EARLY CHILDHOOD MENTAL HEALTH CONSULTATION: PROMOTING CHANGE IN THE QUALITY OF TEACHER–CHILD INTERACTIONS

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ABSTRACT: The goal of this study was to examine the relationship between characteristics of early childhood mental health consultation (ECMHC) and changes in the quality of teacher–child interactions. One hundred forty-one early childhood teachers, serving 3- to 5-year-olds in publically funded early education programs in the state of Arkansas, participated in this study. All childcare sites and preschool programs participating in the study received ECMHC through the Arkansas Early Childhood Mental Health Consultation Project over a period of 3 years. Findings from this study suggest that teachers exposed to ECMHC through their employment at one of the project sites made significant gains toward high-quality teacher–child interactions relative to their initial levels of quality. In particular, delivery aspects of ECMHC and teachers' experiences of ECMHC predicted change in quality of teacher–child interactions. Findings suggest that ECMHC may be a promising professional development intervention for teachers in early childhood settings and that specific characteristics of consultation may be particularly influential in impacting change in those settings.

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Relationships are central to the development of children's psychological well-being (Shonkoff & Phillips, 2000; Thompson, 1998, 2006). In particular, the quality of children's relationships with close others (e.g., parents and early childhood teachers) influences children's cognitive and attentional capacities, prosocial behavior, and incidence of behavior problems (NICHD Early Child Care Research Network, 2001; Peisner-Feinberg et al., 2001). Given that approximately 63% of children under 5 years of age in the United States experience some type of routine nonmaternal child care (National Association of Child Care Resource and Referral Agency, 2007), it is imperative that early childhood educators receive the support necessary to engage children in sensitive, responsive, and developmentally appropriate ways to support children's healthy development.

At present, we know relatively little about ways to train early childhood teachers that will improve the quality of teacher–child interactions over time. While teacher training, education, and prior

experience play an important role in determining how prepared a teacher is upon entry into the classroom (Howes, James, & Ritchie, 2003; LoCasale-Crouch et al., 2007; for mixed findings, see Early et al., 2006; Early et al., 2007), prior training and education may not be enough to sustain or improve high-quality caregiving practices, especially when teachers are faced with children at risk for developing emotional and behavioral difficulties. Providing ongoing support for early childhood educators, especially those teaching in high-needs classrooms, may be an effective way to promote change toward higher quality teacher–child interactions (Pianta, Mashburn, Downer, Hamre, & Justice, 2008; Sheridan, Pope Edwards, Marvin, & Knoche, 2009).

One approach that has received an increasing amount of attention in early childhood settings is Early Childhood Mental Health Consultation (ECMHC). ECMHC has been broadly defined as a "problem-solving and capacity building intervention" involving a collaborative relationship between a mental health consultant and preschool or childcare staff (Cohen & Kaufmann, 2000, p. 4). Often provided by professionals in the fields of psychology, social work, child development, or paraprofessionals with knowledge of children's development and the importance of early relationships, ECMHC focuses on expanding the skills and capacities of teachers, parents, and other adults in a child's life rather than providing direct therapeutic service to the child. ECMHC addresses the unique needs of teachers and children in the context of early childhood education settings. Given the relationship-based focus of many ECMHC programs, ECMHC may be an effective way to promote teacher change toward higher quality caregiving practices, and specifically, change to more positive teacher–child interactions. This study was designed to empirically evaluate the potential influence of ECMHC on teacher–child interactions.

ECMHC as an Approach to Improving and Sustaining High-Quality Caregiving Practices

Currently, a substantial number of children in early childhood classrooms present with emotional and behavioral problems, with approximately 16 to 30% of low-income preschoolers displaying ongoing problems of some type in the classroom (Raver & Knitzer, 2002). In efforts to sustain high-quality caregiving practices and to adequately address the growing needs of individual children with emotional and behavioral difficulties in early childhood settings, many federal programs such as Head Start are mandating the provision of some form of ECMHC (i.e., Head Start Performance Standards, 45 C.F.R. Part 1304.24).

While specific Mental Health Consultant (MHC) activities often vary both in terms of content and strategy of dissemination, the two primary modes of conducting consultation in practice are *program-centered* and *child-and-family-centered* consultation, which often occur together (Cohen & Kaufmann, 2005; Johnston & Brinamen, 2005, 2006; Perry & Kaufmann, 2009). Programmatic or program-centered consultation often focuses on improving the overall quality of the early childhood program by collaborating directly with program staff to solve issues that affect the staff,

children, and families in the center (Cohen & Kaufmann, 2005). Programmatic consultation takes place in the form of both formal and informal professional development such as training, mentoring, and coaching, and consultants deliver this information during staff team meetings, individual meetings with staff, and meetings with program supervisors and directors.

In child-and-family-centered consultation, MHCs focus on strategies for a particular child about whom a teacher or parent might be concerned. In some cases, MHCs observe children in the classroom, conduct assessments, and make referrals to outside intervention services. At other times, MHCs work closely with teaching staff, offering them concrete guidance on how to alter the classroom curricular and relational environment to better meet the needs of the referred children. Overall, program-centered services are likely to enhance teacher capacities to more generally interact sensitively and in less harsh ways with children and families while child-and-family-centered consultation may enhance a teacher's capacity to interact with a specific child who displays particularly difficult behaviors in the classroom. However, it is likely that through consultation around a specific child, a teacher will gain skills transferable to other children with similar difficulties in her classroom. It is likely that both program-centered consultation and child-and-family-centered consultation provide opportunities for teachers to develop a sense of competency around difficult behaviors displayed by individual or multiple children in the preschool classroom and to communicate with greater ease with parents about children's developmental issues.

There have been increasing efforts to integrate ECMHC into preschools and childcare centers, and emerging empirical literature has documented its effectiveness. The growing, but somewhat limited, research base has suggested that ECMHC may contribute positively to the overall quality of childcare programs, improve a teacher's sense of competency, increase positive interactions between teachers and children, contribute to decreases in preschooler's disruptive behaviors, and even decrease preschool expulsion rates (Alkon, Ramler, & MacLennan, 2003; Gilliam, 2005; Gilliam & Shahar, 2006; Green, Everheart, Gordon, & Gettman, 2006; Williford & Shelton, 2008; Gilliam, 2005) found that those teachers who had access to ongoing professional help with developing strategies for handling difficult behaviors were least likely to expel a child from their classroom. In particular, those teachers with an ongoing relationship with an MHC were even less likely to expel children than those who had access to "on-call" types of services.

Characteristics of ECMHC

To optimize the effectiveness of ECMHC in early childhood settings, it is important to determine those elements of ECMHC that are making the greatest impact on change in the quality of teachers' caregiving practices. In a survey of 74 Head Start programs, for example, Green et al. (2006) found that the quality of the mental health consultant–staff relationship was the most important predictor of perceived efficacy of consultation services and

that the frequency of ECMHC activities was positively associated with the quality of mental health consultant–staff relationships. While Green et al.'s study assessed the effects of important characteristics of ECMHC on staff's perceived efficacy of consultation, they did not address whether characteristics of consultation, such as frequency of activities and quality of teacher–consultant relationship, had an effect on observed outcomes targeted by the provision of ECMHC, such as quality of teacher–child interactions. While Green et al. identified characteristics of ECMHC that play an important role in contributing to the efficacy of ECMHC, further research should include examining the approach by which mental health consultants engage in the process of consultation with teachers, as this has been a variable hypothesized to contribute to efficacy of consultation and may ultimately impact observable change in teacher behavior (Johnston & Brinamen, 2006).

At present, ECMHC varies widely in practice, making it difficult to ascertain what specific features of ECMHC promote positive change in program-, teacher-, and child-level outcomes. An important area of future research in the field of ECMHC is to identify the longitudinal impacts of ECMHC on teacher- and child-level outcomes, examining the specific components of ECMHC that affect anticipated outcomes (Duran et al., 2009).

Current Study

The current study investigated specific elements of ECMHC as predictors of change in the quality of teacher–child interactions, taking into account teachers' initial levels of caregiving behavior prior to implementation of ECMHC. Specifically, we examined the quality of the delivery of ECMHC, such as regularity/frequency (i.e., dosage) of consultation practices and approach to consultation practices (e.g., the degree to which the consultant engaged in reflective practices with teachers, offered the teacher new ways of interacting with children with emotional and behavioral difficulties, etc.). In addition, the quality of teacher experience of ECMHC was assessed by examining teacher perceived mental health consultant–teacher relationship quality and teacher perceived professional benefits, as these elements were expected to be important contributors to change toward more positive caregiving practices.

The *delivery of ECMHC* and *teacher experience of ECMHC* were hypothesized to be positively associated with change in teacher–child interactions (see Figure 1). It was expected that teachers who experienced frequent (i.e., regular) and constructive approaches to ECMHC would be more likely to show observed changes in the quality of their interactions with the children in the classroom. It also was hypothesized that teachers who perceived that they had experienced more positive relationships with mental health consultants and had derived greater professional benefits from ECMHC would be more likely to show observed changes in the quality of teacher–child interactions.

METHOD

Sample

A total of 141 preschool teachers participated in this study. All participants were part of a larger study of ECMHC (see Conners-Burrow, Whiteside-Mansell, McKelvey, Virmani, & Sockwell, 2012). Participants were recruited from Head Start and state-funded pre-kindergarten centers in Arkansas (modeled after Head Start and called *Arkansas Better Chance*, or *ABC centers*); both types of programs are designed to meet the needs of educationally and economically disadvantaged children and, as such, require that families meet specific income guidelines. Thus, all children and families served by the center-based childcare programs in the study were low income.

To be eligible to participate, teachers needed to be employed at one of the Arkansas Early Childhood Mental Health Consultation Project sites, providing center-based care to 3- to 5-year-old children and receiving ECMHC services offered through the project. To be included in the current analyses, teachers had to have complete data on the quality of teacher–child interactions variables at baseline and the teacher background and training variables.

Procedures

Before any of the project sites received ECMHC services, all site teachers were assessed by questionnaires and classroom observational measures. This first assessment for the teachers also was the first wave of the study. The observational measures of teacher–child interactions made at Study Wave 1 served as the (Time 1) pre-ECMHC outcomes for those teachers. Subsequently, these teachers were observed and rated on quality of teacher–child interactions approximately every 6 months over a period of 3 years. Thus, it was possible for a teacher to have up to seven waves of observational measures (one pre-ECMHC assessment and six assessments over 3 years during the receipt of ECMHC services). Teacher background variables were assessed only at each teacher's first measurement occasion. Questionnaires regarding teacher experiences with ECMHC were administered during Study Waves 3, 5, and 7.

While the majority of teachers had their first assessment (Time 1; pre-ECMHC) at the beginning of the study (Wave 1), newly hired teachers at participating sites were recruited into the study and had their first assessment at the wave of data collection directly following their hire and were included at all subsequent measurement occasions through the end of the study. Thus, participant teachers varied in the length of time that they received ECMHC due to staggered study intake.

The classroom observations, on which the assessment of teacher–child interactions were based, were made by two trained research assistants following a minimum of 45 minutes of observation in the classroom. Observers were not participants in the classroom nor were they participants in the consultation process. Each observer completed training with the research team, analyzing videos, before conducting independent observations. This
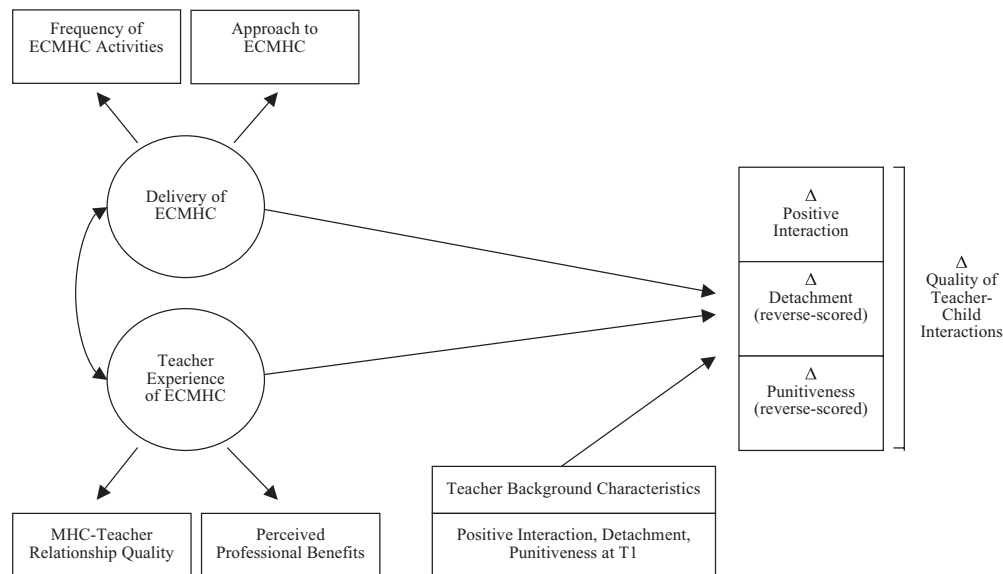
FIGURE 1.   Path diagram of the hypothesized relationships between characteristics of ECMHC and changes in the quality of teacher–child interaction.

process resulted in exact agreement between observer pairs on at least two thirds of the Caregiver Interaction Scale (CIS; Arnett, 1989) items (discussed later), and scores were more than 1 point apart (indicating disagreement) on fewer than 10% of the items.

A group of ECMHC professionals and paraprofessionals provided ECMHC to the projects sites during the 3 years of the study. Consultants were assigned to one of three regions and serviced all sites within their assigned region. Mental health consultants were surveyed during Study Waves 5 and 7 to report on the services provided to each of the participant teachers at their service sites.

As is typical of most ECMHC interventions, mental health consultants for this study utilized both program-centered and child-and-family-centered modes. While the specific ECMHC activities differed somewhat from site to site, each site agreed upon two common, key goals: (a) To enhance the capacity of childcare centers/teachers to prevent and manage mental health problems in children, and (b) to improve the socioemotional outcomes of children enrolled in the collaborating early education programs. Activities included teacher training and consultation, screening children for behavioral concerns and protective factors, making referrals for individual mental health services, formal (e.g., staff meetings) and informal meetings with teachers, and assisting teachers in their efforts to conduct small- and large-group classroom activities with children.

Measures

Timing of teacher entry/attrition. While many of the teachers were recruited into the study and had their pre-ECMHC assessment (Time 1) at Wave 1 of the study, other teachers were recruited after the study was under way. As such, the duration of teacher exposure to ECMHC services at participating childcare centers varied based on study entry. The number of assessments completed on teachers ranged from one to seven, with most of the observations conducted in consecutive time periods. Most of the missing data in the study are due to timing of teacher entry into the study and not skipped assessments or attrition.

To account for differences in study-entry times, the repeated measures on each teacher for this analysis were not numbered by study wave but by the teacher's specific assessment history. For example, Time 1 measures for all teachers were drawn from the pre-ECMHC baseline assessments and questionnaires regardless of the wave in which those assessments occurred. Each time point following the teacher's initial entry into the study represents 6 months of exposure to ECMHC (e.g., Time 1 = 0 months of exposure to ECMHC, Time 2 = 6 months of exposure to ECMHC, Time 3 = 12 months of exposure to ECMHC, etc.).

Quality of teacher–child interactions. For this study, quality of teacher–child interactions at each wave was measured using three of the subscales of the revised CIS (Arnett, 1989): (a) Positive Interaction (warmth, enthusiasm, and developmentally appropriate behavior); (b) Punitiveness (hostile, critical behavior toward children); and (c) Detachment (lack of interest and lack of involvement with child). The CIS is a 26-item observational rating scale organized into four subscales and is considered a valid measure of teacher–child interactions demonstrating concurrent validity ($r = .76$) with the Early Childhood Environment Rating Scale (Phillipsen, Cryer, & Howes, 1995). In the present sample, internal consistency coefficients (Cronbach's α) for each scale ranged from .82 to .93 (10-item Positive Interaction subscale: $\alpha = .93$; four-item Detachment subscale: $\alpha = .82$; eight-item Punitiveness subscale: $\alpha = .92$). The CIS has been used in many studies to assess quality of teacher–child interactions (e.g., Gerber, Whitebook, & Weinstein, 2007; Howes, 1997), including multisite studies such as the Cost, Quality and Outcomes Study (Helburn, 1995). For this analysis, items on the Punitiveness and Detachment subscales

were reverse-coded so that higher values represented higher levels of quality of teacher–child interactions. Mean scores for each of the three subscales were calculated so that individual teachers had three scores to represent quality of teacher–child interactions per time period.

Characteristics of ECMHC. For purposes of this study, characteristics of ECMHC were conceptualized as two distinct factors representing (a) the delivery of ECMHC and (b) teacher experience of ECMHC. The delivery of ECMHC was indexed by frequency of ECMHC activities and mental health consultant approach to ECMHC, and teacher experience of ECMHC was indexed by perceived mental health consultant–teacher relationship quality and perceived professional benefits derived from ECMHC. Both delivery of ECMHC and teacher experience of ECMHC were used as predictors of change in quality of teacher–child interactions (see Figure 1). Because this study sought to determine the way in which specific aspects of delivery and teacher experience of ECMHC were associated with change in quality of teacher–child interactions, an additional exploratory post hoc analysis was done to investigate the association of individual items with change in quality of teacher–child interactions.

Delivery of ECMHC. Frequency of ECMHC activities and approach to ECMHC activities were used as equivalent indicators (i.e., indicators with factor loadings constrained to be equal) of a latent factor representing the quality of ECMHC delivery. The items used to construct these two indicators were drawn from the abridged Mental Health Consultant Activities Questionnaire.

Abridged Mental Health Consultant Activities Questionnaire. This questionnaire is a retrospective assessment of the frequency and type of activities in which the mental health consultants engaged with the participating teachers and was adapted from the Mental Health Consultant Activities Questionnaire (Green et al., 2006). This 16-item adaptation was administered to mental health consultants at Waves 5 and 7. The 13 items directly related to ECMHC frequency and approaches were used for the present analyses. Mental health consultants reported on their interactions with each teacher over the past year of working together. Because both mental health professionals and paraprofessionals provided ECMHC to teachers, the Mental Health Consultant Activities Questionnaire was filled out by both sets of professionals. As such, mean values of mental health professional and paraprofessional data from Wave 7 were used to calculate teachers' scores on the Mental Health Consultant Activities Questionnaire. Correlation analyses between mental health professional reports and paraprofessional reports yielded evidence of strong association between informant reports across items. This study assumes that mental health consultant activities apply retroactively and uniformly to the entire duration teachers were exposed to ECMHC. The tenability of this assumption cannot be directly assessed given that the Mental Health Consultant Activities Questionnaire was administered during only Waves 5 and 7. In addition, mental health

consultants reported on multiple teachers; as such, a standard error adjustment for the shared variance due to the same consultant reporting on different teachers was made in all analyses. Because each mental health consultant was designated to serve a specific region of teachers, all analyses included the region variable as a fixed effect.

Frequency of ECMHC activities. Mental health consultants were asked to report on the frequency of various activities conducted with individual teachers on providing training, supporting teacher wellness, and mentoring the teacher in the classroom. Six items were used to assess the frequency of mental health consultant activities (Cronbach's $\alpha = .86$). Sample items included: "I met individually with this teacher to discuss children and or/families," "I provided support to this teacher for his/her own well-being," "I met with this teacher to help him/her better understand a child/children's behavior." Response options were 1 (*rarely or never*), 2 (*1–2 times per year*), 3 (*monthly*), 4 (*every other week*), and 5 (*weekly or more*). Prior reports of the Mental Health Activities Questionnaire suggests high reliability for reporting on consultation activities ($\alpha = .91$; Green et al., 2006). For the purposes of the present analyses, the mean of these six items was calculated to yield an average *frequency of ECMHC activities* score for each teacher.

Approach to ECMHC. To obtain a clearer sense of the ways in which consultants conduct their work with teachers, mental health consultants reported on their specific approaches to consultation. Sample items included: "I reflected with teacher about his/her experience of working with children," and "I offered this teacher new ways of interacting with children with emotional and behavioral difficulties." Response options were 1 (*strongly disagree*), 2 (*somewhat disagree*), 3 (*somewhat agree*), and 4 (*strongly agree*). The mean of seven items was calculated to yield a total approach to ECMHC score (Cronbach's $\alpha = .91$).

Teacher experience of ECMHC. Mental health consultant–teacher relationship quality and teacher perceived professional benefit were used as equivalent indicators of a latent factor (i.e., indicators with factor loadings constrained to be equal) representing teachers' experience of ECMHC.

Mental Health Consultant–Teacher Questionnaire. Perceived relationship quality with the mental health consultant, and teacher perception of professional benefits derived from working with the mental health consultant, were assessed via a 7-item questionnaire designed for this study. Three of the seven items assessed the nature of the relationship between the mental health consultant and teacher, with two items used for purposes of this study. Four of the seven items assessed the extent to which the teacher felt as if he or she derived professional benefits from working with the mental health consultant. While teachers reported on the quality of the relationship with the mental health consultant and perceived professional benefits at three waves (Waves 3, 5, and 7), due to missing

data, scores from each teachers' last assessment were utilized for analyses in this study.

Perceived professional benefits.   Four items were used to capture teacher-perceived professional benefits derived from ECMHC (Cronbach's $\alpha = .88$). Sample items include: "I often look to the mental health professional for help when a child in my class is having problems" and "Because of the mental health professional, I really learned new strategies for dealing with children's behavior problems." Response options were 4 (*strongly disagree*), 3 (*disagree*), 2 (*agree*), and 1 (*strongly agree*). Items were reverse-coded such that high scores corresponded to the *strongly agree* response category and low scores corresponded to the *strongly disagree* response category. Mean scores were calculated for a single perceived professional benefits score for each participant.

Perceived mental health consultant–teacher relationship quality.   For the present study, two items used to measure relationship quality were utilized: "I developed a good relationship with the mental health professional at my center" and "I felt like the mental health professional at my center really respected my knowledge and opinions" (Cronbach's $\alpha = .84$). Response options were 4 (*strongly disagree*), 3 (*disagree*), 2 (*agree*), and 1 (*strongly agree*). Items were reverse-coded such that high scores corresponded to the *strongly agree* response category and low scores corresponded to the *strongly disagree* response category. Mean scores were calculated for a single perceived consultant–teacher relationship quality score for each participant.

Teacher background characteristics.

Teacher background and training.   The Teacher Background and Training Questionnaire assesses teachers' preparation and training, in addition to years of experience working with children in a classroom setting, and was administered at a teacher's first assessment (marked by entry into the study). Teachers identified their levels of education completed (e.g., high school diploma, associate degree, nursing degree, bachelor of arts degree, master's degree, other advanced degree). Teachers identified whether they had a teaching certificate, a license, or other credentials or certificates related to teaching and whether this credential was specific to child development. For this study, we created a teacher preparation variable, based on empirical literature that has suggested that having a bachelor degree (BA) or Child Development Associate (CDA) credential tends to be associated with engagement in higher quality caregiving practices (Heisner & Leiderberg, 2011; Howes, 1997; Torquati, Raikes, & Huddleston-Casas, 2007). There has been limited research to suggest that other information related to teacher preparation that was available for analysis would yield meaningful differences in teacher quality. As such, for purposes of analyses, teachers were classified into one of four categories, coded: (a) Neither a BA nor CDA credential, (b) CDA and no BA, (c) BA and no CDA, and (d) BA and CDA. Teachers identified themselves as either lead teachers or teaching assistants. In addition, teachers reported their years of experience working as a teacher.

Teacher Perceived Training Needs.   The Teacher Perceived Training Needs Questionnaire was modeled after the Head Start Faces Study (West et al., 2011) and involved having teachers indicate their perceived training needs related to a variety of child and classroom issues at each measurement occasion. This 24-item questionnaire was assessed on a 3-point Likert-type scale with response options of 1 (*not at all*), 2 (*some*), and 3 (*very much*). A sample of topics rated by teachers included "child development," "mental health issues," "providing services for children with special needs," "limit setting," and "managing children's behavior problems." Cronbach's α for this set of 24 items was .89. Mean scores for teacher perceived training needs were calculated from this 24-item questionnaire. Teachers' baseline measure of perceived training needs was utilized for all analyses.

Analysis Plan

Data analysis proceeded in a series of steps to empirically evaluate the primary research question of the study: Is change in quality of teacher–child interactions associated with characteristics of ECMHC, such as delivery of ECMHC (as indexed by frequency and approach) and teacher experience of consultation (as indexed by perceived quality of the mental health consultant–teacher relationship and perceived professional benefits derived from consultation), controlling for baseline quality of teacher–child interactions levels and teacher-background characteristics?

Analysis began by examining descriptive statistics, univariate and bivariate distributions, and model assumptions. Bivariate associations (zero-order correlations) were computed to look at the unadjusted relationships between variables of interest. These initial steps helped to guide subsequent analyses used to examine the main research questions. The fit of a confirmatory two-factor measurement model for ECMHC was evaluated. Next, an unconditional model was conducted to investigate whether there was evidence of change in the quality of teacher–child interactions. Finally, a structural equation model for the relationship between quality of ECMHC and change in teacher–child interactions was established.

Change in Quality of Teacher–Child Interactions. Although some of the participating teachers had complete data across all seven waves of the study, only 31% of the sample had four or more time points. Multivariate data screening and preliminary analyses indicated that a linear latent growth curve with normally distributed growth factors was not consistent with the observed individual trajectories. However, with the majority of the sample having not more than three repeated measures, the data did not allow for the estimation of a nonlinear growth model with random growth factors.

We did, however, have sufficient data to allow us to examine interindividual variability in overall average change in teacher–child interactions for each teacher from pre-ECMHC assessment to final assessment. Given that the time from the first to the last assessment varied across teachers, conditional on each teacher's entry time into the study, we computed duration-adjusted change

scores to capture average gains in the quality of teacher–child interactions. For each teacher, we calculated the difference between the Time 1 teacher–child interactions subscale scores and the scores from the final wave that the teacher was assessed in the study. We then divided each overall change score by the number of years between the Time 1 assessment and the final assessment to obtain for all teachers an estimated change score on each subscale per year of exposure to ECMHC at a project site. For instance, if Teacher A was observed over five assessments, each approximately 6 months apart, then the total time between the first and last assessment was 2 years. The average change per year was calculated as follows: [Score(Time 5) − Score(Time 1)/2]. Larger values represented greater overall mean gain in positive aspects of teacher caregiving behaviors. While it would have been preferable to have data that allowed the estimation of the trajectory shape and function of intra-individual change across time, the observed difference scores provide a rough "snapshot" of the overall total change during a given time interval and can be utilized as "unbiased estimators of underlying true change" (Willet, 1994, p. 672).[1]

Model estimation. Mplus Version 5.0 (Muthén & Muthén, 1998–2007) was used to conduct all analyses. We engaged the full information maximum likelihood (FIML) with robust standard errors and model chi-square for model estimation ("Estimator = MLR" in Mplus). FIML makes use of available outcome data for cases with incomplete or partially missing data under the missing-at-random assumption, an approach preferable to listwise deletion (Schafer & Graham, 2002). The robust maximum likelihood estimator (MLR) in Mplus produces standard errors that are robust against violations of the normality assumption. We also made use of the Mplus capacity to adjust for nonindependence of cases. To account for clustering of teachers within childcare centers, a post hoc sandwich estimator was used to adjust the estimated standard errors ("Type = Complex" in Mplus). Given that mental health consultants implementing ECMHC were associated with three distinct regions, region was included as fixed effects in all analyses to control for clusters of participants within mental health consultants.

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[1]There were sufficient data to estimate a linear latent growth model, but that model did not adequately fit the data—diagnostically, apparent sources of misfit included nonlinear patterns of change and nonnormal variability across individual trajectories. Because only 31% of the sample had data for four or more time points and as our total sample was only 141 teachers, we did not have sufficient data to estimate a curvilinear, piecewise, or other nonlinear growth model nor did we have sufficient data to utilize a more flexible model (e.g., growth mixture model) to relax the population homogeneity assumption for the growth factors. Although the classroom observations were done at multiple waves, the surveys of the mental health consultants and the surveys of the teachers regarding their experiences with the consultants were done at fewer waves near the end of the study; as such, we were forced to treat these as time-invariant, retrospective measures and had to assume a temporal ordering on variable influences that did not match the temporal ordering of the data collection on those variables. While we did not have sufficient data to parametrically model the *functional form* of intra-individual change across time, we were still able estimate and model interindividual variability in *mean change* per year, making use of the data that were available.

TABLE 1. *Descriptive Statistics on Mean Caregiver Interaction Scale (CIS) Scores at Baseline, Mean Change per Year,[a] and Characteristics of ECMHC*

CIS Subscale: Baseline	*M*	*SD*	
Positive Interaction	2.54	.64	
Detachment (reverse-scored)	2.77	.63	
Punitiveness (reverse-scored)	3.45	.64	
CIS Subscale: Change per year	*M*	*SD*	
Positive Interaction	.12	.85	
Detachment (reverse-scored)	.25	.96	
Punitiveness (reverse-scored)	.12	.85	
Characteristics of ECMHC	*M*	*SD*	Range
ECMHC Frequency	2.41	.84	1.00–4.00
ECMHC Approach	3.03	.65	1.00–4.00
Perceived Professional Benefits	3.70	.79	1.50–5.00
MHC–Teacher Relationship Quality	4.08	.85	1.50–5.00

ECMHC = Early Childhood Mental Health Consultation.
[a]Detached and punitive subscales are reverse-scored.

RESULTS

Sample Characteristics

Among the 141 teachers included in this study, there was a wide variety of teacher preparation, training, and years of teaching experience upon entry into the study. Approximately 22.0% of teachers had completed a BA degree, 22.7% had completed a CDA credential, 3.5% had completed both a BA degree and a CDA credential, and 51.8% had neither completed a BA degree nor a CDA credential. Overall, teachers had an average of 5.66 years ($SD = 6.66$) of teaching experience prior to entry in the study, and more specifically, an average of 4.54 years ($SD = 5.14$) of teaching experience with preschool-aged children. A total of 51 lead teachers (36.2%), and 90 teaching assistants (63.8%) participated in the study. On average, teachers reported perceived training needs across a variety of topics ($M = 2.25$, $SD = .43$, range = 1–3). No demographic information was collected on the teachers outside of background on prior education and training, years of teaching, teaching role, and perceived training needs.

Descriptive Statistics

Descriptive statistics for all variables of interest appear in Table 1. Descriptive statistics for average change in quality of teacher–child interactions per year reveal gains in the Positive Interaction, Detachment, and Punitive subscales. The greatest average gains were made in the Detachment subscale; for every year of exposure to ECMHC, teachers showed greater quality of teacher–child interactions, as evidenced by less detachment (M change = .25, $SD = .96$; see Table 1). Descriptive statistics on characteristics of delivery of ECMHC (i.e., frequency and approach) and teacher experience of ECMHC (i.e., perceived professional benefits and MHC–teacher relationship quality) are reported in Table 1. Across all of their different activities, mental health consultants met with teachers,

TABLE 2. *Correlations Between Baseline Assessments of Quality of Teacher–Child Interactions, Teacher-Background Variables, ECMHC Characteristics, and Change in Teacher–Child Interactions*

	Δ Positive Interaction	Δ Detachment (reverse-scored)	Δ Punitiveness (reverse-scored)
Δ CIS Variables			
Δ Positive Interaction Time 1		.68**	.62**
Δ Detachment Time 1 (reverse-scored)			.35**
Baseline CIS Variables			
Positive Interaction Time 1	− .51**	− .40**	− .24*
Detachment Time 1 (reverse-scored)	− .40**	− .58**	− .09
Punitiveness Time 1 (reverse-scored)	− .32**	− .17	− .61**
Teacher Background Characteristics			
Teacher Preparation	− .14	− .14	− .07
Years Teaching	− .08	− .02	− .03
Teacher Role (0 = Lead Teacher, 1 = Teaching Assistant)	.21*	.19*	.13
Perceived Training Needs	− .01	− .13	.13
Characteristics of ECMHC			
Frequency of ECMHC Activities	.11	.24†	.13
Approach to ECMHC	.12	.20	.17
Professional Benefits Derived From ECMHC	.22†	.13	− .01
MHC–Teacher Relationship Quality	.14	.12	− .11

Note. ECMHC = Early Childhood Mental Health Consultation. CIS = Caregiver Interaction Scale. We initially entered teacher preparation as an unordered categorical predictor using indicator variables, but there was no statistical decrement in model fit when entering the ordinal-coded variable as a single predictor as presented here.
†$p \leq .10$. *$p \leq .05$. **$p \leq .01$.

on average, more than twice per year and, on average, offered constructive approaches to consultation. On average, teachers felt that they had received professional benefit from ECMHC and that their relationship with the consultant was of good quality.

Bivariate Correlations

Pearson correlations were used to measure bivariate associations between all variables of interest. Correlation analyses revealed that change in positive interaction, detachment, and punitiveness was all significantly associated with one another (see Table 2). In addition, correlation analyses suggest that teachers' baseline levels of quality of teacher–child interactions as measured by positive interaction, detachment, and punitiveness were negatively associated with teachers' change in all dimensions of teacher–child interactions. Greater change in quality of teacher–child interactions was associated with lower baseline measures of the quality of teacher–child interactions, such that teachers who started out lowest in quality tended to improve the most.

Bivariate associations between change in the quality of teacher–child interactions and teacher-background characteristics were examined. Analyses revealed that teacher role was significantly associated with change in quality of teacher–child interactions, as measured by positive interaction and lack of detachment, such that teaching assistants showed greater gains toward higher quality interactions per year of exposure to ECMHC than did lead teachers. Years of teaching, perceived training needs, and teacher preparation were not significantly associated with change in the

quality of teacher–child interactions per year of the exposure to ECMHC.

Frequency of ECMHC activities was marginally and positively associated with change in quality of teacher–child interactions, as measured by less detachment. Teachers' perceived professional benefits derived from ECMHC were marginally and positively associated with change in the quality of teacher–child interactions, as measured by gains in positive interaction.

Confirmatory Two-Factor Model for Quality of ECMHC

ECMHC was specified as a two-factor construct; one factor measured the *Delivery of ECMHC* as indicated by frequency of ECMHC activities and approach to ECMHC activities, and the second factor measured *Teacher Experience of ECMHC*, as indicated by perceived professional benefit and mental health consultant–teacher relationship quality. Indicators for each pairing were treated as equivalent (i.e., factor loadings constrained to be equal). Model fit indices suggested that the two-factor model fit the data well (Fit indices: CFI = .982, TLI = .963, RMSEA = .004). Analyses revealed that the two factors were not significantly correlated and thus represent two distinct dimensions of ECMHC.

Unconditional Model of Change in Teacher–Child Interactions

An unconditional linear regression model was conducted to investigate whether there was any evidence of change in quality of teacher–child interactions, as measured by change in positive interaction, lack of punitiveness, and lack of detachment. Results

TABLE 3. *Results for the Estimated Structural Equation Model of the Relationship Between Characteristics of ECMHC and Changes in the Quality of Teacher–Child Interactions*

	Δ Positive Interaction		Δ Detachment (reverse-scored)		Δ Punitiveness (reverse-scored)	
	Est. (*SE*)	Std. Est.	Est. (*SE*)	Std. Est.	Est. (*SE*)	Std. Est.
Characteristics of ECMHC						
Delivery of ECMHC (frequency and approach)	.24* (.12)	.17	.32** (.11)	.20	.29† (.19)	.20
Teacher Experience of ECMHC (MHC–Teacher Relationship Quality and Perceived Professional Benefits)	.27* (.13)	.21	.11 (.12)	.08	.17** (.05)	.13

Note. ECMHC = Early childhood mental health consultation. All models included fixed effects for region not displayed in table. Standard errors adjusted for clustering within center. Analyses controlled for the corresponding baseline measures of sensitivity (Positive Interaction at Time 1, Detachment at Time 1, Punitiveness at Time 1). All models were controlled for teacher preparation and teacher role as control variables.
†$p \leq .10$. *$p \leq .05$. **$p \leq .01$.

suggest that on average, there was significant change toward less detachment, *Std. Est.* = .25, $p = .046$, and less punitiveness, *Std. Est.* = .12, $p = .024$, per year. Next, change in quality of teacher–child interactions was evaluated controlling for teachers' baseline measure of quality of teacher–child interactions. On average, teachers changed significantly toward less detachment and less punitiveness per year when controlling for all baseline measures of quality of teacher–child interactions. Teacher change toward greater positive interaction was marginally significant when controlling for teacher baseline measures of quality of teacher–child interactions.

Structural Equation Model: Relationship Between Quality of ECMHC and Change in Teacher–Child Interactions

Characteristics of the delivery of ECMHC and teacher experience of ECMHC were hypothesized to predict change in the quality of teacher–child interactions. A two-factor structural equation model was estimated to test for the effect of the delivery of ECMHC and teacher experience of ECMHC on change in the quality of teacher–child interactions per year of exposure to ECMHC. All analyses controlled for teacher-background characteristics.

Delivery of ECMHC. Delivery of ECMHC significantly predicted change in the quality of teacher–child interactions as measured by positive interaction, *Std. Est.* = .17, $p = .03$, and lack of detachment, *Std. Est.* = .20, $p = .01$. Specifically, teachers who engaged in more frequent and constructive activities with mental health consultants evidenced greater change per year of exposure to ECMHC toward more positive interaction and less detachment (see Table 3). Delivery of ECMHC marginally predicted change in punitiveness, such that teachers who experienced a higher quality of delivery of ECMHC showed greater change toward positive caregiving behaviors as measured by less punitiveness, *Std. Est.* = .20, $p = .06$ (see Table 3).

Teacher experience of ECMHC. Teacher experience of ECMHC significantly predicted change in the quality of teacher–child interactions. Teachers who had a more positive experience of ECMHC,

as indexed by teacher's report of mental health consultant–teacher relationship quality and greater perceived professional benefits, demonstrated greater gains toward higher quality teacher–child interactions, as evidenced by significantly more positive interaction, *Std. Est.* = .21, $p = .04$, and less punitive behavior, *Std. Est.* = .13, $p < .01$ (see Table 3).

Post Hoc Analyses

To better understand the specific aspects of ECMHC that might contribute to change in the quality of teachers' caregiving behaviors, multivariate linear regressions were conducted with individual questionnaire items (Tables 4 and 5).[2]

Delivery of ECMHC—Frequency of ECMHC activities. Results from exploratory post hoc linear regressions suggest that the frequency with which mental health consultants met with teachers to discuss children and families was associated with greater improvement in quality of teacher–child interactions, as measured by less punitiveness. In addition, findings suggest that teachers who met individually with consultants to discuss teacher issues more often made greater gains toward higher quality teacher–child interactions, as evidenced by less punitiveness. Finally, there is marginal evidence to suggest that teachers who attended team meetings more regularly with mental health consultants made gains toward higher quality interactions, as measured by less punitiveness.

Delivery of ECMHC—Approach to ECMHC. Results from exploratory post hoc linear regressions suggest that when mental health consultants offered information about children's age-appropriate capacities, needs, and feelings within the context of the teacher's interest in the child's behavior, teachers made greater gains toward higher quality teacher–child interactions, as measured by less detachment and less punitiveness. In addition, there is some

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[2]No adjustment to p values was made because this analysis was exploratory and not designed to be a test of predefined hypotheses.

TABLE 4. *Exploring the Effects of Delivery of ECMHC on Change in Quality of Teacher–Child Interactions*

Characteristics of ECMHC	Δ Positive Interaction		Δ Detachment (reverse-scored)		Δ Punitiveness (reverse-scored)	
	Est. (*SE*)	Std. Est.	Est.(*SE*)	Std. Est.	Est. (*SE*)	Std. Est.
Frequency Indicators						
Met individually to discuss children and families	.11 (.08)	.15	.12 (.07)	.14	.14** (.03)	.20
Met individually to discuss teacher issues	.10 (.08)	.12	.14 (.08)	.14	.16** (.06)	.18
Provided support for teacher's own well-being	−.01 (.10)	−.01	.02 (.13)	.02	.09 (.08)	.11
Spent informal time with teacher	.08 (.05)	.12	.10 (.08)	.12	.08 (.08)	.12
Met with teacher to help her better understand children's behavior	.09 (.11)	.10	.17 (.13)	.18	.10 (.08)	.12
Attended team meetings with teacher	.11 (.07)	.15	.07 (.06)	.08	.11† (.07)	.16
Approach Indicators						
Offered teacher info about children's capacities	.11 (.10)	.11	.20* (.09)	.18	.10* (.05)	.10
Offered teacher info about resources/services	.15 (.10)	.15	.21† (.13)	.18	.15** (.04)	.14
Reflected with teacher about interactions	.07 (.09)	.07	.09† (.06)	.08	.10 (.07)	.11
Offered teacher new ways of interacting	.02 (.11)	.02	.15 (.10)	.13	−.02 (.08)	−.02
Teacher was open to working with MHC at beginning of year	.12 (.09)	.14	.12 (.09)	.12	.14 (.11)	.16
Teacher was open to working with MHC at end of year	.10 (.07)	.11	.11 (.09)	.11	.15** (.05)	.16
Good relationship with teacher	.22† (.13)	.18	.23 (.15)	.17	.17 (.12)	.14

Note. ECMHC = Early Childhood Mental Health Consultation. All models included fixed effects for region not displayed in table. Standard errors adjusted for clustering within center. Analyses controlled for the corresponding baseline measures of sensitivity (Positive Interaction at Time 1, Detachment at Time 1, Punitiveness at Time 1, Permissive at Time 1). All models include teacher preparation and teacher role as control variables.
†*p* ≤ .10. **p* ≤ .05. ***p* ≤ .01.

TABLE 5. *Exploring the Effects of Teachers' Experiences of ECMHC on Change in Quality of Teacher–Child Interactions*

Characteristics of ECMHC	Δ Positive Interaction		Δ Detachment (reverse-scored)		Δ Punitiveness (reverse-scored)	
	Est. (*SE*)	Std. Est.	Est. (*SE*)	Std. Est.	Est. (*SE*)	Std. Est.
Perceived Professional Benefits						
Because of the MHC, I learned new strategies for dealing with children's behaviors problems.	.15† (.08)	.16	.17 (.11)	.17	.14* (.06)	.16
Looked to the MHC for help when a child is having problems.	−.02 (.05)	−.02	−.17 (.10)	−.16	.01 (.05)	.01
Because of the MHC, more families got the kind of services they needed.	.30** (.11)	.31	.20* (.08)	.18	.13* (.08)	.14
Because of the MHC, I saw a difference in children's behavior.	.12* (.06)	.16	.10 (.09)	.11	.08* (.03)	.11
MHC–Teacher Relationship Quality						
I developed a good relationship with the mental health professional at my center.	.12 (.08)	.12	.01 (.09)	.01	.04 (.06)	.01
I felt like the mental health professional at my center really respected my knowledge and opinions.	.13* (.06)	.14	.04 (.06)	.04	.08† (.05)	.09

Note. ECMHC = Early Childhood Mental Health Consultation. All models included fixed effects for region not displayed in table. Standard errors adjusted for clustering within center. Analyses controlled for the corresponding baseline measures of sensitivity (Positive Interaction at Time 1, Detachment at Time 1, Punitiveness at Time 1, Permissive at Time 1). All models include teacher preparation and teacher role as control variables.
†*p* ≤ .10. **p* ≤ .05. ***p* ≤ .01.

evidence to suggest that when mental health consultants offered teachers information about resources and services for children, teachers made greater gains toward higher quality teacher–child interactions, as evidenced by less punitiveness and marginally by less detachment.

There is limited evidence to suggest that teachers who engaged in reflection with mental health consultants made gains toward higher quality teacher–child interactions, as evidenced by less detachment. Mental health consultant–teacher relationship qual-

ity (as reported by the mental health consultant) was marginally associated with gains in quality of teacher–child interactions, as evidenced by positive interaction, with more satisfying relationships predicting marginally greater gains toward higher quality caregiving behavior. In addition, there were apparent associations between teacher openness to working with the mental health consultant toward the end of the exposure to ECMHC and change toward higher quality teacher–child interactions, as measured by less punitiveness.

Teachers' experiences of ECMHC—Perceived professional benefit. Teacher report of learning new strategies for dealing with children's behavior problems from the mental health consultant was associated with change toward higher quality teacher–child interactions, as evidenced by less punitiveness and marginally by positive interaction. In addition, findings suggest that those teachers who attributed positive changes in children's behaviors to the mental health consultant showed greater gains toward higher quality teacher–child interactions, as measured by positive interaction and less punitiveness. Findings suggest that that teachers who perceived the mental health consultant as providing services useful to families showed greater change in the quality of teacher–child interactions, as measured by positive interaction, less detachment, and less punitiveness (see Table 5).

Teachers' experiences of ECMHC—MHC–teacher relationship quality. Teachers who felt that the mental health consultant respected their knowledge and opinions showed greater gains toward higher quality teacher–child interactions, as measured by positive interaction, and marginally significant gains, as measured by less punitiveness. Teacher report of relationship quality with the mental health consultant was not associated with change in the quality of teacher–child interactions (see Table 5).

DISCUSSION

The goal of the current study was to examine the change in the quality of teacher–child interactions that occurs during exposure to ECMHC as predicted by specific characteristics of ECMHC, controlling for teacher-background characteristics and baseline levels of teacher–child interaction quality. While past research has identified characteristics of ECMHC predictive of greater perceived efficacy of consultation and more positive teacher-level outcomes such as teacher sense of efficacy (Alkon et al., 2003; Green et al., 2006), this is the first empirical study to predict change in observed quality of teacher–child interactions using specific characteristics of ECMHC.

Effects of ECMHC on Quality of Teacher–Child Interactions

The findings from this study suggest that teachers exposed to ECMHC made significant gains toward higher quality teacher–child interactions as compared to teachers' initial levels of interactions. Teachers displayed significant improvements in areas of detachment and punitiveness, changing toward greater involvement and less harshness in observed interactions with young children. On average, over the course of the study, teachers shifted from evidencing somewhat uninvolved interactions (prior to ECMHC) to rarely displaying this type of disengagement with children. Similarly, teachers shifted from engaging in somewhat hostile, punitive interactions to rarely displaying these types of interactions with children in their care.

Within the context of ongoing ECMHC, teachers are afforded opportunities to think deeply about their interactions with children and make conscientious efforts to change negative cycles. Mental health consultants can assist teachers in efforts to break coercive cycles of interactions as well as provide teachers with the opportunity to refer children who need specific intervention services when these needs extend beyond the capacities of the teacher, further supporting teacher sense of competence in the classroom.

While results from this study suggest that ECMHC is likely an effective way to promote high-quality teacher–child interactions by supporting teacher change from negative caregiving practices toward more positive ones, they must be interpreted with some caution. It is possible that teachers could have made shifts toward less negative caregiving behaviors over the course of time with any type of support, not just one focused on ECMHC.

However, to further investigate this possibility, one-way analyses of variance comparing the mean baseline teacher–child interactions subscale scores across teachers' groups according to their time of entry were conducted. These analyses revealed that there were no significant differences in the mean baseline subscale scores for positive, detached, and punitive interactions across study-entry times. This provides some evidence that teacher change toward more positive caregiving practices was attributable to teachers' experience of ECMHC rather than to a natural increase in teacher scores across the study period.

Role of Teacher Characteristics

Teachers with lower baseline measures of quality of teacher–child interactions tended to improve the most during exposure to consultation. In addition, quality of teacher–child interactions increased most significantly for teachers who were less experienced in terms of their classroom role, with teaching assistants making greater gains toward high-quality interactions as measured by positive interaction and lack of detachment, as compared to lead teachers. ECMHC may have important benefits for lower skilled and less experienced teachers because they are often newer to the early childhood setting and likely less equipped to deal with the everyday demands of challenging behaviors presented to them in the classroom (Cohen & Kaufmann, 2005). It also is possible that teaching assistants and lower skilled teachers may be more receptive to ECMHC as a professional development intervention, given their role in the childcare setting. On the other hand, given their experience in the childcare setting, veteran lead teachers may see consultation as less necessary, and thus it may take more of an effort on the part of the consultant to involve lead teachers in thinking about and engaging in new ways of interacting with children in their care. In addition, mental health consultants may find that engaging less experienced, lower skilled teachers in the process of change is easier and more fruitful than is engaging in this process with veteran staff, who have more fixed ways of interacting with young children in the classroom.

Note that teacher preparation was not significantly associated with change toward higher quality teacher–child interactions. Future research is needed to clarify the effects of preparation on teachers' receptiveness to a professional development

intervention. Given that there are mixed findings on the role that teacher preparation plays in contributing to the quality of teacher–child interactions more generally (see Early et al., 2006; Early et al., 2007), one might expect that teacher preparation, as it relates to teachers' receptiveness to change, may similarly yield mixed findings. At present, little research has documented the differential effectiveness of ECMHC on teacher-level outcomes based on teachers' previous preparation, training, and skill set. While the current study aimed to take an initial look at this, future research on ECMHC should evaluate the role that teachers' background and training play in affecting change in teacher-level outcomes. It is likely important to examine not only the education and training teachers bring with them to the classroom but also their sense of efficacy for working with young children who display challenging behaviors. Teacher characteristics are likely to play an important role in influencing teacher receptiveness to receiving ongoing support regarding interactions with young children.

Characteristics of ECMHC

ECMHC as an intervention is quite variable in its approach and implementation. The current study sought to identify characteristics of ECMHC that predicted gains in sensitivity over the course of the study. Characteristics of ECMHC such as delivery of ECMHC (frequency and approach) and teachers' experiences of ECMHC (perceived professional benefit and MHC–teacher relationship quality) predicted change in the quality of teacher–child interactions, as measured by change toward more positive, less punitive, and less harsh interactions.

In this study, the delivery of ECMHC and teacher experience of ECMHC made important contributions to positive changes in teachers' caregiving behaviors. In exploratory post hoc analyses, the regularity with which mental health consultants and teachers met to discuss children and families and teacher issues was associated with gains in quality of teacher–child interactions, as measured by less harshness.

Early childhood teachers, particularly those working in low-income settings, are often overstressed with both their own issues and the issues that children and families bring with them to the classroom (Yoshikawa & Knitzer, 1997). Recent research has suggested that teacher training and ECMHC may contribute to decreases in work-related stressors among early childhood teachers (Brennan, Bradley, Allen, & Perry, 2008; Zhai, Raver, & Li-Grining, 2011), and as such, contribute to improvements in positive caregiving behavior. It is likely that regular meetings with mental health consultants provide teachers with a forum to attend to both children's behaviors and their own work/life stresses that affect their capacity to respond sensitively to the children in their care. Through regular meetings with mental health consultants, teachers are likely to become more invested in their relationships with children and may find it easier to respond in sensitive and nonpunitive ways when they are able to work with mental health consultants who can help to contextualize the child's behaviors within the frame of the child's life outside of the childcare center. In addition, consistent consultation likely supports the development of the relationship between teacher and consultant, which contributes to teacher feelings of efficacy (Alkon et al., 2003) and, in turn, may contribute to positive change in teacher–child interactions.

There is evidence from the current study to suggest that not only the regularity with which one engages in consultation activities but also the approaches mental health consultants use in working with teachers play an important role in predicting observed teacher outcomes. In particular, post hoc analyses indicate that mental health consultants who approached consultation with teachers in a way that offered teachers information about children's age-appropriate capacities, needs, and feelings in the context of the teachers' interest in the child's behavior had teachers who demonstrated greater gains toward higher quality teacher–child interactions, as measured by more involvement and less harshness. It is important that mental health consultants offer teachers information about children's capacities in the context of teachers' interests because this may be an effective way for mental health consultants and teachers to work together to develop a greater understanding of the needs of the children in teachers' classrooms. While workshop-style approaches may be one way to offer teachers information about child development, this style of training may be less focused on teachers' individual interests and thus may not be as easily incorporated into teachers' daily practices. It is well known in the professional development literature targeting children's academic growth that one-time workshops and trainings are less effective than are continuous consultation and coaching (Wayne, Yoon, Zhu, Cronen, & Garet, 2008). The data in this study extend the existing professional development literature (Pianta et al., 2008; Powell, Diamond, Burchinal, & Koehler, 2010; Wasik, Bond, & Hindman, 2006) by suggesting that teachers require consistent mentoring to engage in behaviors to promote children's socioemotional development as well as cognitive development. When teachers have regular opportunities to work with mental health consultants to co-construct an understanding of children's behaviors in the context of what is most relevant for teachers, teachers are more likely to incorporate the information into their way of interacting with children in the classroom.

In addition, findings from the current study suggest that mental health consultants who offered teachers information about resources and services for children had teachers who demonstrated greater gains toward more positive teacher–child interactions, as measured by less punitiveness and marginally by less detachment. Teachers who receive information about resources and services for children may feel empowered to make a difference in children's lives and, as such, become involved in increasingly positive interactions with children in the classroom. When teachers have access to resources, they may feel more like a part of a treatment team rather than being the one person supporting the needs of the children in their classrooms and thus invest more in their interactions with children. While beyond the scope of the current project, future research should investigate how teachers use resource and

referral information from consultants, including the types of referrals teachers make and the kinds of resources that they share with parents.

The process through which consultants work with teachers is of particular importance to the effectiveness of consultation. While there is somewhat limited evidence from this study to suggest that teachers who engaged in reflection around their experiences interacting with young children with mental health consultants made greater gains toward higher quality teacher–child interaction, exploratory post hoc analyses revealed a marginal association between reflective practice and gains in higher quality teacher–child interaction, as measured by less detachment. Future research should further explore this area, as past research has suggested that reflective approaches to training teachers may positively influence teacher capacity to see events from the child's perspective (Virmani & Ontai, 2010). Through the process of reflection on interactions with young children, teachers may gain greater insight into children's behaviors in a way that supports their capacity to engage in high-quality teacher–child interactions. Giving early childhood teachers the opportunity to reflect on their interactions with children, especially children who display challenging behaviors, is likely to support teachers in their efforts to respond in more thoughtful and less reactive ways.

Research on ECMHC has suggested that mental health consultant–teacher relationship quality is an important contributor to the effectiveness of consultation (for a review, see Brennan et al., 2008). The current study found some evidence to support these claims, as teacher experience of ECMHC, measured by both perceived mental health consultant–teacher relationship quality and perceived professional benefits, predicted change toward higher quality teacher–child interactions, as measured by more positive interaction and less punitive interaction. Post hoc analyses suggest that perhaps more important than teachers' overall rating of their relationship with the consultant was teachers' sense that the mental health consultant respected their knowledge and opinions. In particular, those teachers who experienced the mental health consultants as respecting their knowledge and opinions made greater improvements toward quality teacher–child interactions, as measured by more positive teacher–child interactions.

The quality of the mental health consultant–teacher relationship is likely important to teacher–child outcomes because it provides a necessary context for collaboration between mental health consultants and teachers around challenging issues and behaviors presented in the classroom. Findings from the current study suggest that it may be particularly important that consultants convey a sense of respect for teachers' knowledge and opinions because this seemed to be associated with greater change toward positive caregiving behaviors. Conveying a sense of respect for teachers and all that they have to offer in the context of consistent consultation may open up the possibility for the mental health consultant and teacher to engage in a meaningful relationship with one another that serves as a catalyst for change in teachers' behavior with children in their care. Given that early childhood teachers work intimately with children on a day-to-day basis, they are often holders of very important information about children. Findings from this study are consistent with what Johnston and Brinamen (2006) have theorized to be important elements in developing a consultative stance—acknowledging and valuing the experience of others, soliciting ideas from others, and avoiding the "expert posture." When teachers feel as if their knowledge and opinions are respected and their contributions to discussions are valued, it is likely that mental health consultants' efforts to guide teachers in responses to difficult childhood behaviors in more sensitive, less harsh ways will be received more favorably. Mental health consultants who make efforts to understand and validate teachers' experiences of working with children, particularly children displaying difficult or challenging behaviors, model the kind of sensitivity that mental health consultants hope develops in teachers.

Overall, when mental health consultants attend carefully to their interactions with teachers, they convey the importance of relationship-based practice. The teacher is able to use her or his relationship with the mental health consultant as a model for creating and sustaining relationships with children and parents in the classroom. In the context of a trusting, supportive relationship, the teacher is able to explore new ways of interacting with children in her or his care and turn to the mental health consultant for support around these interactions. Further, teachers' experiences of mental health consultation appear to play an important role in predicting how consultation affects teacher–child interactions in terms of their perception of the professional benefit of the service. Teachers' perceived professional benefits of ECMHC contributed to their change toward higher quality teacher–child interactions. In particular, there is some evidence to suggest that when teachers felt like they learned new strategies for dealing with children's behavior problems, saw a difference in the child's behavior, and believed that families received the services needed because of the mental health consultant, teachers made greater improvement toward more positive, less punitive behaviors.

Teachers' perceptions of the professional benefits of ECMHC may contribute to their conceptualization of the consultant as a valuable resource in the childcare setting. Teachers who perceive mental health consultants as helpful by way of offering new strategies for dealing with challenging child behaviors likely feel a greater sense of efficacy in working with children once they implement these strategies and find that they are effective. However, provided the findings previously mentioned with regard to respecting teachers' knowledge and opinions, there seems to be a fine balance between offering teachers strategies for working with children with behavior problems and collaborating with teachers to solve challenges conjointly in the classroom. It may be that teachers feel as though strategies offered by consultants are most useful when they have worked with the consultant to develop the strategy; however, future research should further investigate these nuances.

Furthermore, when teachers attributed positive changes in children's behaviors to the mental health consultant, teachers

showed greater gains toward higher quality interactions with children. Again, these findings need to be considered in the context of the collaborative efforts of the mental health consultant and the teacher. It is possible that when teachers see change in children's behaviors following their work with a mental health consultant, they feel more motivated to engage in more positive and less harsh interactions with children. Provided that teachers may be more likely to change if they witness behavior change on part of the children in their classroom, mental health consultants may consider first working with teachers on altering children's behaviors that seem most possible to influence.

Limitations and Future Directions

While ECMHC was the primary focus of the current study, it is possible that other elements of the early childhood settings not highlighted in this study influenced change in teachers' caregiving behaviors. For example, differences in supervision and training beyond the provision of ECMHC may have influenced positive changes evidenced in teachers' caregiving practices over the course of the study. Future research should include reports of teachers' overall training experiences and supervisory experiences over the course of the study period to assess the degree to which ECMHC or other training experiences influenced teacher behaviors. Another limitation of the current analysis was that it did not utilize a randomized control group. As such, there are potential threats to the internal validity of the study that cannot be completely eliminated. In particular, it is possible that through a Hawthorne effect, teachers improved in aspects of their caregiving behavior merely due to the fact that they were being observed by a research team. However, even if the teachers elevated their caregiving behavior during the observations, it seems unlikely that such an elevation would increase over time such that a Hawthorne effect could explain the *change in* caregiving behaviors across the observation. If anything, we would expect the teachers to habituate to the classroom observation such that the Hawthorne effect would decrease across the study waves, attenuating the observed improvements in caregiving behavior. In addition, maturation is a plausible threat to the internal validity of this study since the measured change in teacher–child interactions over time could reflect a normative teacher trajectory, entirely independent of the receipt of ECMHC services; however, this is not probable because there were no significant differences in the mean baseline subscale scores for teachers in positive, detached, and punitive interactions across study-entry times. Future studies should conduct randomized control trials to more precisely evaluate the effects of ECMHC on teacher-level and child-level outcomes.

A limitation of this study was that it did not obtain multiple measures of characteristics of ECMHC. As such, this study assumed that there was constancy in both the mental health consultants' provision of ECMHC and teachers' experiences of ECMHC, which may or may not be accurate. Future studies should attempt to measure characteristics of ECMHC over time. The current study relied on change scores as a way to quantify change in quality of teacher–child interactions. Although an adequate way to get a "snapshot" of quality of teacher–child interactions prior to and following exposure to ECMHC, differences in patterns of change during exposure to ECMHC could be modeled in future studies with more complete longitudinal data. In addition, more elaborate longitudinal studies could investigate potential mechanisms by which ECMHC impacts change in teacher behaviors.

Future research on ECMHC should continue to uncover potential mechanisms that influence changes in teacher capacities and observed caregiving behavior while accounting for characteristics of the ECMHC, such as activities, relationship quality between mental health consultants and teachers, and overall approach to ECMHC. For example, perceived training needs and teacher sense of efficacy could be hypothesized mediators of ECMHC on change in quality of teacher–child interactions. While not measured in the current study, it is possible that ECMHC may directly affect teachers' feelings of efficacy, which then translates to more positive and less negative interactions in the classroom. In addition, researchers could invest efforts to design more in-depth assessments of teacher–mental health consultant relationship quality to ensure that the quality of the teacher–mental health consultant relationship is adequately captured. While the current study identified both delivery of ECMHC and teachers' experiences of ECMHC as important contributors to change in quality of teacher–child interactions, future studies are needed to corroborate these findings.

CLINICAL IMPLICATIONS

Teachers who engage in sensitive, responsive interactions with young children in their care promote children's social, cognitive, and behavioral competence in the early school years and beyond (Burchinal et al., 2008; NICHD Early Child Care Research Network, 2001; Peisner-Feinberg et al., 2001). Past research on ECMHC has suggested that ECMHC may positively affect teacher-level outcomes such as teacher stress, teacher turnover, teacher perceived competence, and teacher sense of efficacy, yet there has been limited empirical research documenting the effectiveness of ECMHC on observed practices in the classroom (for a review, see Brennan et al., 2008; exception Raver et al., 2008). This study sought to address this gap by describing the specific characteristics of ECMHC hypothesized to contribute to changes in observed teacher outcomes. Findings from this study suggest that ECMHC may play an important role in not only promoting positive caregiving behaviors but also in reducing less desirable caregiving behaviors.

Another goal of this study was to investigate how various characteristics of ECMHC affect change in teacher outcomes. The current study findings suggest that regular efforts to support early childhood educators in their capacities to develop sensitive, responsive interactions with the children in their care contribute to shifting teachers toward more positive caregiving practices. This type of support to caregivers may be particularly effective in cases

when teachers are working with children who present challenging behavioral and emotional problems.

Findings from this study provide information regarding those characteristics of ECMHC that may prove most effective in promoting positive change in quality of teacher–child interactions. In particular, regular meetings in which consultants and teachers meet to discuss issues related to children and families as well as teacher issues may be of particular importance to facilitating change in positive teacher–child interactions. In addition, the findings suggest that consultants who adopt a consultative stance that conveys respect for teachers' expertise may be more apt to develop relationships with teachers who facilitate positive change in teacher–child interactions.

In efforts to motivate teachers to engage in more sensitive interactions with children in their care, it is likely important for consultants to work with teachers on those issues that are most important to teachers as well as those in which teachers are most likely to see change occur. When teachers attribute changes in children's behaviors to their collaborative work with a consultant, they are more apt to continue to shift their caregiving behaviors toward less harsh, more involved, and more positive interactions with children in their care.

Different from professional development interventions such as education or workshop-type trainings, teachers can call on mental health consultants to guide them in their interactions with specific children in their current classrooms. Mental health consultants provide teachers with opportunities to be more reflective and intentional about their interactions with children and to refer specific children who need intervention services when these needs extend beyond the capacities of the teacher.

When mental health consultants strive to develop collaborative, respectful, and predictable relationships with teachers, they may help move teachers toward less coercive, more positive interactions with children in their care. As such, ECMHC may effectively support the development of positive relationships between teachers and young children in early childhood classrooms fundamental to promoting children's social competence and emotional well-being.

CONCLUSION

The findings from this study suggest that ECMHC is a promising approach to professional development for early childhood teachers. When implementing ECMHC in early childhood programs, it is important that policy makers, mental health agencies, and childcare programs carefully consider characteristics of ECMHC that are likely to impact teacher change. Findings from the current study provide some evidence to suggest that ECMHC that is consistent, teacher-led, and conveys a sense of respect for teachers' knowledge and opinions may be most influential in impacting change toward more positive, less negative teacher–child interactions.

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