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Promising Findings that the Cultivating Healthy Intentional Mindful Educators' Program (CHIME) Strengthens Early Childhood Teachers' Emotional Resources: An Iterative Study

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Abstract

Findings suggest that an eight-week mindfulness compassion-based program, Cultivating Healthy Intentional Mindful Educators (CHIME), is a feasible professional development intervention for early childhood (EC) teachers to support their emotion regulation and psychological and workplace

Published in *Early Childhood Education Journal*, 2022

doi:10.1007/s10643-022-01386-3

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Accepted 14 July 2022; Published 8 August 2022.

well-being. We offer preliminary evidence that learning about mindfulness, self-compassion, and social-emotional learning supports EC teachers in strengthening their knowledge and application of practices to be more mindful and less emotionally reactive and emotionally exhausted at work. In analyzing both EC teacher feedback and survey data from two pilot studies, there was promising evidence that participating in CHIME enhanced awareness of emotions and the development of strategies to manage emotions. As CHIME is further developed and refined it will be integral to have collaborative engagement and participation from EC teachers and programs to ensure that learning these practices are relevant, helpful, meaningful, and sustainable.

Keywords: Early care and education, Early childhood teachers' mindfulness, Professional development, Iterative development, Emotion regulation, Well-being

Introduction

Early childhood (EC) professionals are subject to high levels of stress and burnout that contributes to significant turnover. Although much of this turnover is attributable to the poor wages and low occupational prestige associated with early childhood education (Roberts et al., 2019), studies also suggest that everyday occupational and familial stressors, as well as teachers' own psychological resources contribute to their burnout and emotional exhaustion (Cassidy et al., 2017; Corr et al., 2014; Hall-Kenyon et al., 2014; Roberts et al., 2016). For instance, in the US Survey of Early Childcare Workers, perceptions of working conditions and general levels of stress emerged as key predictors of teacher intentions to leave the profession, independent of salary or levels of training (Grant et al., 2019).

High levels of stress, burnout and turnover among EC teachers have important implications for the well-being of young children (Totenhagen et al., 2016). Teaching is cognitively and emotionally demanding (Brackett et al., 2010; Jennings, 2015). In early childhood education (ECE), these demands can be particularly salient due to the emotional nature of teaching in ECE settings. Alarming, 40% of early childhood teachers meet clinical criteria for depression (Otten et al., 2019). Personal and professional stress takes a significant toll on EC teachers, triggering progressive burnout and diminishing their capacity to

engage in sensitive, supportive, and responsive caregiving (Hamre & Pianta, 2004; Jeon et al., 2014; Sandilos et al., 2015; Zinsser et al., 2016). Early childhood teachers who are unable to regulate their responses in the face of stress and negative emotions are less equipped to engage in emotionally supportive interactions that facilitate young children's self-regulation and socio-emotional competence (Hamre & Pianta, 2004; Jennings, 2015; Roberts et al., 2016). Conversely, teachers who effectively coordinate and manage their physiological and behavioral responses to emotional cues demonstrate an ability to manage challenging child behavior; handle stressful interactions with parents and coworkers, and achieve instructional goals (Brackett et al., 2010).

Recognition of the instrumental role of skilled early childhood professionals, particularly EC teachers, in shaping children's development has sparked calls for policy and professional development efforts to support their wellbeing (Lessard et al., 2020) and professional practices. In this paper, we describe the creation of and preliminary evidence for an intervention that draws upon mindfulness and compassion-based social-emotional learning practices to promote EC teachers' adaptive emotion regulation skills to reduce their feelings of burnout and foster their emotional well-being.

Caregiver well-being and socio-emotional competence

Teachers' interactions with children are critical to the establishment of quality early learning environments. According to the prosocial classroom model (Jennings et al., 2009), teachers set the emotional tone for the classroom by providing timely, sensitive, contingent responses to children's emotional cues, supportive responses and scaffolding social and emotional behavior, and modeling respectful social interactions for their students. These emotionally supportive behaviors set the stage for the development of socio-emotional and self-regulation skills that undergird future school readiness (Denham et al., 2019; McClelland et al., 2014). There are many factors that are associated with EC teachers' responsive and supportive care. For example, depressive symptoms in EC teachers were found to correlate with lower levels of instructional support and classroom organization, as well as reduced sensitivity and increased harshness toward children, especially among teachers with lower levels of training (Gerber et al., 2007; Sandilos et

al., 2015). It should be noted, however, that some studies have not found this association (Roberts et al., 2016). Furthermore, EC teachers' perceptions of the work environment as more chaotic are associated with less effective emotion regulation strategies, which, in turn, are associated with more negative and less supportive responses to children's emotions (Jeon et al., 2016). In the prosocial classroom model, these negative, reactive responses to children's emotions and behaviors lead to a coercive cycle of burnout, where children's behavior becomes increasingly dysregulated, and teachers become progressively fatigued and emotionally unavailable. Accordingly, a small number of studies have linked teacher depression and perceived stress to more challenging or dysregulated child behavior (Friedman-Krauss et al., 2014; Neuenschwander et al., 2017; Roberts et al., 2016) and to preschool expulsion rates (Gilliam et al., 2006).

In contrast to the negative impact of psychosocial and occupational stress on educator-child interactions, studies have reported positive correlations between EC teachers' socio-emotional skills and their provision of high-quality care (Jennings, 2015; Poulou, 2017; Yin et al., 2016). Two important dimensions of teacher socio-emotional competence are mindfulness, the tendency to be present and aware of current experiences with attention, curiosity, and non-judgmental acceptance (Bishop et al., 2004; Kabat-Zinn, 1994), and emotion regulation, the capacity to monitor, evaluate, and modify the experience and perception of emotion proactively and strategically (Cole et al., 1994; Gross & John, 2003). In a study of Head Start teachers, higher levels of mindfulness correlated with fewer depressive symptoms and workplace stressors, which in turn were associated with more positive relationships with children (Becker et al., 2017). Similarly, there is evidence that teachers with more effective strategies for managing their own emotions, including effectively reappraising negative emotions, are better equipped to provide emotionally supportive caregiving (Jeon et al., 2016).

Mindfulness strengthens emotion regulation during stressful situations by allowing a person time to decide how to respond effectively, therefore undermining automatic-habitual reactivity (Grossman et al., 2004). Mindfulness-based interventions are related to stress-regulation at both the psychological and physiological levels, reducing self-reported stress and physiological arousal, as measured by daytime

cortisol and heart rate variability (Heckenberg et al., 2018; Shearer et al., 2015). Mindfulness-based interventions have already shown promise for reducing teachers' stress and enhancing their workplace well-being (Barlett et al., 2019; Lomas et al., 2018; Jennings, 2019), although these interventions have focused predominantly on primary and secondary school settings. When mindfulness-based interventions are combined with education about children's socio-emotional learning, preservice EC professionals report increased awareness of their thoughts and feelings, decreased perceptions of stress, and increased abilities to support children (Dewhirst & Goldman, 2018). These promising findings highlight mindfulness-based intervention as a potentially powerful means to enhance EC teacher well-being and increase responsive, sensitive practice in early childhood contexts.

Overview of Program Development

Informed by this research background, the Cultivating Healthy, Intentional, Mindful Educators (CHIME) program was developed as an eight-week mindfulness and compassion-based social-emotional learning program for EC teachers offered to both in home and center-based programs. CHIME was created in response to a need for professional development to reduce stress and promote emotional wellbeing among EC teachers. CHIME follows recommended professional development guidelines for ECE (Schachter et al., 2019), providing time to reflect and practice the strategies taught in the sessions.

The intervention consists of a two-hour overview and seven sessions, each lasting 90 minutes. Each CHIME session focuses on specific mindfulness techniques, such as mindful breathing, mindful body movements, mindful listening and bringing attention to current states and surroundings to support optimal responsiveness, emotion regulation, and compassion. Social-emotional learning is promoted by focusing on five broad competencies: *self-awareness*, *social awareness*, *responsible decision-making*, *self-management*, and *relationship skills* (CASEL, 2018). Following each weekly CHIME session, participants complete "putting into practice" activities with the children in their care, providing opportunity for classroom practice and reflection, a critical component in fostering learning when implementing professional development (Zaslow et al., 2011). An important component

of CHIME is that these practices and strategies are taught in a small group format with other EC teachers. As such, CHIME fosters a peer learning community.

CHIME provides weekly learning opportunities and support with a trained facilitator who has a master's degree in child development or early childhood. Facilitators for CHIME participate in three days of interactive training (24 h) and then mentoring for eight weeks while delivering the CHIME program. During these eight weeks, the facilitator is asked to video record themselves teaching three sessions of CHIME. These sessions are coded for fidelity using a modified version of the Mindfulness-Based Interventions: Teaching Assessment Criteria (MBI: TAC; Crane et al., 2013). The tool was adapted by changing the rating scale to be more growth oriented (e.g., changing incompetent to beginning) and including content specific to the CHIME program. The MBI-TAC assesses important components of effective mindfulness-based intervention teaching where facilitators are rated on a 6-point scale from 'beginning' to 'innovating'. The learning tool assesses six domains: Coverage, Pacing and Organization of the CHIME sessions, Relational Skills, Embodying Mindfulness, Guiding Session Topics, Conveying Course Themes through Interactive Inquiry and Didactic Teaching, and Holding the Group Learning Environment. The video recordings center only on the facilitator. The facilitator in training receives feedback about areas that are facilitated well and areas for growth. Due to the iterative way we developed this intervention, we did not establish inter-rater reliability for this learning tool.

Research Aims

CHIME has been developed in an iterative fashion, based on feedback from EC teachers and facilitators. Here, we describe two cycles of data collection during progressive iterations of CHIME. We focus on measures of EC teacher emotion regulation, burnout, and well-being as the direct targets for CHIME. The aim of these studies was to determine acceptability, feasibility, and whether CHIME showed preliminary evidence of effectiveness in enhancing well-being, adaptive emotion regulation skills, and reducing workplace stress among EC teachers.

The iterative process we employed in revising the CHIME program is described in two studies using multiple methods. The first cycle

of testing and revision occurred with 43 EC teachers from four child care centers in 2017 ("Study 1") to provide evidence of acceptability and perceived benefits and suggested improvements. Participating EC teachers completed 14-weeks of 1.5-h sessions offered on alternate weeks. They received weekly handouts and completed weekly formal (e.g., brief guided meditations) and informal practices at home for 10–45 min per week. Results from this study were used to inform the revisions and enhancements to the CHIME program before being implemented with the second cohort of 56 EC teachers from a variety of ECE settings in 2019–2020 ("Study 2"). Here, CHIME was revised to include a participant handbook and was offered for 8 consecutive weeks. For both studies, the facilitators were University Extension Educators with master's degrees in child development and/or education. They delivered CHIME in person to small groups of 7–12 EC teachers. Information obtained from Study 1 that informed Study 2 are described below in the results section.

Study 1

Method

Participants

Table 1 provides the information regarding the characteristics of study participants. In study 1, CHIME was piloted with 43 EC teachers working in center-based care in one of four Nebraska child care settings. These EC teachers participated in CHIME from August 2017 to November 2017. All EC teachers reported English as their primary language. At the pre-test, 14% reported that they did not plan to work at their current center in the next two years; and 7% reported they did not plan to work in child care in the next two years. Approximately 4.7% ($n = 2$) currently practiced meditation and no one practiced yoga.

Procedures

The study was approved by the first author's Institutional Review Board and all participants provided written informed consent in

Table 1 Participant characteristics in Study 1 and Study 2

Characteristic	Study 1 (N = 43) M(SD) or %	Study 2 (N = 56) M(SD) or %
Gender		
Male	4%	3.5%
Female	96%	96.5%
Age	35.7 years	35.8 years
Race/Ethnicity		
Black or African American	4.1%	3.5%
Caucasian/White	87.8%	86%
Multi-ethnic	0%	1.8%
American Indian or Alaska Native	2%	0%
Hispanic or Latino	8.2%	14%
Married	52%	56.1%
Parent	65%	66.7%
Work in EHS/HS*	0%	53%
Years Worked at Current Program	6.33 (2.15)	6.41 (2.18)
Hours Worked Per Week	37.36 (13.44)	39.87 (8.62)
Child Care Setting		
Infants (0–15 months)	39.5%	14%
Toddlers (16–30 months)	32.6%	10.5%
Preschool (31 to 5 years)	34.9%	66.7%
Multiple Ages	Unknown	5.3%
Education		
High School	11.6%	3.5%
Some college but no degree	44.2%	41%
AA degree	25.6%	28.1%
Bachelor's degree	16.3%	38.6%
Graduate degree	2.3%	12.3%

* EHS/HS Early Head Start/Head Start child care

person. Participants were recruited by contacting child care center directors and asking if CHIME could be delivered onsite for 16 in-service credits. Participants were given flyers and informed that their participation was voluntary. A total of three participants did not consent to participate in the research but participated in the CHIME program. Participants could receive up to \$150 cash for completing surveys online using a web-based platform (Qualtrics, 2019) and for providing saliva samples across two days in the morning and in the afternoon both prior to and after participating in the CHIME program. We do not present the saliva data in this paper. After consenting, participants were asked to complete the surveys on university provided-laptops or with their own device approximately one week before beginning

the program. Participants also received pizza and soft drinks/juice when pre-surveys were collected. Participants were emailed a link to the online post-survey approximately one week after completing the CHIME program.

Measures

Feasibility

Indicators of feasibility included completion, acceptability, and usefulness. Participants were also asked to provide written feedback about what, if anything, they perceived as beneficial, and what, if anything, was challenging, about participating in the CHIME program.

Analytic Approach

The analytic approach for study 1 involved descriptive analyses and a qualitative, inductive thematic analysis of teachers' perceptions of CHIME. Authors A1 and A8 analyzed the open-ended comments using an inductive approach and met regularly for identifying codes and themes (Patton, 2005). A1, A3, and A8 met to discuss the final themes with all responses provided being substantive for the qualitative analysis and double coded by A1 and A8. Unclear statements or discrepancies were discussed and settled amongst coders.

Results

Feasibility

Sample attrition at post-test (on average 4 weeks after pretest) was 19% ($n = 8$): individuals left their jobs and two stopped attending after the third session; one person felt they did not have time in their schedule to participate and another did not want to practice mindfulness. Those who completed the CHIME program ($n = 35$) all reported that learning information about mindfulness was very helpful (77.1%) or somewhat helpful (22.9%), engaging in reflection activities (journaling and listening to understand) were very helpful (65.8%) or somewhat helpful (34.3%), and the session handouts were very helpful

Table 2 Participants' Perceptions of the CHIME Program (Pilot Study 1)

<i>Program Acceptability and Usefulness</i>	Pilot 1 M (SD)
<i>Rated at the end of the CHIME Program</i>	(n = 35)
I would recommend this program to other educators	3.83 (.38)
I liked participating in the mindfulness activities	3.77 (.43)
Participating in the program was meaningful	3.80 (.41)
I liked participating in the guided reflective groups	3.63 (.65)
The sessions were offered during a convenient time of day	3.66 (.48)
The program gave me strategies to help control my emotions	3.83 (.38)
I feel like I am a better educator because I participated in this program	3.51 (.70)

Items rated on a scale from 1(*strongly disagree*) to 4 (*strongly agree*)

(65.8%) or somewhat helpful (34.3%). Many of the participants agreed that the information taught in CHIME was acceptable and useful to them as EC teachers as shown in **Table 2**.

Participants also provided written comments for making improvements to the CHIME program. The majority commented that a needed improvement for the program was to have materials placed in a hand-book or binder and requested to have activities to do with children in the classroom. Additionally, many commented that meeting biweekly was too long of a commitment for a professional development program and it was difficult to remember what was discussed during the prior session. Though less frequently commented, some participants found it challenging to meet in the early evening. In a few instances, an EC teacher needed to have their children attend due to not having child care. Additionally, a few teachers commented that there was a lot of information to discuss and that more time may be needed. One EC teacher shared, "*I do feel there was a lot of information and wish we could have done more with it.*" This participant also shared that they would have liked to engage in a weekly "listening to understand" activity with other teachers, commenting, "*I wish I could have been partnered with more than one person. I had the same partner every session.*"

Participants also commented on what, if anything, they found beneficial by participating in the CHIME program (themes reflected in **Table 3**). Many commented that participating in CHIME increased effective communication skills, gave them permission to have the feelings they were experiencing, gave them strategies to manage stress

Table 3 Pilot Study 1: Early childhood teachers' perceived benefits of participating in CHIME (N = 35)

Themes	Sub-themes	Illustrative Quotes
Benefits		
Improved communication	Communicating better with co-workers	<i>"The most helpful aspects were when we got in groups and practiced mindfulness. Taught me to listen more before I give my opinion."</i>
	Listening and responding to children more effectively	<i>"I don't like to talk about myself. I can't to my family and my boyfriend but when it comes to everyone else, I tend to have this tough exterior. Learning now to communicate mindfully will hopefully help with this."</i>
	Feeling that communication with families at work improved	<i>"Listening taught me to really listen to a child's cry and differentiate their cries."</i>
	Communicating better with family at home	<i>"I thought it helped me to know some people just need to be listened to and not fix the people's problems or even react to what they're saying sometimes letting them vent is."</i>
Permission to express feelings	Feeling the group was a safe place to share feelings	<i>"Being able to trust the people I was in sessions with and being able to be open and honest about how I was feeling."</i>
	It is okay to have negative feelings	<i>"Being able to express my feelings and feeling 'safe' with my open thoughts."</i>
	Feeling not alone in having struggles and challenges	<i>"I really enjoyed being able to talk about my problems and connect with my co-workers with some of the same issues."</i>
Learning helpful ways to manage stress and emotions	Learned strategies for deal with stress at work	<i>"This program helped me learn how to manage my stress or how to be less stressed out at home and at work."</i>
	Learned strategies to regulate emotions	<i>"I notice my stress go down during this program. These meetings helped me find some very good ways to deal with stress in the classroom."</i>
Useful resources and tools	Handouts to practice mindful breathing	<i>"I find myself using breathing techniques especially when kids are making me upset."</i>
	Ideas for practicing mindfulness with children	<i>"I like using specific handouts and activities. I really enjoyed the emotion cube/animal cube where you had to make up a story."</i>
		<i>"I really enjoyed the guided meditations."</i>
		<i>"I really like the starfish meditation exercise that I have tried to use multiple times."</i>
	Journaling to reflect	<i>"Deep breathing for myself at home and before work. I used [the] talking stick and stuff, like animal time with my classes."</i>
		<i>"I liked the journaling—it made me be reflective and really more aware of why I felt the way I did."</i>

and their emotions, and some commented that they liked the resources and mindfulness tools. One EC teacher commented, "*Practicing listening taught me to really listen to a child's cry and differentiate their cries*", and another teacher wrote, "*I find myself using breathing techniques especially when kids are making me upset.*" Another theme reflected by some participants was perceiving benefits not only for their professional work but also in their personal lives. As one teacher commented, "*I benefited a lot from participating in this program. Because of CHIME, I am able to regulate my emotions better, and I am able to communicate better with everyone in my life, not just at work.*"

Use of Results to Inform Study 2

Drawing from these results, we revised the program materials to include more mindfulness activities to do with children attending the early care program. We termed these activities "putting into practice". We also created a participant handbook rather than providing weekly handouts and modified the group so that participants could practice the listening to understand reflective practice activity with different people throughout the intervention. The timing of sessions was also changed so that participants attended eight 1.5 hour sessions on a weekly, rather than a bi-weekly, basis.

Study 2

Participants

In Study 2, CHIME was piloted with 56 EC teachers working in center-based care (see Table 1). These teachers participated in CHIME from January 2019 to December 2019. At the pre-test, 15.8% reported that they did not plan to work at their current center in the next two years; and 7% reported they did not plan to work in child care in the next two years. Approximately 17.5% ($n = 10$) currently practiced meditation and 8.8% ($n = 5$) practiced yoga.

Procedures

The study was approved by the first author's Institutional Review Board and all participants provided written informed consent after a trained RA explained the study over the phone. A snowball approach to recruitment was used (Parker, Scott, & Geddes, 2019), in which participants were recruited by their child care directors or received flyers shared via email and on social media platforms such as Facebook and Twitter (e.g., from Early Learning Coordinators, Extension educators, or professional development coordinators). Due to available funding and the reduced study measures (i.e., no saliva data collection), participants received up to \$50.00 and up to 16 service credits for completing study activities and for participating in the CHIME program. CHIME sessions were held onsite or in an Extension building. All participants who participated in the CHIME intervention also consented to complete the surveys. These surveys were administered at pre and post in Qualtrics through a personalized link that was sent to teachers via email within a week of beginning or completing CHIME. Although approximately 15% of participants received an email reminder, 4 teachers did not complete the post-study survey.

Measures

The following scales were included in the pre- and post-intervention surveys.

The Five Facet Mindfulness Questionnaire (Baer et al., 2006) was used to measure a general tendency to practice mindfulness. The 36 items are rated on a 1 (*never or very rarely true*) to 5 (*very often or always true*) scale. There are five subscales: observe, describe, act with awareness, nonjudgement, and nonreactivity. Example items include statements such as, "It seems I am running on automatic without much awareness of what I'm doing" or "I find it difficult to stay focused on what's happening in the present." A higher score on each subscale indicates a higher level of mindfulness. Internal consistency was good or excellent for all five subscales at both time points: observe (pre, $\alpha = 0.82$; post, $\alpha = 0.91$), describe (pre, $\alpha = 0.91$; post, $\alpha = 0.89$), act with awareness (pre, $\alpha = 0.89$; post, $\alpha = 0.85$), nonjudgement (pre, $\alpha = 0.92$; post, $\alpha = 0.89$), and nonreactivity (pre, $\alpha = 0.82$; post, $\alpha = 0.86$).

Warwick-Edinburgh Mental Well-being Scale (WEMWBS; Stewart-Brown et al., 2009) is a 14-item survey measuring a broad representation of well-being including cognitive-evaluative dimensions (e.g., I have been dealing with problems well) and affective/emotional aspects (e.g., "I've been feeling cheerful"). Participants used a 5-point Likert-type scale to rate the frequency they've experienced each item over the previous two weeks (1 = *none of the time*, 5 = *all of the time*). The WEMWBS is scored by summing all the items to get a total well-being score that ranges from 14–70. Internal consistency was excellent at pre ($\alpha = 0.92$) and at post ($\alpha = 0.92$). The total score was used in the analyses and higher scores indicated higher levels of perceived mental well-being.

Maslach Burnout Inventory: Educator's Survey (MBIES; Maslach et al., 1996) is a measure of EC teachers' workplace emotional exhaustion (e.g., feeling emotionally overextended), depersonalization, and personal accomplishment (e.g., feeling successful at work). The 22 items are rated from 1 (*never*) to 7 (*every day*). A higher score for emotional exhaustion and depersonalization indicates higher levels of burnout. Conversely, a higher score on personal accomplishment indicates lower levels of workplace burnout. Internal consistency ranged from acceptable to excellent for: emotional exhaustion (pre, $\alpha = 0.89$; post, $\alpha = 0.91$) and personal accomplishment (pre, $\alpha = 0.75$; post, $\alpha = 0.85$); however, depersonalization showed questionable internal consistency (pre, $\alpha = 0.68$; post, $\alpha = 0.60$).

The *Difficulties in Emotion Regulation Scale* (Gratz & Roemer, 2004) was used to measure EC teachers' emotion regulation capacities. This 36-item measure includes items rated from 1 (*Almost Never*) to 5 (*Almost Always*) and included questions such as "I am clear about my feelings" and "When I am upset, my emotions feel overwhelming." The DERS was administered at pre and post time points. Both the subscales and the total DERS score were used in the analyses and higher scores indicated higher levels of difficulties in emotion regulation. Internal consistency was excellent for the total score at pre ($\alpha = 0.95$) and at post ($\alpha = 0.94$). Internal consistency was good or excellent for all six subscales at both time points: emotional clarity (pre, $\alpha = 0.81$; post, $\alpha = 0.95$), strategies (pre, $\alpha = 0.84$; post, $\alpha = 0.83$), awareness of emotions (pre, $\alpha = 0.82$; post, $\alpha = 0.90$), goal directed behaviors (pre, $\alpha = 0.83$; post, $\alpha = 0.76$), non-acceptance of emotions (pre, $\alpha = 0.92$; post, $\alpha = 0.91$), and impulse control (pre, $\alpha = 0.74$; post, $\alpha = 0.80$).

The *Relationship Structures Questionnaire of the Experiences in Close Relationships—Revised* (Fraley et al., 2011) was used to measure attachment styles in close relationships with participants rating a Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The scale consisted of nine items with three items comprising the anxious subscale and six items comprising the avoidant subscale. Higher scores on these dimensions of attachment reflect greater levels of insecure attachment. Although there is limited research examining the role of attachment in EC teacher well-being, there is research suggesting that attachment styles may be associated with individuals' psychological well-being and mindfulness (Calvo et al., 2020). Accordingly, we included these two aspects of attachment in our study. Internal consistency was good for the two subscales at both time points: avoidant (pre, $\alpha = 0.86$; post, $\alpha = 0.82$) and anxiety (pre, $\alpha = 0.91$; post, $\alpha = 0.88$).

Analytic Approach

For Study 2, we first examined descriptive statistics and correlations between all the study variables to provide an indication of the level of association among key constructs targeted in CHIME. Then, a repeated measures analysis of variance (ANOVA) was used to examine changes in participant scores for the various survey outcomes. Several of the survey measures included multiple scales. To mitigate against Type 2 error, a multivariate repeated measures approach was used to first examine within-person changes in the broader scale construct for these measures. We took a conservative approach where, if the overall multivariate test for the measure as a whole was significant, we examined the univariate tests to gain further insights into the specific effects of the CHIME intervention on individual scales. Statistical analyses were conducted in SPSS Version 27 (IBM, 2020). A significance threshold of $\alpha = 0.05$ was applied.

Study 2: Results

Feasibility

Approximately 14% ($n = 8$) of the participants dropped out of the program because of the time commitment, not having staff coverage

during the work day to attend the group, and leaving their place of employment. Seven percent of the participants completed the program but did not complete post-tests. Independent samples t-tests showed that participants who dropped out did not differ in their pre-CHIME scores for the Five Facet Mindfulness, Difficulties in Emotion Regulation, Warwick-Edinburgh Mental Wellbeing, or Maslach Burn-out scales.

Acceptability

After completing CHIME, 72.7% of participants reported that they meditated, which was a significant increase from pre-intervention, McNemar $Z = 4.81, p < 0.001$. Furthermore, 20% practiced yoga, which was a notable increase from pre-test, although not statistically significant, McNemar $Z = 1.34, p = 0.18$. Interestingly, although information was provided about practicing mindfulness by engaging in yoga, these practices were not taught during the CHIME intervention.

Survey Findings.

Table 4 and **Table 5** provide the bivariate correlations among the key variables. Notably, self-reported emotion dysregulation at pre-intervention was significantly and positively associated with workplace exhaustion and negatively associated with all facets of mindfulness and mental well-being both pre-and post-intervention. Interestingly, emotion dysregulation was also significantly and positively associated with anxious attachment. Avoidant attachment was not significantly associated with any of the study variables whereas anxious attachment was significantly associated with many facets of mindfulness, workplace exhaustion, and mental well-being. Not shown in the correlation table, EC teacher education level was not significantly correlated with any of the study measures either pre- or post-intervention. Years working in child care was positively correlated with nonreacting both pre- ($r = 0.28, p < 0.05$) and post-intervention ($r = 0.33, p < 0.05$), positively correlated with personal accomplishment at work pre-intervention ($r = 0.32, p < 0.05$), and negatively correlated with attachment anxiety assessed pre-intervention ($r = -0.35, p < 0.01$).

Table 4 Pilot Study 2: Associations among Pre-CHIME Measures

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Mindfulness																	
1. Observing																	
2. Describing	.49*																
3. Acting with Awareness	.26	.46*															
4. Nonjudging	.01	.41*	.47*														
5. Nonreactivity	.53*	.70*	.47*	.43*													
Burnout																	
6. Emotional Exhaustion	-.19	-.34*	-.55*	-.45*	-.44*												
7. Depersonalization	-.05	-.32*	-.30*	-.35*	-.39*	.66*											
8. Personal	.21	.34*	.16	.14	.37*	-.34*	-.24										
9. Mental Well-being	.25	.53*	.48*	.49*	.54*	-.56*	-.43*	.43*									
Emotional Regulation Difficulties																	
10. Total Score	-.28*	-.59*	-.47*	-.67*	-.54*	.47*	.49*	-.43*	-.72*								
11. Nonacceptance	-.09	-.36*	-.41*	-.74*	-.29*	.38*	.38*	-.17	-.42*	.81*							
12. Goal Directed Behavior	-.29*	-.34*	-.62*	-.32*	-.35*	.40*	.37*	-.27*	-.51*	.67*	.52*						
13. Impulse Control	-.27*	-.31*	-.15	-.37*	-.40*	.37*	.45*	-.43*	-.41*	.77*	.54*	.46*					
14. Awareness	-.34*	-.69*	-.40*	-.52*	-.57*	.43*	.40*	-.38*	-.79*	.77*	.47*	.38*	.43*				
15. Strategies	-.17	-.47*	-.26	-.57*	-.42*	.25	.35*	-.40*	-.61*	.88*	.67*	.44*	.69*	.62*			
16. Clarity	-.25	-.67*	-.42*	-.60*	-.57*	.47*	.41*	-.45*	-.72*	.85*	.57*	.43*	.62*	.77*	.73*		
Attachment																	
17. Avoidance	.01	-.03	.17	-.01	-.14	.08	.15	-.23	-.14	.19	.13	-.01	.18	.24*	.18	.18	.18
18. Anxiety	-.04	-.54*	-.31*	-.65*	-.45	.47*	.42*	-.23	-.62*	.63*	.52*	.34*	.31*	.63*	.57*	.61*	.16

N = 44. *p < .05

Table 5 Pilot Study 2: Associations among Post-CHIME Measures

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Mindfulness																	
1. Observing																	
2. Describing	.67*																
3. Acting with Awareness	.42*	.64*															
4. Nonjudging	.25	.59*	.59*														
5. Nonreactivity	.71*	.64*	.39*	.53*													
Burnout																	
6. Emotional Exhaustion	-.18	-.22	-.39*	-.24	-.15												
7. Depersonalization	-.11	-.26	-.37*	-.15	-.13	.49*											
8. Personal	.49*	.47*	.23	.31*	.48*	.01	-.05										
9. Mental Well-being	.54*	.78*	.69*	.61*	.57*	-.31*	-.33*	.49*									
Emotional Regulation Difficulties																	
10. Total Score	-.57*	-.84*	-.65*	-.76*	-.69*	.28	.28	-.57*	-.85*								
11. Nonacceptance	-.29	-.60*	-.47*	-.72*	-.44*	.20	.17	-.45*	-.65*	.76*							
12. Goal Directed Behavior	-.40*	-.62*	-.68*	-.48*	-.54*	.26	.20	-.30*	-.62*	.73*	.43*						
13. Impulse Control	-.45*	-.50*	-.23*	-.36*	-.60*	.04	.17	-.71*	-.46*	.64*	.36*	.41*					
14. Awareness	-.55*	-.75*	-.63*	-.60*	-.57*	.36*	.30*	-.27	-.77*	.82*	.49*	.58*	.28				
15. Strategies	-.43*	-.69*	-.40*	-.70*	-.58*	.10	.13	-.60*	-.66*	.89*	.72*	.55*	.69*	.59*			
16. Clarity	-.59*	-.80*	-.67*	-.71*	-.58*	.34*	.31*	-.47*	-.82*	.91*	.64*	.62*	.52*	.80*	.73*		
Attachment																	
17. Avoidance	-.31*	-.30*	-.13	-.12	-.14	-.05	.10	-.61*	-.37*	.33*	.32*	.24	.35*	.12	.30*	.29	
18. Anxiety	-.28	-.61*	-.53*	-.56*	-.40*	.25	.25	.04	-.52*	.58*	.45*	.39*	.06	.70*	.43*	.53*	-.06

Table 6 describes the mean scores of participants for measures of mindfulness, emotion regulation, well-being, burnout, and attachment administered pre- and post-CHIME completion. Participants showed an increase in mindfulness on the Five Facet Mindfulness Questionnaire after completing CHIME, multivariate $F(5,39) = 3.31$, $p = 0.014$, $\eta^2 = 0.30$. Specifically, scores increased for all individual scales of the Five Facet Mindfulness measure and the effect sizes for changes across these scales were uniformly large. Similarly, there was a large and positive intervention effect on mental well-being. There was an overall reduction in participants' reported levels of burnout on the MBIES, $F(3,41) = 3.13$, $p = 0.029$, $\eta^2 = .20$, although univariate tests showed that this effect was driven by a decrease in emotional exhaustion, with no significant changes in depersonalization or personal

Table 6 Comparison of Pre- and Post-CHIME Scores on Measures of Psychological and Workplace Well-being

	M (SD) Pre-CHIM	M (SD) Post-CHIM	Univariate F ^a	<i>p</i>	η^{2b}
Mindfulness					
Observing	3.27 (.71)	3.64 (.73)	13.18	.001	.235
Describing	3.33 (.72)	3.57 (.77)	9.02	.004	.173
Acting with awareness	3.27 (.67)	3.55 (.65)	9.55	.003	.182
Nonjudging	3.69 (.79)	3.89 (.71)	4.12	.049	.087
Nonreactivity	3.27 (.54)	3.50 (.63)	6.53	.014	.132
Mental well-being	46.93 (6.54)	51.57 (8.40)	16.68	< .001	.279
Emotion Regulation Difficulties					
Nonacceptance	12.14 (5.30)	10.39 (3.94)	7.89	.007	.155
Goal directed behavior	12.36 (3.25)	10.55 (3.00)	14.87	< .001	.257
Impulse control	9.41 (3.75)	8.77 (3.31)	2.09	.155	.046
Emotional awareness	17.48 (4.88)	15.73 (6.15)	6.39	.015	.129
Strategies	14.61 (5.30)	12.43 (4.06)	10.05	.003	.189
Emotional clarity	10.05 (2.93)	9.07 (3.62)	4.48	.040	.094
Burnout					
Emotional exhaustion	23.75 (10.26)	19.32 (10.37)	9.44	.004	.180
Depersonalization	3.70 (3.56)	3.18 (3.98)	1.05	.311	.024
Personal accomplishment	39.68 (5.81)	40.59 (7.30)	.89	.350	.020
Attachment					
Avoidance	3.62 (1.71)	3.25 (1.63)	3.01	.090	.065
Anxiety	3.19 (.50)	3.03 (.78)	1.46	.234	.033

N = 44.

a. Error degrees of freedom are 44.

b. .01 = Small; .06 = Medium; .14 = Large (Cohen, [1988]).

The total DERS score was not used.

accomplishment. There also was a large multivariate effect on emotion regulation, as reported on the DERS, $F(6, 38) = 2.89, p = 0.02, \eta^2 = .31$. Participants reported fewer difficulties with non-acceptance of emotions, goal directed behavior, emotional awareness, using strategies to regulate emotion, and emotional clarity, whereas they did not show a change in their level of difficulty regulating impulsive responses to emotion. Finally, there was no significant change in attachment scores $F(2, 42) = 1.73, p = 0.19, \eta^2 = .08$.

Discussion

Amidst high levels of turnover, burnout and emotional exhaustion in the EC workforce, identifying effective ways to promote the emotional well-being of EC teachers so that they are more present, regulated, and aware of their emotions has become a pressing concern of potentially profound importance for responsive and engaged teaching (Jeon, 2016; Totenhagen et al., 2016). The current study, which included two iterations of the CHIME program delivered in two different pilot studies, provides initial evidence that learning about mindfulness, self-compassion, and social-emotional learning appears to be acceptable to EC teachers and is feasible to deliver in small groups. Findings from this preliminary study indicate that CHIME is one promising way to promote EC teacher's adaptive emotion regulation skills and well-being. Given the important role that these teacher characteristics play in creating healthy, prosocial classroom environments (Jennings, 2015; Poulou, 2017; Yin et al., 2016), CHIME may also represent a promising means of supporting the development of socio-emotional skills in children, which in turn has implications for their long-term achievement and peer relationships at school (Denham et al., 2019; McClelland et al., 2014).

Feedback received from participants in the first pilot study suggests there was enthusiasm for the use of mindfulness and self-compassion to support social-emotional learning, emotion regulation and both psychological and workplace well-being. It was interesting that EC teachers were invested not only in learning these tools for themselves but also in proactively implementing mindfulness strategies with children in the classroom. The written feedback received from EC

teachers supported the extension of CHIME into a more holistic intervention that includes specific activities for nurturing social-emotional learning in young children and an opportunity to reflect on these activities in terms of what they noticed worked well or what they would do differently next time. The integration of mindfulness activities for EC teachers to use with the children in their care may contribute to the intervention being more purposeful and meaningful to the EC teachers. It was also interesting that the EC teachers found learning about mindfulness beneficial to their personal lives.

Another clear theme emerging from both qualitative and quantitative measures was CHIME's effects on teachers' emotional awareness within the classroom. Teachers noted a stronger attention to children's emotional cues, (e.g., differences in cry patterns), and survey measures showed a stronger capacity to describe and observe emotions both within themselves and in the children they cared for and educated. Although these capacities are in direct alignment with mindfulness practice, it is also promising that enhanced awareness was accompanied by the development of strategies for managing emotions and stress. In other words, simply becoming aware of unpleasant emotions without time for reflection and group sharing, may not have been deemed as helpful. Accordingly, EC teachers reported fewer difficulties with strategically coping with emotions and expressed that they were using techniques like mindful breathing directly in the classroom. These results are consistent with a recent qualitative study of teachers who were trained in a mindfulness-based intervention, the 'b.' curriculum, to practice and use with school-age children in that the school staff perceived being better able to handle their emotions and stress at work (Norton & Griffith, 2020).

Overall, findings from these studies are well-aligned with the theory of change for CHIME, suggesting that providing teachers with research-supported knowledge and tools around mindfulness and self-compassion aids in their emotion regulation and reduces levels of workplace-related stress. Indeed, effect sizes for these outcomes were moderate to large in magnitude. Although a multi-tiered approach that targets broader EC systems and policies will be necessary to fully address a national problem of EC workforce burnout and turnover that has been exacerbated by the COVID-19 global pandemic (Swingotski, James, Whyhns, & Casavan, 2021; Whitebrook, Philips, &

Howes, 2014), enhancements in EC teachers' emotion regulation and well-being also are likely to have substantive impact by changing the micro-systems that children and teachers experience on a daily basis in the classroom. Tools and strategies provided in CHIME include pausing to observe the present moment, observing emotions in a curious, non-judgmental, compassionate way; listening with mindfulness; and recognizing common humanity. By deploying these strategies in the classroom, teachers likely provide models and practice opportunities, as well as more sensitive, non-reactive environments that support children's regulation and relationship-building (Jeon et al., 2016). Through its effects on these daily interactions, CHIME has promise not only for advancing EC teachers' own well-being, but also for fostering the long-term wellbeing of children in their care.

Strengths and Limitations of this Study

These pilot studies were conducted as part of an iterative development process and, clearly, there is a need for more objective measures included as part of a controlled design. Measures of teachers' behavior, including their sensitivity, affect and emotional responsiveness within the classroom will be especially important in evaluating the theory of change for CHIME. These will optimally be coupled with measures of children's self-regulation and socio-emotional development to provide a comprehensive test of the prosocial classroom model. Another important concern as CHIME is evaluated further will be the isolation of moderators that support the program's effectiveness. It is possible that specific program components, such as the group-based sessions, may moderate the level of CHIME's acceptability. Teacher and facilitator experience and background are also likely to play an important role in CHIME's effectiveness, especially as teacher education and experience are known to correlate with levels of teachers' stress and well-being (Kwon et al., 2020).

Current and Future Directions

Resilience and other professional development programs highlight the importance of identifying effective ways for supporting the early care and education workforce, particularly EC teachers. Mindfulness

is not intended to cultivate an environment of compliance, passivity, and silence, while social inequities, inequalities, and structural oppression create marginalization, exclusion, stress, and burnout. Mindfulness must include ethical practices and assurances to participate in mindfulness as an invitation (rather than a requirement). Decolonizing mindfulness refers to not only a non-evaluative recognition of experiences, common humanity, and awareness of the emotional responses of self and others (Yellow Bird et al., 2020), it also means that it is inherently supportive of inclusive, anti-biased educational practices that engage one to seek change at the individual and structural levels. Such practices can increase awareness of attending to one's needs for wellbeing, while at the same time noticing when others are overwhelmed and stressed and then taking effective and healthy actions to address the offending stressors.

Integral to the effective use of mindfulness will be partnership and engagement of individuals from marginalized communities in the further development and refinement of CHIME. Ultimately, collaborative engagement in conjunction with further development of facilitator training materials is likely to facilitate CHIME's uptake and sustained use in diverse early child care settings.

Conclusion

Though the early care and education setting offers an effective context for supporting young children's learning and development, there are few evidence-based approaches available that support EC teachers to address their workplace stressors, cultivate effective emotion regulation strategies, and enhance their interactions with young children (Frank et al., 2015; Harris et al., 2016). The preliminary findings presented in these studies suggest that learning about mindfulness, self-compassion, and social-emotional learning in a cohesive program may be one effective way to support EC teacher emotion regulation, and their psychological and workplace well-being.

Acknowledgments The research reported here was supported by a Nebraska Extension Innovation Grant and a Center for Brain, Biology, and Behavior Grant at the University of Nebraska-Lincoln. The opinions expressed are those of the authors and do not represent views of the University of Nebraska-Lincoln. We also thank and acknowledge the Nebraska Extension educators who contributed to the development of the CHIME program, Carrie Gottschalk and LaDonna Werth.

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