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Exploring Mindfulness for Perceived Teacher Stress and Classroom Climate

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Abstract
Teaching has been identified as the most stressful profession in the human service industry (Greenberg in Teacher stress and heal the effects on teachers, students, and schools, Edna Bennett Pierce Prevention Research Center, Pennsylvania State University, University Park, 2016). Elevated teacher stress not only affects the teacher's well-being and likelihood of burnout, but also the classroom climate of young children. The purpose of the present study was to assess whether mindfulness practices can increase positive classroom climate and decrease perceived stress in early childhood teachers. Participating teachers were selected based on results of the Perceived Stress Scale (PSS, Cohen in Journal of Health and Social Behavior, 24:285–396, 1983). Data were collected on the positive and negative climate objectives from the Classroom Assessment Scoring System (CLASS; Pianta in Classroom assessment scoring system (CLASS) manual, pre-K, Paul H. Brookes Pub. Co., Baltimore, 2008), which were operationally defined. The Mindfulness Practices Intervention included yoga poses, intentional breathing, and guided mediation (Harris in Mindfulness 7:143–154, 2015), which were implemented within the school day during arrival, mid-morning, lunch, mid-afternoon, and after work in the evening. Perceived Stress Scale scores decreased for two of the participating teachers; all three teachers' increased positive climate and decreased negative climate. Results of the current study suggest that this low-cost, low labor-intensive intervention was effective in improving classroom conditions for both teachers and young children.

Keywords Mindfulness · Teacher stress · Classroom climate · Perceived stress scale · Yoga · Guided meditation

Introduction

Children spend the majority of their waking hours in educational environments.

Having authoritative caregivers early in education, who are highly responsive, resilient, able to cope with stress, and model effective coping strategies is imperative for young children's social-emotional and academic development (Cohen 2012; Schonert-Reichl 2017). However, classroom teachers often perceive high levels of stress (e.g., Greenberg et al. 2016). Occupational sources of stress include school organization, high job demands, and lack of support and autonomy (Greenberg et al. 2016). A recent Gallup Poll determined that 46% of teachers reported high daily stress ranking teaching as one of the highest in occupational stress (Gallup 2014, p. 24). Perceived stress can lead to negative classroom environments and poor academic outcomes for students, as well as negatively affect teacher well-being (Kidger et al. 2009; Osher et al. 2018; Schonert-Reichl 2017, 2019; Flook et al. 2013). The purpose of this paper is to explore a low cost, low labor-intensive mindfulness-based intervention in two early childhood education classrooms to assess the impact of teacher stress on classroom climate.

Impact of Stress in Academic Environment

Preparing Teachers for Teaching-Related Stress

The National Association for the Education of Young Children (NAEYC) Commission on the Accreditation of Early

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Childhood Higher Education Programs awards accreditation to early childhood teacher preparation programs that demonstrate adherence to the NAEYC Professional Preparation Standards. While the NAEYC standards are comprehensive for teacher development, there is nothing that speaks to self-care or stress reduction, as in other disciplines (e.g., social work; Moore et al. 2011). Research suggests that teachers' social and emotional well-being affects students and should be a part of teacher preparation and professional development (Schonert-Reichl 2017). Research with early childhood educators found that establishing professional learning communities contributes to teacher development (Castle 2012; Escamilla and Meier 2017). When undergraduate students in teaching preparatory programs participated in mindfulness intervention they illustrated greater beliefs about the importance of reflective practices, reported more kindness in interactions, and exhibited developmentally supportive responses to infants and toddlers, as well as greater knowledge of early development, as compared to other undergraduate majors. Many in the field understand that teacher's social and emotional well-being affects the classroom environment (Arens and Morin 2016; Breeman et al. 2015; Flook et al. 2013); positive classroom climate and teacher resiliency are correlated with positive student development and academic outcomes, as well as student social-emotional learning (Cohen 2012; Schonert-Reichl 2017). However, in light of a multitude of factors, teachers remain stressed.

Teacher's Perceived Stress

Research has shown teaching is ranked among the most stressful professions in the human service industry (Johnson et al. 2005; Kahn 1993; Sautelle et al. 2015; Schonert-Reichl 2017; Travers and Cooper 1993; Young and Cooper 1999). High stress levels in teachers and their inability to cope, negatively influence social-emotional learning for students (Jennings and Greenberg 2009; Merritt et al. 2012). Negative outcomes of stress include excessive daytime sleepiness, atypical cortisol levels, negative classroom environments, and poor student academic outcomes (Greenberg et al. 2016). Not only are these high levels of teacher stress a detriment to teachers' physical and emotional well-being, but also lead to affecting students. Oberle and Schonert-Reichl reported correlations between high levels of self-reported teacher burnout and high morning cortisol levels in fourth and seventh grade students, thus concluding that "stress is contagious."

In order to address teacher stress, we must first be able to identify stress. There are various ways to assess stress, from self-reporting scales (e.g., questionnaires, surveys) to other methods considered to be more invasive (e.g., cortisol swabs, blood draws). For decades, researchers have used the Perceived Stress Scale (PSS; Cohen et al. 1983) to "measures the degree to which situations in one's life are appraised as stressful" (p. 385). *Perceived stress* is also referred to as *psychological stress*, which is defined as the degree to which situations in one's life are appraised as stressful. Understanding the level of stress teachers perceive is foremost in reducing teacher stress to promote a healthy environment and improve teacher well-being and teacher-student relationships (Flook et al. 2013).

Classroom Climate

Stress is detrimental not only to teachers, but also to the children in their care. When teachers have the personal resources to cope with the demands of their profession, they become more resilient (Skinner and Beers 2016), and thus teachers who possess meta-awareness can model resilient behavior in their classrooms. Cohen (2012) defined *resilience* as "a person's capacity to overcome stress or adversity" and explained that "resilience is not a trait that people either have or do not have. It involves behaviors, thoughts, and actions that can—at least to some extent—be learned and developed in anyone" (p. 411). A positive classroom environment is imperative for young minds to develop and learn; a negative environment results in student stress and misbehavior. Social-emotional development and academic learning are also both affected by interactions with teachers (Schonert-Reichl 2017). Teachers who are less stressed are more effective educators and have positive impacts on classroom climate (Flook et al. 2013).

Teachers who are able to cope with stress are more equipped to provide care consistent with indicators on the Classroom Assessment Scoring System (CLASS) (Pianta et al. 2008) associated with positive classroom climate (Flook et al. 2013). Previous research has established that a positive classroom climate results in better academic, social, and emotional outcomes for young children (Cohen 2012; Schonert-Reichl 2017). Mindfulness practice is an effective coping strategy for stress. Mindfulness practices have been shown to decrease stress and reactivity to negative stimuli and increase sleep quality, compassion, clarity of mind, and relaxation (Davis and Hayes 2011; Frank et al. 2013; Hölzel et al. 2011; Hwang et al. 2017). Teachers who are less stressed also have better relationships and exhibit more positive interactions with students (Jennings et al. 2013).

Impact of Mindfulness on Teacher Stress and Classroom Climate

Mindfulness is defined as "awareness that arises through paying attention, on purpose, in the present moment, non-judgmentally". Mindfulness can be cultivated by focusing attention on the breath, body, and mind from moment to moment. Examples of mindfulness practices include yoga

poses, intentional breathing, and guided meditation (Harris et al. 2015). Mindfulness practices decrease stress and bring awareness to the body and mind (Hwang et al. 2017). Programs that show evidence of effectiveness for decreasing teacher stress include teacher induction and mentoring programs, school-workplace wellness promotion programs, student behavior and social and emotional learning programs, and mindfulness and stress management-based professional development programs (Greenberg et al. 2016). Reducing teacher stress through resiliency and mindfulness training has also shown positive impacts on classroom climate.

Mindfulness and Teacher Stress

To measure physiological effects of stress on the body, Roeser et al. (2013) worked to reduce teacher stress and burnout through mindfulness training. After completing the eight-week mindfulness training, teachers reported less occupational stress and less symptoms of anxiety and depression. But physiological measures are just the beginning of the effects stress has on teachers' and students' well-being.

The Cultivating Awareness and Resilience in Education (CARE) for Teachers program has been used to assess teacher stress, well-being, efficacy, burnout/time pressure, and mindfulness (Jennings et al. 2013). Findings suggest practicing mindful awareness resulted in greater competencies to regulate emotional reactivity, thus resulting in improved relationships with students, classroom management, and classroom climate (Jennings et al. 2013). Additionally, teacher general well-being, resiliency, efficacy, burnout/time pressure were all positively impacted by the program, also resulting in improvements in student and classroom outcomes (Jennings et al. 2013). Schussler et al. also found that CARE program supported teacher development and resiliency. However, each of these programs took place over the course of several months requiring a large time commitment.

Mindfulness and Classroom Climate

Several studies have explored the effects mindfulness teacher training programs have on classroom climate. Extending investigations on the impact of the CARE program on emotional competence to include classroom interactions in a year-long study, Jennings et al. used the CLASS (Pianta et al. 2008) observation tool and several questionnaires to provide evidence of positive effects on emotional support, classroom climate, and teacher sensitivity (consistent with previous findings). Similarly, in a modified Mindfulness-Based Stress Reduction program to assess stress, burnout, and teacher efficacy using physiological measures (i.e., salivary cortisol levels) and questionnaires (see Flook et al. (2013) for full list), participants reported an increase in mindfulness and self-compassion, and improvement in observer-rated classroom behavior was observed (Flook et al. 2013). In this study, the CLASS was used to directly observe emotional support (including positive and negative climate), classroom organization, and instructional support. The data exhibited a significant decrease in psychological symptoms, burnout, and attentional bias.

Several mindfulness training studies occurring over fewer weeks than Jennings et al. and Flook et al. (2013) have also provided evidence that changes in teacher stress yielded changes in classroom climate using mindfulness strategies. For example, Flook et al. (2013) mimicked the positive effects of mindfulness intervention on classroom climate by implementing a 12-week mindfulness intervention, the Kindness Curriculum (KC), with preschool children, resulting in better grades for preschoolers on the end of year assessments on approaches to learning, health and physical development, and social emotional development. Another study provided evidence that over the course of 8 weeks, a mindfulness intervention course mitigated negative impacts on teacher's mental health and its effects on classroom climate.

Positive affect, self-compassion, depersonalization, teaching efficacy, and mindfulness have been positively correlated with emotional climate (Jennings et al. 2013). Therefore, it is important that teachers' social and emotional well-being is nurtured to increase positive learning environments for students. Previous research has shown positive effects on teacher stress and classroom climate through both long-term mindfulness training programs (e.g., Flook et al. 2013) and short-term mindfulness training programs (e.g., Flook et al. 2013). Teachers exhibiting high perceived stress levels could benefit from mindfulness interventions that assist them with remediating stress. As childcare facilities are busy places with little down time, the purpose of the present study was to determine if a short-term mindfulness intervention would decrease early childhood teachers perceived stress and also increase positive classroom climate. Identifying low cost, low labor-intensive interventions to decrease teacher perceived stress is important in contributing to children's overall development, can increase teacher well-being, and contribute to a positive classroom climate for young children.

Method

The present study sought to determine the effects of a mindfulness practices intervention on teacher stress and classroom climate by asking two research questions: (1) Do mindfulness practices impact classroom climate? (2) Can implementing mindfulness practices decrease early childhood teacher stress? The independent variable within the

present study is the intervention consisting of the mindfulness practices implemented by the teachers. The dependent variables consist of the perceived teacher stress as measured by the PSS (Cohen et al. 1983) to monitor teachers' perceived stress before and after the intervention and observations of positive and negative climate taken from the CLASS (Pianta et al. 2008).

Participants

The participants included three early childhood teachers working at a campus-based childcare preschool in the south. All three female subjects taught children ages five and under. Melanie was African American with 15 years' experience; 13.5 years at this center. She taught three-year-old children and had an associate degree in early childhood education, a Bachelor of Science in administration, and a master's degree in early childhood education. Anna was Caucasian with seven years' experience; 1.5 years at this center. She taught four- and five-year-old children and had a bachelor's degree in psychology. Linda was Caucasian with 14 years' experience; 8 years at this center. She taught four- and five-year-old children and had a bachelor's degree in merchandising. The subjects were chosen based on their PSS (Cohen et al. 1983) scores. To assess teachers' perceived stress, the PSS was administered to a total of eight teachers. Data from the pre-intervention measure of the PSS showed high and moderate levels of teacher stress for the three participants; other teachers' PSS scores did not indicate perceived stress. Stress level scores included 32, 35, and 16 for Melanie, Anna, and Linda respectively. This study had the approval from the university's Institutional Review Board and teacher consent was obtained.

Setting

The study was conducted at a preschool located on a university campus that served children from birth to Pre-K. The school followed an emergent curriculum inspired by the Reggio Emilia approach. The Reggio-inspired philosophic approach embodies the ideal that children construct their own knowledge through the help of intentional and knowledgeable adults. Projects are developed based on the children's interest and provide the children with opportunities to learn important concepts naturally by engaging in investigations and provocations.

The preschool operated as a full day program opening at 7:15 am and closing at 5:15 pm each day. Melanie and Anna worked from 7:00 am to 4:00 pm. Linda worked from 8:15 am to 5:15 pm. The teachers' schedules along with the age groups served are not conducive to interactions between the participants. They do not share breaks or lunch times and do not communicate often. The number of children varied by classroom. Melanie's classroom consisted of 12 children, six boys and six girls. Melanie was the lead teacher and had an assistant teacher's support. Anna's classroom consisted of 14 children, six boys and eight girls. Anna had two graduate assistants, one that helped in the morning and another who helped in the afternoon. Linda's classroom consisted of 15 children, seven girls and eight boys. Linda had a peer-lead teacher in her classroom.

Various learning formats were incorporated in each classroom's daily schedule. These formats included morning provocations, morning meeting, morning investigations (free choice centers), literacy time, small groups, and reflection time. Each classroom arrangement was consistent with Early Childhood Environment Rating Scale, organized into learning centers. Breakfast and lunch were served family style in the classroom. Each day the teachers were given a 15-min break in the morning and the afternoon, as well as a 30-min lunch break. They also received a planning period once a week for an hour.

Perceived Stress Scale

The PSS is a self-report measure of perceived stress (Cohen et al. 1983) used prior to and following the implementation of the mindfulness intervention to assess the teachers' level of perceived stress. The PSS consists of a 10-item questionnaire in which participants score each item on a scale from 0 to 4, *never* to *very often* respectively. Every item begins, "In the last month, how often have you…" For example, "In the last month, how often have you dealt successfully with irritating life hassles?" Another question asked, "In the last month, how often have you found that you could not cope with all the things that you had to do?" Scores are summarized to determine a perceived stress score. Scores range from 0 to 40. High scores range from 27 to 40; moderate stress scores range from 14 to 26; low stress scores range from 0 to 13. The reliability for the PSS was .84, .85, and .86 for each of the samples (Cohen et al. 1983). It is a classic stress assessment instrument commonly used in mindfulness related stress research.

Behavior Definitions

The behavior definitions used in this study to assess the effects of mindfulness intervention on classroom climate were based on the positive and negative climate dimensions of the CLASS (Pianta et al. 2008). The overall categories observed include positive relationships, positive communication, respect, positive affect, negative affect, punitive control, sarcasm/disrespect, and severe negativity. Under each of these main categories were behaviors that are indicative of each of the overall categories; these behaviors were defined

using standard definitions from the dictionary (dictionary.com).

Positive relationships included physical proximity, shared activities, peer assistance, matched affect, and social conversation. *Physical proximity* maintained that the individual is within arm's reach of another person. *Shared activities* were defined as taking joint participation in a common activity. *Peer assistance* was defined as giving or receiving help or support from the person of the same age. *Matched affect* was defined as displaying equal expression of emotion. For example, if the teacher was smiling when the other person was smiling, or sad when the other individual was sad, it was considered matched affect. *Social conversation* was defined as the informal interchange of thoughts with others and was not marked during instructional conversation. It only counted if the interchange of thoughts was informal and casual.

Positive Communication included verbal affection, physical affection, and positive expectations. *Verbal affection* was scored if the vocal expression of positive emotion, feeling, or sentiment was observed. *Physical affection* consisted of the kinesthetic display of emotion, feeling, or sentiment. This included kind touches, such as a hug, placing hand on arm or back, or a high five. Additionally, the observer marked positive communication if the teacher expressed *positive expectations* in which she gave clear guidelines for behavior.

Respect included eye contact, warm, calm voice, respectful language, and cooperation and/or sharing. *Eye contact* was marked if the teacher was looking directly into another person's eyes. Speaking in a nurturing, low, even, tranquil, and cordial tone was also measured as a sign of respect. If *respectful language*—using polite and courteous verbal communication, and *cooperation and/or sharing*—engaging in a shared activity for mutual benefit (Dictionary.com) were observed, the main category of *respect* was marked.

Negative affect included irritability, anger, harsh voice, peer aggression, and disconnected or escalating negativity. *Irritability* was observed as being readily excited to impatience or anger. *Anger* was defined as a strong feeling of displeasure and belligerence aroused by a wrong. If the teacher was observed using an ungentle and unpleasant verbal expression it was considered to be a *harsh voice*. *Peer aggression* was defined as any offensive action, attack, or procedure directed towards someone of the same age was documented as such. *Disconnected or escalating negativity* was recorded if the teacher displayed antagonistic behavior that was seemingly irrational or increasing in intensity.

Punitive control included yelling, threats, physical control, and harsh punishment. *Yelling* is to cry out or speak with a strong, loud, clear sound; shout. *Threat* was a declaration of an intention or determination to inflict punishment or injury in retaliation for or conditionally upon some action or course that a teacher used in interaction with children. *Physical control* was defined as kinesthetically exercising restraint or direction over a child. *Harsh punishment* was an ungentle or unpleasant, physically uncomfortable, cruel, or severe discipline.

Sarcasm/Disrespect includes sarcastic voice/statement, teasing, and humiliation. *Sarcastic voice/statement* was considered if a harsh or bitter verbal expression, including a sneering or cutting remark, was exhibited by the teacher. *Teasing* was to irritate or provoke with persistent petty distractions or annoyance. *Humiliation* was observed if the teacher caused a person a painful loss of pride, self-respect, or dignity; or did something to mortify the other person.

Severe Negativity included victimization, bullying, and physical punishment. *Victimization* referred to duping, swindling, cheating or persecuting another individual. *Bullying* was defined as exhibiting intimidating or domineering behavior. *Physical Punishment* was considered somatic discipline.

Data Collection

Positive and negative behaviors were scored using 15-s interval recording during 10-min observation sessions (Kazdin 2011). Video recordings were taken for each of the 10-min observation sessions for each participant. The observer scored the sessions using the video footage from each session by marking on the data sheet. An overall positive and negative climate score was calculated for each session, as well as each individually observed objective. The scores were calculated as a percent, which was calculated by dividing the number of occurrences by the total opportunities. Data were collected from November to February.

Observation Procedure

All sessions were recorded for 10-min using an iPad. The observer held the iPad and moved around to follow the teacher. The teacher was videoed from the front and within an audible distance to capture eye contact, facial expressions, tone of voice, and language. This was necessary to accurately assess the indicators measured on the data recording sheet. The observer did not interact during recordings or give any feedback during or after.

Experimental Conditions

Baseline

During baseline, teachers were not given any instruction or information other than to act as they would on any other day. Melanie exhibited negative affect. Anna exhibited irritability, and Linda lacked positive affect but was not overall negative. Although negativity scores were not always high,

no opportunity was often marked as a lack of being positive or negative. Negative affect and sarcasm/disrespect were the most commonly observed negative climate behaviors during baseline. Punitive controls and severe negativity were never observed from any of the subjects.

Mindfulness Intervention

This study used a multifaceted mindfulness-based intervention that consisted of several practices in the literature found to be beneficial for decreasing stress. These practices included yoga poses, intentional breathing, and guided meditation (Harris et al. 2015). The subjects were given a protocol of mindfulness practices to be used at particular times throughout the day (i.e., arrival, mid-morning, lunch, mid-afternoon, evening). The practices included in the intervention consist of guided meditation, a three-minute breathing space, and yoga. Protocol included a 5-min guided meditation video (Winston 2014) to complete each morning before work and evening before going to sleep. In the morning with the children, the participant took part in a three-minute video of mindfulness for children (GoNoodle). During the morning 15-min break the participant was asked to complete a three-minute breathing space video (Segal 2016). Yoga was also included in the protocol consisting of one to 2 min with the children each day.

Fidelity Check

The teachers were given a fidelity checklist in which they were asked to indicate which mindfulness practices they used each day. The participants were asked to fill out the fidelity checklist immediately following the exercise to mark exactly what was or was not completed in each exercise. Melanie completed 86% of the intervention, consisting of 165 min practicing mindfulness. Anna completed 81% of the intervention, consisting of 155 min practicing mindfulness. Linda completed 100% of the intervention consisting of 192 min practicing mindfulness.

Interobserver Agreement

The reliability observer was a graduate assistant with a bachelor's degree in early childhood education. The reliability observer was trained by reviewing the operational definitions and through discussion with the researcher who answered any questions and explained examples and non-examples of the behaviors. The two observers then scored the video recordings simultaneously using the same data sheet used for all other sessions until at least 80% reliability was achieved. Interobserver reliability was calculated for 20% of all observations across baseline and intervention conditions (Kratochwill et al. 2010). Reliability was calculated using the point-by-point reliability formula (Kazdin 2011). The number of agreements was divided by agreements plus disagreements and then multiplied by one hundred to obtain a percentage of reliability. For positive climate the average reliability for occurrence was 91% (range, 84–100%), non-occurrence was 86% (range, 55–100%), and overall reliability was 95% (range, 90–100%). For negative climate the average reliability for occurrence was 62%, (range, 0–100%), non-occurrence 97% (range, 87–100%), and overall reliability was 97% (range, 90–100%).

Experimental Design

A single subject research design was used to demonstrate the impact of a Mindfulness Practices Intervention on classroom climate. Specifically, a multiple baseline design across subjects was used (Kazdin 2011). Multiple baseline designs allow for the staggered implementation of an intervention systematically across subjects only when behavior change occurs (Kazdin 2011). Single subject research methods are useful in applied settings as it allows for comparisons of individual behavior across different conditions (baseline/mindfulness mediation). This study followed the procedures for multiple baseline designs set forth in the *Single Case Technical Document*, which stipulate that all phases have a minimum of five data points (Kratochwill et al. 2010).

Results

The present study assessed the impact of mindfulness practices on classroom climate and early childhood educator perceived stress. Guiding research questions specifically sought to determine if (1) teachers who implement mindfulness practices daily exhibit higher positive climate and lower negative climate, and (2) the use of mindfulness practices produce a change in perceived stress scores.

Research Question 1: Classroom Climate

Research question 1 sought to determine if positive and negative classroom climate would be altered through the use of the Mindfulness Practices Intervention (see Fig. 1).

Melanie

Positive. During baseline Melanie's positive climate averaged 54% (range, 40–78%); when the Mindfulness Practices Intervention was applied, Melanie's positive climate averaged 75% (range, 45–85%). This represents a 21-percentage point increase in positive climate. *Negative.* During baseline, Melanie's negative climate averaged 20% (range, 8–35%); when the Mindfulness Practices Intervention was applied,

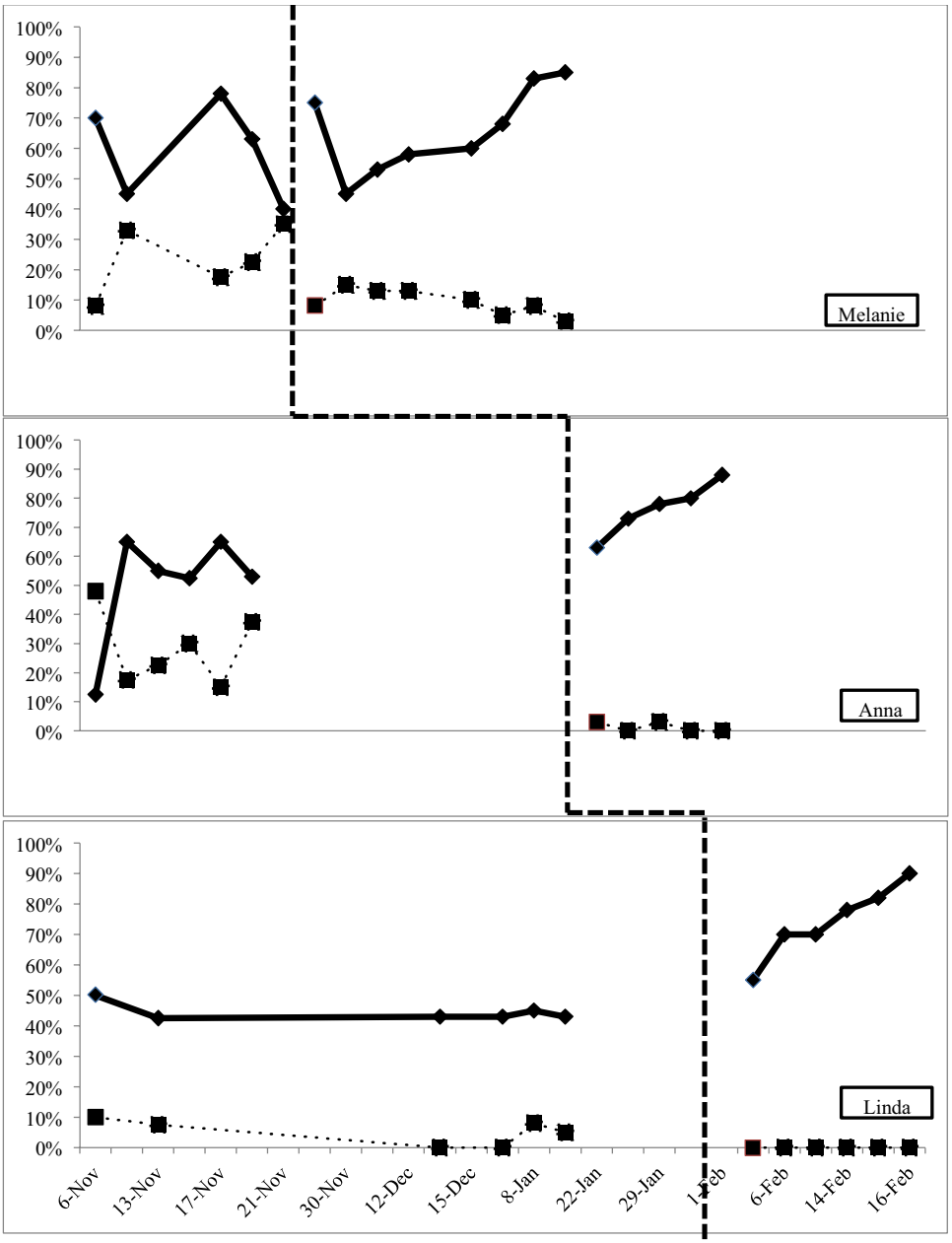

Fig. 1 Results of positive and negative classroom climate for baseline and intervention. The solid line represents positive climate and the dotted line represents negative climate

Melanie's negative climate averaged 9% (3–13%). This represents an 11-percentage point decrease in negative climate.

Anna

Positive. During baseline, Anna's positive climate averaged 51% (range, 13–65%); when the Mindfulness Practices Intervention was applied, Anna's positive climate averaged 76% (range, 63–88%). This represents a 25-percentage point increase. *Negative.* During baseline, Anna's negative climate averaged 29% (range, 15–48%). When the Mindfulness Practices Intervention was applied, Anna's negative climate averaged 1% (range, 0–3%). This represents a 28-percentage point decrease.

Linda

Positive. During baseline, Linda's positive climate averaged 45% (range, 43–50%). When the Mindfulness Practices Intervention was applied, Linda's positive climate averaged 74% (range, 55–90%). This represents a 29-percentage point increase. *Negative.* During baseline, Linda's negative climate averaged 5% (range, 0–10%). When the Mindfulness Practices Intervention was applied, Linda's negative climate

averaged 0% (range, 0–0%). This represents a 5-percentage point decrease.

Research Question 2: Perceived Stress

Research question 2 sought to determine if the use of the Mindfulness Practices Intervention would decrease teacher levels of perceived stress. The PSS was administered before baseline data collection and after the intervention was completed (see Table 1).

Melanie

Before baseline, Melanie's perceived stress score was a 32, which is considered a high stress score. After the Mindfulness Practices Intervention was completed, Melanie's perceived stress score was a 30. This represents a 2-point decrease; remaining in the high stress bracket.

Anna

Before baseline, Anna's perceived stress score was a 35. After the Mindfulness Practices Intervention was completed, Anna's perceived stress score was a 32. This represents a 3-point decrease; remaining in the high stress bracket.

Linda

Before baseline, Linda's perceived stress score was a 16. After the Mindfulness Practices Intervention was completed, Linda's perceived stress score was a 20. This represents a 4-point increase; remaining in the moderate stress bracket.

Discussion

The purpose of the present study was to determine if positive and negative classroom climate would be impacted when the Mindfulness Practices Intervention was implemented throughout the daily routine and if early childhood teachers would experience decreased levels of perceived stress. Data were collected on positive and negative classroom climates using indicators from the CLASS tool (Pianta et al. 2008). Previous research literature summarized by Hwang et al. (2017) maintained that mindfulness has several mental benefits for teachers including coping with stress and emotions, managing conflict, better awareness of experiences, clarity of mind, relaxation, better reaction to challenges or stressful stimuli, feelings of reduced stress, and better classroom outcomes. Increased "classroom organization, emotion regulation, and use of positive affect words in the classroom" (Hwang et al., p. 40) were evident in mindfulness based intervention studies.

Table 1 Teacher's scores on the perceived stress scale prior to and following the mindfulness intervention

Participant	Baseline	After mindfulness intervention	Difference
Melanie	32	30	2-Point decrease
Anna	35	32	3- Point decrease
Linda	16	20	4-Point increase

Research Question 1

The results indicated that all three participants exhibited increased positive climate and decreased negative climate while implementing the Mindfulness Practices Intervention.

It is important to note that the two teachers with stress scores in the high range at baseline presented more negative climate than the teacher with moderate stress. This is consistent with findings from Jennings et al. (2013) in that teacher stress is correlated with "higher levels of absenteeism, reduced quality performance, and frequent irritable mood" (p. 376). As the teachers implemented mindfulness, their positive classroom climate increased and their perceived stress decreased.

Results from the present study showed that one participant's stress increased while her positive climate increased and negative climate decreased. It is possible that moderate stress does not affect negative classroom climate, however there is no current literature to support this hypothesis. It is also possible that the PSS was not as sensitive of a tool for only a two-week intervention because the tool captures the participants general stress level over the past month. This is not consistent with previous literature (Flook et al. 2013), in which findings suggested that stress affects classroom climate and teacher efficacy. Mindfulness may be more significantly correlated to classroom climate than perceived stress. However, this should be a topic for future research.

Consistent with previous literature (Hwang et al. 2017), the Mindfulness Practices Intervention had positive effects on classroom climate exhibited by the three teachers. Studies such as Jennings et al. (2013) and Frank et al. (2013) evaluated mindfulness interventions that were more time consuming. The CARE program involved four sessions over the course of four to six weeks equaling a total of 30 h (Jennings et al. 2013). In the Mindfulness-Based Stress Reduction (MBSR) intervention evaluated by Frank et al. (2013) participants attended classes lead by a trained and experienced MBSR coach for eight weeks. Similar results were found in the current study; however, this Mindfulness Practice Intervention is a more cost-efficient and manageable program. Not all schools have access to or funds to hire a mindfulness trainer/expert or time to attend group

sessions. Although mindfulness benefits are supported by several research studies (Hwang et al. 2017), they are underutilized in the field. Therefore, the Mindfulness Practices Intervention implemented in the current study was created as a feasible mindfulness intervention due to its time and cost-effective nature. Teachers can easily incorporate the Mindfulness Practices Intervention in their daily routines with or without their children.

Research Question 2

The PSS results indicated that two out of the three participants experienced decreased levels of perceived stress after the Mindfulness Practices Intervention was completed. Various factors could have affected Linda's stress score; for example, during the intervention the teacher became aware that she might be moving to another classroom. This added potentially stressful news may have affected the results of the Mindfulness Practices Intervention. It is also possible that the participant became more aware of her stress as a result of the study and this negatively impacted her perceived stress. Reduced stress was found in other studies that implemented a mindfulness practices intervention (Beshai et al. 2016; Davis and Hayes 2011; Harris et al. 2015; Taylor et al. 2016). However, these studies incorporated more longitudinal studies and perhaps more labor-intensive interventions. Beshai et al. (2016) administered multiple self-report measures, such as the Five Facet Mindfulness Questionnaire and the PSS and found an improvement in well-being as well as a decline in perceived stress. Perhaps incorporating multiple self-report measures, such as the Five Facet Mindfulness Questionnaire would determine if all participants acquired more mindful capabilities. It is possible that Linda did not improve her mindfulness capacities and as a result her stress was adversely affected.

The PSS was chosen because of its reliability and its frequency of use in current mindfulness literature. However, the nature of the PSS should also be considered when reviewing the perceived stress results from the current study. The PSS asks questions about how a participant has felt within the last month. It is also possible that the PSS focuses only on negative stress and does not account for *good* stress. Due to the short duration of the study it is possible that other stress questionnaires, such as a questionnaire created specifically for teacher stress may have shown different results.

Furthermore, two teachers experienced declines in perceived stress, however they remained in the *high stress* range. More longitudinal implementation of the Mindfulness Practices Intervention may be needed to assess whether the participants would experience declines significant enough to reduce perceived stress from the *high stress* range to the *moderate* or *low stress* range. Beshai et al. (2016)'s intervention consisted of nine sessions that were 75 min long with a trained mindfulness instructor. Perhaps interventions that incorporate group sessions or longer time spent practicing mindfulness would result in greater declines in perceived stress.

The baseline PSS scores indicated that only two of the teachers who were administered the questionnaire experienced high levels of perceived stress. This may be attributed to the Reggio Emilia philosophy that the center follows. Beltman et al. (2011) stated, "Teacher resilience is a dynamic process or outcome that is the result of interaction over time between a person and the environment" (p. 188). Due to the nature of the Reggio Emilia inspired environment, which consists of a nature-based and calming atmosphere, it is possible that teachers in Reggio Emilia inspired schools experience less perceived stress. Future studies should consider studying the connection between the Reggio Emilia approach and teacher's perceived stress.

Limitations

With every single case design there are threats to validity. One consideration is the threat to history, which is a threat to internal validity. The use of a multiple baseline design minimizes this threat, as the Mindfulness Practices Intervention was implemented at varying times across the three subjects. This minimizes the chance that "any event occurring at the time of the experiment could influence the results or account for the pattern of data" (Kazdin 2011, p. 30). Another threat to internal validity controlled for in this study was the internal threat of instrumentation.

External validity was also regarded in the current study (Kazdin 2011). The subjects that participated in the study were of varying races, working with different age groups, and had varying years of experience. These characteristic differences indicate that a diverse population that could potentially benefit from the results of the Mindfulness Practices Intervention. A fidelity checklist was provided to ensure that participants implemented the intervention in the way that it was written.

A threat to generality of setting is another threat to validity which must be considered. All teachers in the present study worked at the same school, however they were each in different classrooms that were designed differently, had different teaching assistants and peer-lead teacher support, different age groups in their care, and a varying number of children in their classroom. This allows for some control of generality of settings even though all teachers are working at the same program. Generality across time (Kazdin 2011) was a threat that was also controlled for. All observation sessions were conducted in the morning to account for behavior changes at different times of the day.

A viable threat to external validity in the current research is the threat of reactive assessment, defined as "[t]he extent to which subjects are aware that their behavior is being assessed and that this awareness may influence how they respond" (Kazdin 2011, p. 33). This threat is possibly due to participants' knowledge that they were being recorded on video. Participants may have exhibited behavior deemed acceptable because of their knowledge of being on camera. They may, therefore, have avoided unacceptable, negative climates knowing their behavior was being recorded. This threat should be taken into consideration when evaluating the observation data for this study.

Another viable limitation is the short duration of the present study. The individuals only implemented the intervention for 2 weeks. Many studies, such as Beshai et al. (2016), have evaluated mindfulness interventions that are more longitudinal. Current literature suggests that it takes approximately 6 weeks for a behavior change to occur (Chu et al. 2016). Although the time frame was sufficient for changes to teachers' positive climate practices, the duration may not have been long enough to impact teachers' perceptions of stress, as many questions asked teachers to think back on the past month's stressors. The slight decreases in stress are perhaps a reflection of the short duration of the study and should be taken into consideration when reviewing the perceived stress data results.

Social validity is another important aspect of substantiation in assessing the need and importance of the research presented in the existing study (Kazdin 2011). Positive and negative climate CLASS objectives were used to assess the classroom environment. This is a statewide tool used to assess classroom climate. Therefore, because the data exhibited an increase in positive climate and decrease in negative climate, it is likely to be accepted as beneficial to both the teachers and the children. Positive climate is considered to be an important component of effective learning environments for young children (CLASS; Pianta et al. 2008).

The increase in positive climate and decrease in negative climate for all participants and a decrease in stress for a majority of the participants suggests a need to educate early childhood teachers on the effects of mindfulness practices and how to implement them in everyday life, possibly as a topic of professional development.

Clinical Implications

The positive effects of mindfulness are well documented in the literature. As teacher stress is a standing issue in the educational field and has shown to have effects on classroom climate, it stands to reason that mindfulness could have positive effects on teacher stress levels and increasing positive climate. These benefits are advantageous for both the health of teachers and the children. Positive classroom climate is associated with effective learning environments for children (CLASS; Pianta et al. 2008). Administrators should consider how to incorporate mindfulness practices within professional development and other policies. Teachers should be instructed about the positive effects of mindfulness practices and its related benefits within the classroom. They could also be taught proper mindfulness practices and techniques. Previous research claims that children of resilient teachers are more likely to attain positive outcomes than children with less resilient teacher models (Cohen 2012; Hwang et al. 2017).

Future Research

Since the Mindfulness Practices Intervention implemented in the present study was a package intervention consisting of yoga, guided breathing space, and guided meditation, we cannot be sure which components of the intervention are responsible for the change of behavior. Future research could study the effects of each individual practices on classroom climate and perceived stress, in order to determine which elements are most useful for teachers. It may be found that some components are more effective than others, while some may be more influential within the classroom for the teachers and/or the children.

The Hawthorn Effect (Cook 1962) could pose a threat to the validity of the data in the current study. The subjects' behavior could be a result of the knowledge that they were being videotaped and their behavior was subject to evaluation. Future research could incorporate regular video observation to offset the possible Hawthorn Effect. It may be useful for the teachers to be accustomed to being videotaped before baseline observations are conducted, in the hopes that their behavior would not be affected by the presence of the camera.

Future research should consider studying the impact of mindfulness practices using longitudinal studies, which may better capture the continued use of mindfulness practices. It may have been that the short duration of the present study was not sufficient to capture a greater decline in perceived stress. The participants completed the intervention for only 2 weeks. Future studies should implement the Mindfulness Practices Intervention for a longer period of time to determine the effects of longer-term mindfulness practices on stress.

Conclusion

In this study, the teachers' positive climate increased and negative climate decreased through the use of the Mindfulness Practices Intervention. Perceived stress scores also decreased for two out of the three teachers. The contribution

of this study is a more time and cost-effective Mindfulness Practices Intervention and the positive classroom climate impact that the teachers experienced as a result of incorporating the intervention into their daily routines.

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