

Preservice Students' Dispositional Mindfulness and Developmentally Supportive Practices with Infants and Toddlers

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Published online: 17 October 2018
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Abstract

Although dispositional mindfulness has recently been linked to high quality teaching practices, there is limited work on how mindfulness is related to caregiving beliefs and practices with infants and toddlers. Based on survey responses from 618 preservice students enrolled in child development/early education classes at nine US universities, we examined associations between mindfulness and students' beliefs, knowledge, and practices with infants and toddlers. Preservice students with greater self-reported mindfulness reported stronger beliefs about reflective practices and more mindful interactions with others, particularly interactions characterized by intentional kindness, greater child development knowledge, and more developmentally supportive responses to infants'/toddlers' needs during common challenging situations. Results underscore the associations between mindfulness and developmentally supportive beliefs and practices and highlight burgeoning research on the role of mindfulness in high-quality early childhood teaching. Results also suggest the potential value of incorporating mindfulness training as part of professional development efforts related to early childhood teacher training.

Keywords Mindfulness · Early childhood · Teachers · Teacher training · Developmentally appropriate practices

More than 12 million children in the US under the age of 5 spend time in early care and education settings, including almost 25% of children under the age of 3 years (Laughlin 2013). An extensive body of research has linked the quality of

early child care with more optimal social-emotional (e.g., Ruzek et al. 2014), cognitive (Burger 2010), and language outcomes (Li et al. 2013) in children, including long-range effects on later developmental outcomes (Burger 2010; Vandell et al. 2010). Despite the known importance of high-quality early care and education for young children, the quality of practices in most programs in the US has been consistently evaluated as being of low to moderate quality (La Paro et al. 2014; Ruzek et al. 2014). Unfortunately, traditional approaches to teacher training and professional development have had limited success in promoting meaningful, sustained changes in teachers' practices (Hamre et al. 2012). As such, recent calls in the professional development literature have emphasized the need to move beyond characterizing professional development and training as building teachers' developmental knowledge and classroom behavior management strategies to more holistic approaches (Cohan and Honigsfeld 2011). In particular, mindfulness has emerged as a key focus in teacher professional development programs (Jennings et al. 2011; Jennings and Frank 2015; Roeser et al. 2012). Mindfulness is defined as the awareness that arises through paying attention on purpose and without judgment

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(Kabat-Zinn 2003) and is taught through mindfulness meditation training, such as found in the well-studied Mindfulness-Based Stress Reduction Program (MBSR; Kabat-Zinn 2005). Mindfulness is also considered to be a dispositional tendency to be more present in moment-to-moment experiences of daily life. In line with this thinking, Bishop et al. (2004) reviewed the literature and outlined two primary components of mindfulness that included (a) regulation of attention that brings awareness of thoughts, feelings, and sensations from moment to moment, and (b) an “orientation toward curiosity, openness, and acceptance” (p. 20). As noted by Bergomi et al. (2013), elements of nonjudgmental acceptance have been reflected in contemporary measures of mindfulness. For our purposes, attention and acceptance were identified as most salient to include in this study because of their hypothesized links to teachers’ practices.

Mindfulness is posited to promote higher quality teaching in several ways. For example, researchers in the field of mindfulness (Jennings 2015a; Kemeny et al. 2012) have suggested that mindfulness may be associated with teachers’ recognition of their emotional reactions without judgment, allowing them to accept their feelings but also regulate their reactions to respond with intention and empathy toward children, including children whose behaviors they may find challenging. Emerging research with preschool teachers also suggests that mindfulness is related to their developmentally-appropriate beliefs and practices. For example, Jennings (2015a) found that preschool teachers with higher self-reported mindfulness were more emotionally-supportive of children, were better able to engage in perspective taking relative to children’s experiences, and they endorsed more sensitive approaches to discipline even when children display challenging behaviors. Greater mindfulness may also enhance teachers’ emotional competence, which may, in turn, make them better socializers of children’s own emotional competence (Jennings and Greenberg 2009).

Given the promise of teacher mindfulness as a key skill in high quality teaching, there has been a surge in interest in mindfulness within the education field, resulting in a growing number of mindfulness-based interventions in K-12 education (e.g., Frank et al. 2013; Roeser et al. 2012; Roeser et al. 2013). Mindfulness-based interventions with pre-K and K-12 teachers have been shown to increase self-awareness (Meiklejohn et al. 2012), and greater self-awareness may enable teachers to respond more intentionally and more compassionately in the classroom. Mindfulness-based interventions have been shown to reduce teachers’ job stress and increase their self-compassion (Gold et al. 2010; Roeser et al. 2013), each of which contribute to higher quality teaching. The scant research on mindfulness with early childhood teachers has suggested that mindfulness is related to teachers’ shifts in emotional reactivity, resulting in less teacher stress and greater sensitivity to children (Jennings 2015a, b; Schussler et al.

2015; Sharp and Jennings 2016). In short, mindfulness-informed professional development is based on acknowledging teaching as a stressful profession that demands a high level of self-awareness at the heart of effective, responsive teaching (Jennings 2015a; Woods 2009).

Work on incorporating mindfulness skills training into teacher training and professional development efforts is still in its infancy. Existing mindfulness-based programs for teachers often focus on how to use mindfulness to regulate emotions and stress (see Roeser et al. 2012), but research in this area largely focuses on teachers in elementary and secondary schools. To date, there are no published studies focusing on dispositional mindfulness in teachers of infants and toddlers, including preservice teachers. This is problematic for several reasons. As noted, a tendency to be mindful in daily life may promote teachers’ use of high-quality reflective practices with infants and toddlers, including perspective taking in wondering about the child’s feelings and experiences and using that sense of wonder to guide interactions (Weatherston et al. 2010; Weatherston 2013; Weigand 2007). Second, infant/toddler teachers have reported greater emotional demands in their work than teachers of older children, placing them at higher risk for stress and burnout (Faulkner et al. 2014; Seery and Corrigan 2009). Greater dispositional mindfulness has been associated with reduced stress in teachers (Roeser et al. 2012), suggesting that it may be an important element in preparing teachers for their careers. Integrating mindfulness into teacher training and professional development offers the opportunity to better prepare preservice teachers by extending their abilities to engage in high quality practices with infants and toddlers. However, there is first a need to understand how dispositional mindfulness is associated with teaching competencies, including key attitudes and practices that are hallmarks of high quality infant/toddler education.

The goal of the current study was to examine associations between preservice students’ dispositional mindfulness and four aspects of high quality early childhood teaching: (a) beliefs about the value of reflective practices with infants and toddlers; (b) intentional kindness in interactions with others; (c) knowledge of infant/toddler development; and (d) developmentally appropriate responses to infants’/toddlers’ emotional needs and behaviors.

Method

Participants

Participants were 618 undergraduate students (556 females; $M_{age} = 22.27$ years, $SD = 5.77$ years, range 18 to 58 years) enrolled in child development, early childhood education, family studies, or related human service classes from nine

universities in which faculty are involved in the Collaborative for the Understanding of Pedagogy of Infant/Toddler Development (CUPID; Chazan-Cohen et al. 2017), a large, national collaborative focused on preservice infant/toddler teacher education. Students majoring in child development, early childhood education, or elementary education reflected the preservice teaching group of students in the sample and this was the largest major in the sample (35%, $n = 217$). The other participants were majoring in areas such as human services and psychology. Most participants identified as White (70.6%, $n = 456$). Full demographics are reported in Table 1. Universities were located on the East coast ($n = 3$), the Midwest ($n = 2$), Northwest ($n = 1$), Southwest ($n = 1$), and West coast ($n = 2$). Eight universities were public institutions and one university was a small, private institution.

Procedures

Students enrolled in early childhood education, child development, or related courses at the affiliated universities completed a survey at the beginning and end of the academic term. The survey was administered via Qualtrics, a secure online platform. All study protocols were approved by the participating universities and procedures were carried out in accordance with the approved guidelines. The informed consent form was administered online and explained that the overall purpose of the study was to learn about effective teacher preparation pedagogy. Thus, informed consent was obtained from all individual participants included in the study and the current study reflects the data of students who consented for their data to be used for research. Course instructors did not see identifiable student data nor have knowledge as to whether or not students consented to the use of their data for research

purposes. The CUPID survey was intended to assess student characteristics and their knowledge, skills, and attitudes about infant/toddler development, care, and education and consisted of the measures described below.

Measures

Dispositional Mindfulness The Philadelphia Mindfulness Scale (PMS; Cardaciotto et al. 2008) is derived from Kabat-Zinn's conceptualizations of mindfulness such that purposeful attention promotes mindful awareness and mindful acceptance reflects a compassionate openness to thoughts, feelings, and sensations in the moment. The PMS assesses awareness (10 items, $\alpha = .82$) and acceptance (10 items, $\alpha = .85$) with items scored on a 1 (never) to 5 (very often) scale ($\alpha = .84$). Sample items include the following: *I am aware of what thoughts are passing through my mind* (awareness) and *I try to distract myself when I feel unpleasant emotions* (reverse scored to assess acceptance). The PMS characterizes acceptance as experiential avoidance because of its association with psychosocial outcomes, including stress and anxiety. Cardaciotto et al. (2008) referred to the scale dimension as acceptance, and we remained consistent with their definition. Acceptance items were reverse scored such that higher scores reflected greater acceptance and a total mean score was used for analyses.

Beliefs about the Value of Reflective Practices The Observe, Listen, Wonder, and Respond scale (Tomlin et al. 2009) measures beliefs about the value of reflective practices. Sample items from each subscale, respectively, are as follows: *Noticing an infant's effort to engage or respond to others*; *Making room for the parent's concerns and remaining*

Table 1 Descriptive statistics for mindfulness, knowledge, beliefs, and practices with infants and toddlers and sample demographic characteristics

Measures	<i>M</i>	<i>SD</i>	Min	Max	1	2	3	4	5	6
1. Dispositional mindfulness	3.17	.40	1.00	5.00	—	.21**	.14*	.11**	.09*	.02
2. Mindful practices in kind interactions	4.12	.59	1.00	5.00	—		.42***	.27**	.19*	.08
3. Beliefs about the value of reflective practices	3.27	.54	1.00	5.00		—		.33**	.21***	.09*
4. Knowledge of infants/toddlers (0% correct)	.54	.25	0	1.00			—		.37*	.25**
5. Dev. supportive responses (% supportive responses)	.49	.17	.00	1.00				—		.19**
6. Number of prior early childhood/child dev courses	3.09	2.65	1	15					—	
Demographic characteristics			Percent	<i>n</i>				Percent	<i>n</i>	
Preservice teaching major	35.1		217		Black/African American			9.2	57	
Human services major (e.g., social work, family services)	20.7		128		Caucasian/White			70.1	433	
Psychology major	4.0		25		Hispanic/Latino			9.1	56	
Health-related major	9.5		59		Asian/PI			7.3	45	
Other major (e.g., communications, sociology)	15.2		94		Other			.6	4	
Undeclared	2.4		15		Multiple races identified			3.4	21	
No response	12.9		80		No race identified			.3	2	

sensitive to them; Wondering about the link between past and present interactions or behaviors; and Empathizing with an infant's or toddler's negative emotions. Respondents indicated how important each of the 22 items ($\alpha = .92$) was to their work with infants, toddlers, and families on a scale ranging from 1 (not important to the work that early childhood teachers do) to 5 (extremely important to the work that early childhood teachers do). The response scale was slightly adapted from the original scale which stated the importance of the item "to the work that I do" to relate more readily to the current study's preservice participants. A total mean score was calculated for analyses.

Mindfulness in Interactions An adapted version of the Interpersonal Mindfulness in Parenting Scale (IMP; Duncan 2007; Duncan et al. 2009) was utilized, specifically focusing on a subset of five items from the IMP scale reflecting intentional kindness in interactions, which were confirmed via factor analysis. The five items related to kindness toward others were as follows: *When someone is going through a difficult time, I try to give him/her the attention he/she needs; I am kind to others when they are sad; I try to understand others' opinions even if I disagree with them; I try to be understanding and patient with others when they are having a hard time; and, I listen carefully to others' ideas, even when I disagree with them* ($\alpha = .83$). Items from the IMP scale were adapted by altering wording to reflect interactions with others rather than "my child" as in the original version and were scored on a 1 (never) to 5 (very often) scale. A total mean score was calculated for analyses.

Knowledge of Infant/Toddler Development The Knowledge of Infant/Toddler Development Inventory (KIDI; MacPhee 1981) included 18 statements about knowledge of developmental processes and milestones during infancy and toddlerhood ($\alpha = .68$). Seventeen items from the KIDI and one additional item designed for this study were included. Participants indicated their agreement with each true or false statement about development with options to indicate agree, disagree, and unsure. Items were scored to determine perception of correct responses (agree with true statement, disagree with false statements, treating "unsure" responses as incorrect).

Developmentally Supportive Responses Twelve vignettes, created for the study, reflecting realistic situations in infant/toddler care were used to assess emotionally supportive responses. The vignettes were designed to elicit responses in the following six areas typically included in measures of interaction quality: sensitive responding to infants'/toddlers' needs; support for autonomy; structure and limit setting; verbal communication; cognitive stimulation; and fostering peer interactions. Multiple-choice response options included one response per vignette that was a more developmentally supportive

response as compared to two other choices which were designed to reflect low sensitivity, over/under adult control, or inappropriately high or low developmental expectations. For further information on validation of the measures, see Vallotton et al. (2016). A total score reflecting the percent of developmentally supportive responses selected was calculated.

Covariates included student age, gender, and the number of prior child development/early childhood education courses completed. These items were included on a demographics questionnaire. Age was included as a covariate to be conservative given that teacher age has been associated with greater sense of personal accomplishment in teaching (Zabel and Zabel 2001). We controlled for student gender because some studies have shown that female teachers report greater work stress than their male counterparts (e.g., Klassen and Chiu 2010) and may perceive children's behaviors differently (e.g., Dee 2005). We controlled for prior coursework in child development/early childhood education given that completion of more child development/early childhood education courses would likely be associated with teachers' beliefs and practices. Controlling for age, gender, and coursework in the analyses allowed for greater clarity in identifying unique associations between dispositional mindfulness and study outcomes.

Data Analyses

Students were nested within universities and, thus, we employed two-level linear mixed models to test four models examining associations between dispositional mindfulness and each of the following four outcomes: (a) beliefs about the value of reflective practices with children, (b) intentional kindness in interactions with others, (c) child development knowledge, and, (d) developmentally appropriate responses to young children. Student age and gender (female as the referent group), major (other major as the referent group), and the number of prior child development/early childhood education courses taken were also included in the models.

Results

Descriptive statistics and participant demographic characteristics are reported in Table 1. As expected, we found significant positive associations between dispositional mindfulness and beliefs about reflective practices, knowledge of infant/toddler development, mindfulness in interactions with others, and developmentally-supportive responses to infants and toddlers. Effect sizes were small to moderate, with correlations ranging from .10 to .42. Also, preservice teaching majors had significantly greater beliefs about the importance of reflective practices, $M = 3.36$, $SD = .49$ vs $M = 3.21$, $SD = .55$, $F(1, 616) = 10.27$, $p = .001$, reported more kindness in interactions with others, $M = 4.17$, $SD = .53$ vs $M = 4.09$, $SD = .61$, $F(1, 616) =$

5.69, $p = .017$, demonstrated greater knowledge of early development, $M = .61$, $SD = .24$ vs $M = .50$, $SD = .26$, $F(1, 616) = 27.14$, $p = .000$, and reported more developmentally supportive responses to infants and toddlers, $M = .55$, $SD = .15$ vs $M = .46$, $SD = .16$, $F(1, 616) = 54.23$, $p = .000$, as compared to other majors. As expected, they had more prior coursework in early childhood education/child development as compared to other majors, $M = 4.29$, $SD = 2.98$ vs $M = 2.32$, $SD = 1.37$, $F(1, 616) = 125.12$, $p = .000$. Gender differences were evident as well. Female students reported greater beliefs in reflective practices, $M = 3.31$, $SD = .51$ vs $M = 2.94$, $SD = .65$, $p = .000$; greater kindness in interactions with others, $M = 4.16$, $SD = .55$ vs $M = 3.77$, $SD = .75$, $p = .000$; greater knowledge of child development (percent of correct responses), $M = 56\%$, $SD = 25$ vs $M = 34\%$, $SD = 28$, $p = .000$; and, more emotionally supportive responses to infants and toddlers (percent of emotionally supportive responses), $M = 51\%$, $SD = 17$ vs $M = 39\%$, $SD = 15$, $p = .000$. Female preservice students had also completed more prior coursework in early childhood education/child development as compared to male preservice students, $M = 3.17$ courses, $SD = 2.66$ vs $M = 2.16$ courses, $SD = 2.44$, $p = .027$.

Results from the linear mixed models are displayed in Tables 2, 3, 4 and 5. Age was not significantly related to outcomes and was, therefore, dropped from the final analyses. School (university) as a random effect was not significant in any of the models. Greater dispositional mindfulness was associated with students' beliefs about the value of reflective practices with children, $F(1, 609) = 10.76$, $p = .001$. Preservice teaching major status was associated with beliefs about reflective practice at the trend level ($p = .08$). The number of prior early childhood/child development courses was not significantly related to beliefs about reflective practices. Female students held stronger beliefs about reflective practices, $F(1, 609) = 18.15$, $p = .000$. Similarly, dispositional mindfulness, $F(1, 609) = 27.67$, $p = .000$, and female gender, $F(1, 608) = 22.62$, $p = .000$, were associated with self-

reported kindness in interactions with others. Prior coursework and major status were not significantly related to kindness in interactions with others. Effects sizes for all models, using f^2 as an indicator of effect size, were small.

Dispositional mindfulness was associated with knowledge of child development, $F(1, 606) = 4.77$, $p = .029$. Prior early childhood/child development coursework, $F(1, 604) = 25.30$, $p = .000$, preservice teaching major status, $F(1, 570) = 11.63$, $p = .001$, and female gender, $F(1, 604) = 18.97$, $p = .000$, were also associated with child development knowledge. Similarly, dispositional mindfulness, $F(1, 609) = 4.37$, $p = .037$, preservice teaching major status, $F(1, 304) = 33.35$, $p = .000$, and female gender, $F(1, 609) = 14.14$, $p = .000$, were associated with developmentally supportive responses to the emotional needs of young children. Effects sizes for all models, using f^2 as an indicator of effect size, were small.

Discussion

This study focused on the dispositional mindfulness of preservice students enrolled in early childhood, child development, and related courses and how mindfulness related to their beliefs, knowledge, and practices with infants and toddlers. Preservice students' greater dispositional mindfulness was associated with their beliefs about the importance of reflective practices with infants and toddlers, self-reported kindness in interaction with others, greater knowledge of child development, and more developmentally supportive responses to infants' and toddlers' emotional needs during challenging scenarios. Preservice teaching major status was related to greater child development knowledge and more supportive responses. Prior coursework, a covariate in the study, was related to greater child development knowledge. These findings on the effects of major and coursework confirm our assumption that those enrolled in higher education related to early childhood education do gain greater competencies in early childhood

Table 2 Estimates of fixed effects and covariance parameters associated with beliefs about the value of reflective practice

Fixed effects	Coefficient	S.E.	df	t	Sig.	95% confidence interval	
						Lower bound	Upper bound
Intercept	2.71	.17	411.53	15.58	.000	2.37	3.01
Gender (female referent)	-.30	.07	608.79	-4.26	.000	-0.44	-0.16
Major (other major referent)	.09	.05	259.94	1.76	.079	-0.01	0.19
Prior ECE/CD courses	.01	.01	488.04	1.12	.265	-0.01	0.03
Dispositional mindfulness	.17	.05	608.98	3.28	.001	0.07	0.27
95% confidence interval							
Parameter	Estimate	S.E.	Wald Z		Sig.	Lower bound	Upper bound
Residual	.26	.02	17.34		.000	.23	.29
Intercept [subject = school] variance	.01	.01	1.01		.313	.00	.06

Table 3 Estimates of fixed effects and covariance parameters associated with kindness in interactions with others

Fixed effects	Coefficient	S.E.	df	t	Sig.	95% confidence Interval	
						Lower bound	Upper bound
Intercept	3.19	.19	532.97	16.70	.000	2.82	3.56
Gender (female referent)	-.37	.07	607.56	-4.76	.000	-.52	-.22
Major (other major referent)	.04	.06	221.28	.59	.554	-.08	.14
Prior ECE/CD courses	.01	.01	463.27	.68	.497	-.01	.03
Dispositional mindfulness	.30	.06	608.67	5.26	.000	.19	.41
95% confidence interval							
Parameter	Estimate	S.E.	Wald Z		Sig.	Lower bound	Upper bound
Residual	.31	.02	17.38		.000	.28	.35
Intercept [subject = school] variance	.00	.01	.89		.374	.00	.04

education/child development. The findings are not surprising given that majoring in the area and taking courses should increase child development knowledge. Nonetheless, results address a general gap in the literature on the “black box” of higher education coursework and student learning outcomes in preservice early childhood education programs (Chazan-Cohen et al. 2017), including underscoring the importance of infant/toddler content in early childhood education courses (Horm et al. 2013).

The positive association between mindfulness and beliefs in the importance of reflective practices with young children may be explained by the commonalities in mindfulness practice and reflective practice. Just as mindfulness is characterized by an awareness of thoughts, feelings, and sensations in the moment without judgment, so, too, are reflective practices. Reflective practices (Tomlin et al. 2009) are centered around the cornerstones of teachers being aware of and noticing their own thoughts and behaviors as well as observing the cues and behaviors of children. Moreover, reflective practices, much like mindfulness practices, encompass an openness to curiosity and self-compassion. Previous research has suggested that

teachers’ mindfulness may be related to their compassion and their developmentally appropriate and supportive interactions with young children (Ambrose et al. 2010; Jennings 2015a). Thus, compassion may be an important concept to assess in future research with preservice teachers.

Although we were not able to test the mechanisms through which dispositional mindfulness is linked with intentional kindness in interactions and emotionally supportive responses to children, research suggests the effects of mindfulness on psychosocial functioning may be a potential path. For example, a research on dispositional mindfulness in college students has suggested that those with greater mindfulness report fewer depressive symptoms, less anxiety, and less emotional lability (Pearson et al. 2015). Subsequently, more optimal psychosocial functioning may promote more sensitive practices and interactions. Moreover, the characteristics of mindfulness, including attending to the moment and suspending judgment have been associated with greater empathy in college students (Barbosa et al. 2013) and in the helping professions (e.g., Wiseman 1996). Among early childhood teachers, greater mindfulness predicted teachers’ sensitivity and perspective-

Table 4 Estimates of fixed effects and covariance parameters associated with child development knowledge

Fixed effects	Coefficient	S.E.	df	t	Sig.	95% confidence Interval	
						Lower bound	Upper bound
Intercept	.31	.08	206.28	3.88	.000	.15	.47
Gender (female referent)	-.13	.03	604.64	-4.36	.000	-.19	-.07
Major (other major referent)	.08	.02	569.97	3.41	.001	.03	.13
Prior ECE/CD courses	.02	.00	604.43	5.32	.000	.01	.03
Dispositional mindfulness	.05	.02	606.46	2.18	.029	-.00	.09
95% confidence interval							
Parameter	Estimate	S.E.	Wald Z		Sig.	Lower bound	Upper bound
Residual	.05	.00	17.35		.000	.04	.05
Intercept [subject = school] variance	.01	.00	1.74		.081	.00	.02

Table 5 Estimates of fixed effects and covariance parameters associated with developmentally supportive responses to children

Fixed effects	Coefficient	S.E.	df	t	Sig.	95% confidence interval	
						Lower bound	Upper bound
Intercept	.36	.05	429.26	6.67	.000	.25	.46
Gender (female referent)	-.08	.02	608.68	-3.76	.000	-.12	-.04
Major (other major referent)	.09	.02	304.22	5.76	.000	.06	.12
Prior ECE/CD courses	.00	.00	513.83	1.27	.210	-.00	.01
Dispositional mindfulness	.03	.16	608.97	2.09	.037	.00	.06
95% confidence interval							
Parameter	Estimate	S.E.	Wald Z		Sig.	Lower bound	Upper bound
Residual	.02	.00	17.36		.000	.02	.03
Intercept [subject = school] variance	.00	.00	1.14		.252	.00	.00

taking relative to young children's emotional needs (Jennings 2015a).

Associations between greater dispositional mindfulness and implementation of developmentally appropriate and supportive interactions with young children may suggest that higher levels of self-report mindfulness are linked with preservice students' awareness of their own reactions to children (Jennings 2015a; Kemeny et al. 2012). Likewise, some work with college students has shown that students' mindfulness practices were associated with greater forgiveness of those they perceived as having hurt or disappointed them (Oman et al. 2008). Thus, preservice students who are more mindful may be more likely to hold child-centered perspectives, respond more sensitively to young children, and engage in more mindful interactions with others and with children. This supposition aligns well with existing work that indicated that early childhood teachers who were more mindful were better able to take children's perspectives and were more sympathetic to children's challenging behaviors (Jennings 2015a).

Preservice student gender identity, favoring female students, was associated with beliefs about the value of reflective practices with infants and toddlers, greater kindness in interactions with others, and more emotionally supportive responses to infants and toddlers. Because only 10% of the sample was comprised of males, we were limited in the extent to which we could fully delve into the associations between gender, beliefs, and practices. However, the associations between gender and beliefs and practices in our study may reflect gender roles and norms. We did not assess gender norms but the extant literature offers insights that may be helpful in exploring these associations in future research. For example, research has shown that gender norms socialize women to be kind and "nice" to a greater extent than men (Leaper and Friedman 2007). Moreover, the literature has suggested that girls are socialized about emotions differently than boys. For example, our prior work (Senehi et al. 2018) showed that mothers of young girls were less disapproving of their

children's emotions than mothers of boys. Likewise, studies have shown that mothers tended to explain emotions more fully to their daughters than to their sons (Garner et al. 1997). Thus, greater kindness in interactions and a more reflective stance in interactions with young children may reflect differences in the childhood socialization of emotion and gender. Alternatively or perhaps in combination, female students had accumulated more coursework in early childhood education/development and demonstrated greater child development knowledge, which would be expected to contribute to more reflective beliefs and practices. Unfortunately, opportunities to more fully explore the role of gender in early childhood educational practices have been limited given that only 2.5% of preschool and kindergarten teachers identify as male in the USA (with very similar rates found in European nations) (Bureau of Labor Statistics 2016).

Mindfulness was associated with greater child development knowledge as well. Howell and Buro (2011) reported that college students with greater mindfulness tended to engage in more academic help-seeking behaviors, engaged in more goal-oriented strategies, and employed more learning strategies in their college studies. Thus, it is possible that more mindful preservice students may be better able to take advantage of child development course content learning opportunities. We did not measure academic help-seeking in our study. This is an area of research in further need of study.

Limitations

There are several limitations of this study. First, this study utilized a convenience sample of preservice students, including preservice teachers, that does not reflect the vast variability within the infant-toddler workforce and limits the ability to generalize these data. Second, the data collected were via self-reports rather than observations of interactions with children so we do not know how dispositional mindfulness is associated with actual behavior in this population. Furthermore, the

self-reports are limited due to the nature of asking preservice students to respond to forced-choice questions, which cannot take into account culture or other aspects of individual differences of the teacher or the children. The data are cross-sectional, which only provides a one-time glimpse into preservice students' beliefs, knowledge, and reports of how they would respond to infants and toddlers. We would expect these to change over time as teachers become more experienced and future studies should include longitudinal measures of beliefs and knowledge and observations of interactions with children. Model effect sizes were small. Although there are few other studies to which we could compare our findings, the sparse literature suggests similar small effects. For example, Jennings (2015a) reported small effect sizes in correlations between aspects of mindfulness and teachers' perspective taking (r 's ranging from .03 to .37, with only mindful observation significantly related to perspective taking) and sensitivity of discipline (r 's ranging from .02 to .41 with only mindful awareness related to sensitivity). It may be that unmeasured concepts such as empathy and compassion also contribute to preservice teachers' beliefs and practices and warrant future study. Finally, as we noted previously, gender associations with study outcomes are limited in interpretation given the small number of male students in the study. Despite the limitations, study findings suggest that dispositional mindfulness may be an important characteristic to consider in developing preservice teacher education and teaching training programs.

Acknowledgements The Collaborative for Understanding the Pedagogy of Infant/Toddler Development (CUPID) is a group of more than 30 scholars from 20 universities who have joined together to understand how to better prepare preservice child development students for future careers in early childhood education and development. Our ultimate goal is to improve practice in the field of infant/toddler care and education by improving our own teaching and preparation of preservice child development university students.

Author Contributions HBH designed the study, wrote the methods and results, and assisted with the literature review and discussion. ACW assisted with the literature review. GAC assisted with the literature review and data analysis. JT prepared and tracked data completion and prepared dataset for the study. KBD assisted with the conceptualization of the study and the literature review. JV assisted with the discussion and limitations. CDV conceptualized the larger CUPID study in which the current study is embedded and organized and implemented IRB protocols. LGD assisted with the conceptualization and explanations of mindfulness. All CUPID members including all authors on this manuscript implemented the study that yielded these data across the eight institutions of higher education.

Compliance with Ethical Standards

Conflict of Interest The authors declare that that they have no conflict of interest.

Ethics Statement This research was approved by the Institutional Review Boards at Michigan State University, Montana State University, Mount Olive University, San Jose University, University of California-

Stanislaus, University of Delaware, University of Massachusetts-Boston, and Utah State University from which data were generated, as well as Oklahoma State University and the University of Nebraska-Lincoln. Informed consent was obtained from all individual participants.

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