

## Exploring Teachers' Depressive Symptoms, Interaction Quality, and Children's Social-Emotional Development in Head Start

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### ABSTRACT

*Research Findings:* This study explored the role Head Start teachers' ( $n = 355$ ) depressive symptoms play in their interactions with children and in children's ( $n = 2,203$ ) social-emotional development, specifically changes in children's problem behaviors and social skills as reported by parents and teachers during the preschool year. Results of the multilevel path analyses revealed that children in classrooms with more depressed teachers made significantly fewer gains in social-emotional skills as reported by both teachers and parents. We found no evidence of mediation by the quality of teacher–child interactions. *Practice or Policy:* These findings have implications for understanding and supporting Head Start teachers' mental health and potentially improving children's social-emotional outcomes.

Preschool experiences characterized by high-quality teacher–child interactions are increasingly regarded as critical mechanisms for enhancing young children's development (Burchinal, Vandergrift, Pianta, & Mashburn, 2010; Hamre et al., 2013; Magnuson, Ruhm, & Waldfogel, 2007; Mashburn et al., 2008; Yoshikawa et al., 2013). The quality of teachers' interactions with children is influenced by a variety of teacher characteristics (Pianta et al., 2005), including depression (e.g., Hamre & Pianta, 2004). Teachers who report more depressive symptoms are less likely to effectively interact with children, which may impact children detrimentally (Hamre & Pianta, 2004; Jennings, 2015a; Jeon, Buettner, & Snyder, 2014; McLean & Connor, 2015; Ripski, LoCasale-Crouch, & Decker, 2011). Previous research suggests that depressed teachers may be emotionally exhausted and less able to provide high-quality care, which in turn negatively impacts children's development (Jeon et al., 2014).

Prior research in this area has been limited by a focus on associations between teacher depression and children's behavior problems at a single point in time (Jeon et al., 2014). The present study seeks to extend these findings by examining how teachers' depression relates to children's development of social skills and problem behaviors over the course of the preschool year. Furthermore, this study adds to the field by examining the extent to which depression relates to teacher–child interactions and children's social-emotional development specifically in Head Start programs. This focus is warranted given the large numbers of children in Head Start programs who are at risk because of poverty-related adversity (Blair & Raver, 2012). Children growing up in adverse conditions are particularly susceptible to environmental stressors, including caregivers' depressive symptoms (Belsky, Bakersman-Kranenburg, & van IJzendoorn, 2007). The goal of Head Start is to offset children's risk by providing high-quality early experiences, but this goal may not be realized if children are in classrooms where their teachers are depressed. In this article we explore whether Head Start teachers' depressive symptoms relate to children's social-emotional development throughout the school year. We also examine whether the quality of teachers' interactions, specifically

their provision of emotional support, mediates the association between teachers' depressive symptoms and children's social-emotional development.

### **Theoretical framework: The prosocial classroom model**

The prosocial classroom theoretical model (Jennings & Greenberg, 2009) offers a framework for conceptualizing how teacher depression may relate to the quality of the classroom environment and subsequently children's development. It proposes that teachers with higher levels of well-being and social-emotional competence are able to develop closer relationships with their students, which leads to healthier classroom environments and ultimately improved social and cognitive outcomes for students. In relation to depression specifically, this model suggests that teachers who experience fewer depressive symptoms are able to develop healthier relationships through high-quality positive interactions with students and ultimately promote positive developmental outcomes for these students (Jennings & Greenberg, 2009). The current study focuses specifically on how teachers' depressive symptoms relate to children's social-emotional development.

### **Young children's social-emotional development**

Social-emotional development is a broad, multifaceted concept characterized by growth in various proactive skills and behaviors, including recognizing and managing one's emotions, developing positive relationships with others, making responsible decisions, handling challenging situations, and feeling empathy and concern for others (Collaborative for Academic, Social, and Emotional Learning, 2013). In turn, social-emotional development is also characterized by the absence (or lower incidence) of problem behaviors, including emotional distress and conduct problems (Collaborative for Academic, Social, and Emotional Learning, 2013). Social-emotional development flourishes during the preschool years as children make strides in their capacity to understand and communicate with others and recognize and control their own emotions and behaviors (Shonkoff & Phillips, 2000).

Early social-emotional skills, observed during the preschool years, have been associated with a variety of later life outcomes, such as fewer problem behaviors in adolescence (smoking, teen pregnancy, high school dropout) and better health, wealth, criminal, and personal outcomes in adulthood (Moffitt, Poulton, & Caspi, 2013; Raver, 2002; Tremblay et al., 2004; Trentacosta & Izard, 2007). These findings underscore the importance of fostering social-emotional skills in young children, especially children considered at risk for poverty-related adversity, given that these children often exhibit early social-emotional deficits that may relate to classroom difficulties (Blair & Raver, 2012; Gilliam, 2008; Qi & Kaiser, 2003; Shonkoff & Phillips, 2000). Because of this, the goal of many preschool programs, including Head Start, is to offset such risk by providing high-quality early experiences to promote positive social-emotional development.

Young children develop social-emotional skills in context, largely through their interactions with adults, which includes parents as well as teachers or other formal care providers (Burchinal et al., 2010; Hamre et al., 2013; Mashburn et al., 2008; Yoshikawa et al., 2013). Adults can model appropriate communication skills, encourage children to share ideas and experiences, and instruct children on how to interact with peers and other adults (J. E. Thompson & Twibell, 2009; R. A. Thompson & Goodman, 2009). When children are in settings where adults are responsive and emotionally supportive to their needs, they develop more secure attachments that facilitate the development of these skills (Mashburn et al., 2008; Shields et al., 2001). Emotionally supportive interactions are characterized by creating a positive classroom climate, expressing sensitivity and regard for students' feelings and perspectives, and avoiding negativity or harshness (Pianta, La Paro, & Hamre, 2008). Inconsistent or harsh caregiving can impede children's social-emotional development and put children at risk for later detriments. As discussed in the next section, caregiver depression has been shown to relate negatively to both the quality of interactions as well as children's social-emotional development (Jeon et al., 2014).

## Considering teacher depression

Depression is characterized by adverse psychosomatic symptoms, such as feelings of sadness or emptiness, irritability, restlessness, and difficulty concentrating (American Psychiatric Association, 2013). Depression is one of the most common mental health problems in the United States, with an estimated 16 million adults having experienced a major depressive episode in 2012 (National Institute of Mental Health, 2015). Those who experience depressive symptoms may have problems meeting the cognitive, social, and emotional demands of daily life, including workplace responsibilities (McIntyre, Liauw, & Taylor, 2011). This may be especially true for teachers working in preschool settings where daily responsibilities include managing large groups of 3- and 4-year-old children, ensuring that children are safe and well cared for, and teaching curricular content to promote children's development, all while dealing with various stressors, including low pay, poor benefits, and limited support (Whitebook, Phillips, & Howes, 2014).

As part of the Pennsylvania Head Start Staff Wellness Survey, Whitaker, Becker, Herman, and Gooze (2013) compared the physical and mental health of teachers employed in Head Start and Early Head Start programs with that of national samples of demographically similar women working in other professions. Overall, Head Start teachers had poorer mental and physical health than the broader population. In fact, 24% of all teachers in the study were considered depressed based on a commonly used self-report checklist of depressive symptoms (the Center for Epidemiologic Studies–Depression scale [CES-D]; Radloff, 1977), whereas 18% of women in the comparison sample were considered depressed. Overall, this underscores the importance of further examining teacher depression among Head Start teachers. It is necessary to note that similar to previous work, we use the term *depression* to refer to self-reported depressive symptoms rather than diagnosed clinical depression (Hamre & Pianta, 2004).

## Teacher depression and interaction quality

Much of experts' understanding about the impact of caregiver depression on children's development comes from research studies on *maternal depression* suggesting that depression is associated with adverse developmental consequences (Cummings & Davies, 1994; Lovejoy, Graczyk, O'Hare, & Neuman, 2000). However, a small body of work now demonstrates that nonfamilial caregivers' and teachers' depressive symptoms may adversely affect the quality of interactions children experience outside of the home (Hamre & Pianta, 2004; Jennings, 2015a). Specifically, Hamre and Pianta (2004) found that preschool teachers who reported more depressive symptoms engaged in significantly fewer interactions with children. When interactions did occur, teachers with more depressive symptoms were observed to be significantly less sensitive and more withdrawn than teachers with fewer depressive symptoms (Hamre & Pianta, 2004). Teachers' depressive symptoms have also been associated with the quality of the relationships teachers report with their students (Whitaker, Dearth-Wesley, & Gooze, 2015). Given that teacher–child interactions are associated with child outcomes (i.e., Hamre et al., 2013) it is relevant to consider how Head Start teachers' depression relates to the quality of observed interactions as well as to teacher and parents reports of children's development.

## Teacher depression and children's social-emotional development

Recent work has explored the relevance of depressive symptoms in directly explaining children's developmental outcomes, as well as the possible indirect effect, namely, the mediating role of teacher quality (Jeon et al., 2014; McLean & Connor, 2015). For instance, McLean and Connor (2015) found that the quality of the classroom learning environment mediated the association between depressive symptoms and student achievement in third-grade classrooms. With regard to early childhood, Jeon and colleagues (2014) used data from the Fragile Families and Child Wellbeing study, a longitudinal study of economically disadvantaged children born into single-parent households, to explore the

associations between teacher depression, global child care quality, and teachers' and parents' reports of children's problem behaviors during the 3-year-old year. Consistent with previous work, teachers who reported more depressive symptoms had lower global child care quality scores. In addition, teachers who exhibited higher levels of depressed mood reported more externalizing (i.e., impulsivity, lack of behavioral and attentional control) and internalizing (i.e., anxiety, withdrawal, sadness) problem behaviors for the children in their care. Parents whose children were in classrooms with teachers who had higher levels of depression reported that their children had more internalizing problem behaviors. Observed global child care quality mediated these associations for teacher-reported problem behaviors (Jeon et al., 2014). The present study seeks to replicate and extend these findings by focusing explicitly on children served by Head Start, considering the possible mediational role of teacher-child interactions specifically and utilizing measures of children's reported behavior at multiple time points to estimate changes in children's social-emotional development during the year.

## The present study

The present study utilizes a large national survey of Head Start to further explore the links between teacher depression, teacher-child interactions, and children's social-emotional development. Few studies have considered teacher depression, and far fewer have specifically focused on the mental health of Head Start teachers. Although previous work suggests that teacher depression is associated with the quality of teacher-child interactions (e.g., Hamre & Pianta, 2004), interaction quality exclusively has not been tested as a mediator of the association between teacher depression and children's development. And although teachers' depressive symptoms have been linked to children's behavior problems at a single time point (Jeon et al., 2014), the present study seeks to extend these findings by utilizing both parent and teacher reports of children's social skills and problem behaviors at two time points. This strategy allows us to estimate the extent to which depression relates to changes in children's social-emotional development over the course of a school year.

The current study examines the following research questions: First, what is the association between teachers' depressive symptoms and the change from fall to spring in children's social-emotional development? Second, do teachers' emotionally supportive interactions mediate the association between depression and children's social-emotional development? Based on previous work, we hypothesize that teacher depression will be negatively associated with children's social-emotional development and that the association between teacher depression and children's development will be mediated by teachers' emotional support.

## Method

### Participants

Teachers and children in this study were participants in the Head Start Family and Child Experiences Survey (FACES), an ongoing longitudinal evaluation of Head Start conducted by the Office of Planning, Research and Evaluation, an office of the Administration for Children and Families in the U.S. Department of Health and Human Services. The study sampled Head Start children, their families, classrooms, and programs to provide descriptively rich data on the children and families served by the program as well as characteristics of the teachers and programs providing services. The most recent wave of data, FACES 2009, utilized a multistage clustered sampling strategy to select the first three stages (programs, centers, and classrooms) with probabilities proportional to size. At the final stage, children were selected with equal probabilities within classrooms with the goal of consenting 10 children per classroom, for a total sample of 3,349 children nested in 486 classrooms in 129 centers in 60 programs. These children were followed beginning in the fall of 2009

and continuing through 1 or 2 years of Head Start participation and into kindergarten. This study focuses exclusively on the first year of data collection, when all sampled children were in preschool.

The sample for the present study was composed of 2,203 children nested within 355 classrooms/teachers (in 118 centers/58 programs). Children and teachers were included if teachers remained in the same classroom and thus worked with the same children for the duration of the school year. Nearly all of the teachers were female (97.9%), with an average age of 41 years ( $SD = 10.54$ , range = 23–59). Teachers were ethnically diverse, with 47.8% indicating White; 34.8% Black; 21.1% Hispanic; and 17.7% American Indian, Asian, or other (note that categories were not mutually exclusive). On average, teachers had 13.08 years of teaching experience ( $SD = 8.49$ , range = 0–30). Most teachers had at least some postsecondary education (94.6%); specifically, 36.4% possessed associate's degrees, 33.0% bachelor's degrees, and 8.4% master's degrees.

The children in this sample were on average 47.63 months old at the time of the Fall 2009 assessment ( $SD = 6.65$ , range = 33–75). Approximately half (50.9%) of the sample was male. Moreover, 40.6% of children were Hispanic; 33.4% Black; 19.4% White; 4.8% multiracial; and 1.7% Asian, American Indian, or other. Most children (61.5%) came from families below the poverty threshold; 5.0% of children had an Individualized Education Plan (IEP) or Individual Family Service Plan (IFSP) in the fall of 2009. Most parents (70.1%) reported that the primary language spoken to the child at home was English; 46.8% of children lived with their biological or adoptive mothers only, and 42.0% of children lived in two-parent households. In terms of maternal education, 35.4% of mothers reported less than a high school diploma, 34.8% had attained a high school diploma or equivalent, 23.5% had at least some college or an associate's degree, and 6.3% had attained bachelor's degrees.

## Measures

The measures utilized in this study, described in more detail here, were collected through a variety of teacher and parent interviews as well as classroom observations. Teacher and parent interviews were conducted twice during the preschool year (once in the fall and once in the spring). Classroom observations were conducted in the spring. Descriptive statistics, including reliability estimates for all measures, can be found in Table 1.

Teacher depression was captured using the short-form of the CES-D (Radloff, 1977). Teachers indicated how they felt about themselves and their lives in the past week using 12 items rated on a 4-point scale (1 = *rarely or never*, 5 = *most or all*). Items captured feelings and behaviors commonly associated with depression, such as “You could not shake off the blues, even with help from family and friends,” “Everything you did was an effort,” and feeling “sad” or “lonely.” The CES-D was administered via in-person interviews during the fall of 2009 ( $\alpha = .80$ ) and the spring of 2010 ( $\alpha = .81$ ). To estimate teachers' average depressive symptoms over the school year, we used a mean of the two time points in analyses ( $r = .38$ ). Overall, 12.7% of teachers reported no depressed symptoms over the entire school year; an additional 80.2% had scores greater than 0 but less than 10, indicating

**Table 1.** Descriptive statistics.

Variable	M	SD	Range observed	Possible range	$\alpha$
Teacher depression	3.99	3.89	0–21.50	0–36	.80
Emotional support	5.29	0.51	2.50–6.38	0–7	.82
T-R problem behaviors: Fall	4.52	4.47	0–23	0–36	.88
T-R problem behaviors: Spring	4.29	4.61	0–28	0–36	.87
T-R social skills: Fall	15.40	4.84	0–24	0–24	.89
T-R social skills: Spring	17.25	4.64	0–24	0–24	.89
P-R problem behaviors: Fall	5.55	3.61	0–22	0–24	.72
P-R problem behaviors: Spring	5.38	3.54	0–24	0–24	.73
P-R social skills: Fall	12.05	2.55	3–16	0–16	.68
P-R social skills: Spring	12.35	2.49	2–16	0–16	.69

Note. T-R = teacher reported; P-R = parent reported.

some depressed symptoms; and 7.1% of teachers had scores greater than 10, indicating more pervasive symptoms. Although this scale does not constitute an official diagnosis of clinical depression, individuals who score at or above 10 are considered depressed (Radloff, 1977).

Emotionally supportive interactions were assessed by trained coders in Spring 2010 using the Classroom Assessment Scoring System (CLASS; Pianta et al., 2008), an observational measure of teacher–child interaction quality. CLASS training (paired with training for other observational tools) took place over 8 days in Winter 2009 using lectures on the components of the observation tool, protocol for observation, video exemplars, quizzes, and practice using the observation tool in local preschool classrooms. Observers were required to view videotapes of three classrooms, and their scores were compared to the developer’s master codes; the results were used to discuss areas that seemed unclear to observers. In February 2010, groups of three observers and one master coder observed preschool classrooms, conducting four 20-min observation cycles followed by 10 min for coding. Observer scores needed to match the gold-standard score, plus or minus 1 point, for 80% of the items in order to be considered reliable and certified to conduct field observations. A total of 20 of the 22 trainees were certified to conduct observations in the spring of 2010.

In January 2010, FACES staff contacted onsite coordinators to plan for the spring observations and determine the best time for data collection. During the spring of 2010, observers completed an average of six classroom observations per week. In each sampled classroom, coders made live observations during the morning and remained as unobtrusive as possible. Codes were recorded on paper and transferred to computer after the observation. Most relevant to this study is that observers rated teachers’ sensitivity, positive climate, lack of negativity, and regard for students’ perspectives using a 7-point scale (1 = *minimally characteristic*, 7 = *highly characteristic*) for four observation cycles. Consistent with previous work, these aspects were averaged across cycles to create a domain-level score for Emotional Support. Interrater reliability was estimated and maintained in two ways: consistency with the master coder and consistency among field observers. In Spring 2010, the interrater reliability estimates between master coders and field observers averaged 96% (range = 83%–100%). In one instance, this process uncovered an individual or team of observers with unreliable ratings. As a result, scoring discrepancies and deviations from the observation protocol were discussed and an additional reliability check was conducted that then satisfied the reliability criterion. The paired in-field reliability ratings of field observers averaged 95% (range = 83%–100%).

Children’s social-emotional development was captured from a variety of sources, including teacher-reported problem behaviors and social skills as well as parent-reported problem behaviors and social skills.

### **Teacher report**

Teachers reported on children’s skills and behavior in both the fall and spring, receiving an incentive payment for each completed form. Problem behaviors were reported using 14 items from an abbreviated version of the Personal Maturity Scale (Entwisle, Alexander, Cadigan, & Pallis, 1987) and the Behavior Problems Index (Peterson & Zill, 1986). Teachers used a 3-point scale (1 = *not true*, 3 = *very true or often true*) to indicate how often children engaged in aggressive; hyperactive; and anxious, depressed, or withdrawn behavior by indicating agreement with statements such as “The child hits/fights with others,” “The child is very restless,” and “The child is unhappy.” Children’s social skills were reported using 12 items drawn from the Social Skills Rating System (Gresham & Elliot, 1990) and the Personal Maturity Scale (Entwisle et al., 1987). Teachers indicated the extent to which a given statement was characteristic of the child, such as the child “follows the teacher’s directions” and “helps put things away,” using a 3-point scale (1 = *never*, 3 = *very often*).

### Parent report

Similarly, parents reported on children's skills and behavior in both the fall and spring via a telephone or in-person interview, depending on the parent's personal preference. The majority of respondents were the mother of the child (81.7%), and a smaller portion reported being the father (7.2%), a grandparent (3.7%), or other (1.3%). Nearly all (97.6%) of parent respondents stayed the same from fall to spring. A total of 21 items were taken from a variety of measures, including the Personal Maturity Scale (Entwisle et al., 1987), Behavior Problems Index (Peterson & Zill, 1986), Social Skills Rating System (Gresham & Elliot, 1990), and Preschool Learning Behaviors Scale (McDermott, Green, Francis, & Stott, 2000). Parents reported their agreement with statements on social skills (such as "My child makes friends easily") and problem behaviors (such as "My child is disobedient at home") using a 3-point scale (1 = *not true*, 3 = *very true or often true*). The items were then categorized into two summary scores: social skills/approaches to learning and problem behaviors. Parents who completed the entire interview received an incentive payment of \$35.

### Covariates

Covariates, including teachers' years of experience, educational attainment, and number of aides present in the classroom, were collected during the teacher interview that occurred in the fall. Teachers' ratings of school community and leadership were captured during the spring interview using a 12-item questionnaire based on the Policy and Program Management Inventory (Lambert, 2002). Teachers indicated the extent to which they agreed with statements about the workplace environment, such as "Your Head Start program makes teachers feel good about their jobs" and "Your Head Start programs provides freedom for teachers to create their own unique classrooms," using a 5-point scale (1 = *strongly disagree*, 5 = *strongly agree*). Scores ranged from 1 to 5, with an average of 3.69 ( $SD = 0.76$ ,  $\alpha = .92$ ). These covariates were selected based on previous research linking teachers' experience, education, number of classroom aides, and perceived school community with the quality of teacher-child interactions (e.g., Hamre & Pianta, 2004; McGinty, Justice, & Rimm-Kaufman, 2008; Pianta et al., 2005).

Child-level covariates, including age at the time of the fall assessment and gender, were reported by parents. Lastly, because we utilized parent-report data, we also included parent depression as a covariate. Similar to teacher depression, parent depression was captured using the previously described CES-D (Radloff, 1977). Likewise, we averaged the fall and spring depression scores together to obtain an average score representing depressive symptomatology over the year ( $r = .46$ ). Scores ranged from 0 to 34, with an average of 4.68 ( $SD = 4.99$ ,  $\alpha = .86$ ).

## Results

First descriptive statistics (see Table 1) and bivariate correlations (see Table 2) were examined. In order to adequately compare Level 1 (child) and Level 2 (teacher) variables, we aggregated Level 1 variables to the classroom level when appropriate. Correlations were mostly modest, with the

**Table 2.** Bivariate correlations.

Variable	1	2	3	4	5	6	7	8	9	10
1. Teacher depression	—									
2. Emotional support	.01	—								
3. T-R problem behaviors: Fall	.11*	-.02	—							
4. T-R problem behaviors: Spring	.19*	.08	.69*	—						
5. T-R social skills: Fall	-.07	.04	-.65*	-.47*	—					
6. T-R social skills: Spring	-.14*	.08	-.52*	-.66*	.62*	—				
7. P-R problem behaviors: Fall	.06	.00	.12*	.10*	-.13*	-.08*	—			
8. P-R problem behaviors: Spring	.15*	-.03	.16*	.16*	-.15*	-.13*	.59*	—		
9. P-R social skills: Fall	-.05	-.06	-.19*	-.16*	.18*	.15*	-.31*	-.27*	—	
10. P-R social skills: Spring	.02	-.02	-.19*	-.18*	.15*	.16*	-.22*	-.26*	.52*	—

Note. Child-level variables were aggregated up to the classroom level when appropriate. T-R = teacher reported; P-R = parent reported.

\* $p < .05$ .

exception of reports of children's social skills and problem behaviors during the fall and spring, which tended to be highly correlated. The strength of the associations between teacher- and parent-reported behaviors was mostly modest, which is consistent with previous work (Achenbach, McConaughty, & Howell, 1987; Winsler & Wallace, 2002) and is likely the result of behaviors being more or less salient in different contexts (i.e., home vs. school). Across reporters, problem behaviors tended to decrease over time, whereas social skills tended increase (see Table 1). Paired-samples *t* tests confirmed that all reports of children's problem behaviors and social skills were significantly different at the fall and spring time points.

Teacher depression was significantly and modestly correlated with teachers' reports of children's problem behaviors in the fall and spring, and their reports of children's social skills in the spring, as well as parent reports of problem behaviors in the spring. More depressed symptoms in teachers were associated with more problem behaviors and fewer social skills in children, respectively. However, more depressed teachers were not observed to be less emotionally supportive than their less depressed peers. Furthermore, emotional support was not correlated with reports of children's problem behaviors and social skills.

Next a series of two-level mediation models were conducted for children's social skills and problem behaviors as reported by teachers and parents. Using a two-level model allowed us to account for children nested within classrooms. The intraclass correlation coefficients were as follows: .28 for teacher-reported problem behaviors, .29 for teacher-reported social skills, .07 for parent-reported problem behaviors, and .01 for parent-reported social skills. Analyses were conducted in Mplus 7.11 (Muthén & Muthén, 2013) using full information maximum likelihood, which has been identified as a superior way to handle missing data (Enders, 2010). The following covariates were included in the analyses: fall (pre-) score of the outcome, teachers' educational attainment, teachers' years of experience, number of paid classroom aides, teachers' perceived school community, child's age, gender, and parental depression.

Results are presented in Table 3. In this study, there was a direct association between teacher depression and three of the four child outcomes. Specifically, after we controlled for covariates, including fall scores, teacher depression predicted children's spring problem behaviors as reported by both teachers<sup>1</sup> and parents. In addition, teacher depression predicted children's spring teacher-reported social skills. This finding did not replicate for parent-reported social skills. No significant association was found between teacher depression and teachers' provision of emotionally supportive interactions. Similarly, emotional support did not predict children's developmental gains. The hypothesized mediation model was not supported.

**Table 3.** Coefficients from models with emotional support as the mediator.

Predictor	Mediator	Outcome	$\beta$ (SE)	p
Depression	→ Emotional support		.003 (.009)	.772
	Emotional support	→ Teacher-reported problem behaviors	-.108 (.486)	.824
	Emotional support	→ Teacher-reported social skills	.299 (.386)	.439
	Emotional support	→ Parent-reported problem behaviors	-.213 (.132)	.107
Depression	Emotional support	→ Parent-reported social skills	.004 (.092)	.962
	→ Teacher-reported problem behaviors		.075 (.026)	.004*
Depression	→ Teacher-reported social skills		-.077 (.028)	.006*
Depression	→ Parent-reported problem behaviors		.055 (.019)	.003*
Depression	→ Parent-reported social skills		.003 (.013)	.829
Indirect effects				
Depression	→ Emotional support	Teacher-reported problem behaviors	.000 (.002)	.865
Depression	→ Emotional support	→ Teacher-reported social skills	.001 (.003)	.777
Depression	→ Emotional support	→ Parent-reported problem behaviors	-.001 (.002)	.771
Depression	→ Emotional support	→ Parent-reported social skills	.000 (.001)	.963

\* $p < .05$ .

<sup>1</sup>Noting the positive skew of teacher-reported problem behaviors, we performed a square root transformation and reran the analyses. However, the results did not change. Therefore, estimates from the original models are reported.



## Discussion

In the present study, we sought to identify whether and how Head Start teachers' depressive symptoms relate to children's social-emotional development and considered the quality of teacher-child interactions as a possible mediator of this relationship. We found that children in classrooms with more depressed teachers made significantly fewer positive developmental gains as reported by teachers and parents. However, contrary to expectation, teachers' provision of emotionally supportive interactions did not mediate the association between teachers' depressive symptoms and children's social-emotional development. These findings are discussed in greater detail here.

### *Depressive symptoms and children's social-emotional development*

Teachers and parents reported increases in problem behaviors, and teachers reported decreases in children's social skills, when children were in classrooms with more depressed teachers. These are important findings because although previous work has found concurrent associations between teacher depression and children's social-emotional *skills* (Jeon et al., 2014), our findings show that teacher depression also has implications for children's *development* over the course of a school year. Overall, this supports the idea that teachers' own social-emotional competence and well-being, namely, depression, relates to children's social-emotional growth (Denham, Bassett, & Zinsler, 2012; Jennings & Greenberg, 2009).

It is important to note that because teachers were one of the reporters of children's behavior, it is possible that more depressed teachers may have reported (and perceived) fewer developmental gains. Given that depression is characterized by negative perceptivity (American Psychiatric Association, 2013), a teacher who is experiencing more depressive symptoms may perceive children's development less favorably than a teacher experiencing fewer depressive symptoms. To address this shared source of variance, in the present study we also considered parents' reports of children's behavior. As previously mentioned, teacher depression related to children's problem behaviors as reported by both parents and teachers, which allows us to more confidentially ascertain an association between teacher depression and children's persistence of problem behaviors. However, in terms of social skills, depression only related to *teachers'* reports. Therefore, teachers' depressive symptoms may have negatively affected their perceptions of children's social skill development.

It is also possible that these results may be attributable to how children's behaviors and skills naturally vary across contexts, which subsequently impacts how adults in those contexts perceive a given child (Achenbach et al., 1987). For instance, a child may be more or less talkative in a classroom of 20 four-year-olds than he or she is at home with parents or siblings. In most cases, teachers have more opportunities to observe children's social behavior, at least among large groups of peers. Consequently, it is normal for parents and teachers to vary in their ratings of preschool children's social skills and problem behaviors. Evidence suggests that parents and teachers agree on social skills *less* than problem behaviors, perhaps because problem behaviors are particularly salient across contexts (Winsler & Wallace, 2002). Teacher depression may be associated with increases in both parent- and teacher-reported problem behaviors because such behaviors occur in both home and school settings. In contrast, teacher depression may only negatively influence children's social skill development at school, not at home or in other out-of-school settings, at least in ways that are perceptible to parents.

### *Teachers' depressive symptoms and emotionally supportive interactions*

To explore the possible explanatory pathway between teachers' depression and children's social-emotional development, in the present study we considered teachers' emotionally supportive interactions as a mediator but found no evidence of mediation. This is surprising given previous evidence linking teachers' depression to emotional support (Hamre & Pianta, 2004; Jennings, 2015a) and emotional support to children's social-emotional outcomes (Hamre et al., 2013; Mashburn et al.,

2008). Although the reason for these null associations is unknown, it may be possible that the 1-day CLASS observation was not sensitive enough to provide a reliable estimate of teachers' *true* interactions with children. Perhaps depressed teachers were able to appear emotionally supportive on the day of observation, but this may not represent more typical daily interactions.

In a similar vein, previous work suggests that variability in emotional support, even the variability throughout a single day of observation, may actually be more indicative of children's outcomes than an overall mean score: Emotional *inconsistency*—that is, teachers who appear enthusiastic or attentive and at other times act flat or withdrawn—may overburden children's self-regulatory resources (Curby, Brock, & Hamre, 2013; Curby et al., 2011; Tremblay et al., 2004; Zinsser, Bailey, Curby, Denham, & Bassett, 2013). Given that depression relates to one's own personal management of emotions, and a large portion of the present sample consisted of teachers with some, though arguably mild, depressive symptomatology, it may be possible that teachers' *consistency* of emotional support may have related more strongly to depression, but this notion could not be ascertained in the present study.

In addition, it is also possible that other mechanisms may account for the association between depression and children's social-emotional development. For instance, emotionally supportive interactions were captured at the classroom level, but perhaps more individualized or dyad-level measures, such as teachers' personal relationship with specific children or the nature of individual children's interactions with teachers (as measured by the Individualized Classroom Assessment Scoring System, for instance; Downer, Booren, Lima, Luckner, & Pianta, 2010), may be more explanatory. Furthermore, other potential mechanisms may include the utilization of social-emotional curricula or, in a related vein, the extent to which teachers model socially and emotionally appropriate behaviors, such as explicitly using words to describe thoughts and actions when faced with emotionally charged situations (e.g., "I am feeling frustrated with this task, I am going to take three deep breaths to calm myself down"; Jennings, 2015b). Other facets of teachers' interaction style may also be implicated (Sandilos et al., 2015), suggesting the need for further investigation.

Our exploration of Head Start teacher depression was particularly warranted based on recent estimates suggesting a high prevalence of depression among this population of teachers (Whitaker et al., 2013). It is interesting that our study estimated that approximately 7% of Head Start teachers were considered depressed, which is noticeably less than recent estimates by Whitaker and colleagues (2013), who utilized anonymous survey techniques. Instead, our estimates are similar to other *less anonymous* survey techniques (e.g., 9% in Hamre & Pianta, 2004), suggesting that teachers may underreport depressive symptoms in many research studies. It is possible that common societal stigmas related to various mental health disorders, including depression, may deter teachers from truthfully admitting their symptomatology and perhaps seeking help. As a result, it is extremely difficult to estimate the *true* incidence of depression among Head Start teachers. It is possible that the underreporting of depressive symptoms influenced our inability to detect mediation. Nevertheless, in the present study depressive symptoms, albeit underreported, related significantly to children's social-emotional development.

### **Limitations**

Given the descriptive nature of this study, no causal inferences can be made. To that point, we cannot confirm that teacher depression *causes* children to make fewer social-emotional gains per se. Similarly, we cannot rule out the possibility of a transactional relationship between depression and children's social-emotional skills—that is, the notion that teachers who work with less socially emotionally competent children may be more stressed, and perhaps more depressed as a result. In addition, for theoretical reasons, we purposely narrowed our sample to include children in classrooms who had the same teacher for the duration of the school year. Although doing so allowed us to consider the impact of a specific teacher's depression on children's development over the school year, it may have limited external validity. Also, the present inquiry focused on self-reported depressive symptoms collected via teacher interviews, which may be

underreported, perhaps because of social desirability bias, and characteristically different than clinically diagnosed depression.

### **Future directions**

Future work should continue to explore the association between teachers' mental health and children's development and seek to better understand the explanatory pathways. To the extent that it is possible, it may be particularly advantageous to utilize more anonymous survey techniques in future work to curb the likelihood of underreporting of depressive symptoms. Future work should also consider the variability in teachers' provision of emotional support as well as the extent to which teachers utilize social-emotional curricula and model socially and emotionally competent behaviors. Currently, there is a dearth of knowledge about the factors that relate to teachers' mental health, such as financial and social support, which may provide more information about how to intervene and ultimately promote teachers' well-being. Lastly, it is worth considering other facets of teachers' mental health, such as anxiety, as well as the mental health of teachers in different settings, such as Early Head Start or child care, to provide a more holistic and conclusive understanding of the early childhood workforce.

### **Conclusion and implications**

Children make significant gains in social-emotional development during the preschool years (Shonkoff & Phillips, 2000), and these early social-emotional skills have been associated with a variety of later life outcomes (Moffitt et al., 2013; Raver, 2002). Children develop social-emotional skills largely through their interactions with adults (Mashburn et al., 2008; Yoshikawa et al., 2013). In preschool settings, early childhood educators are vital contributors to young children's development. Our findings show that Head Start teachers' depressive symptoms relate directly to children's social-emotional development during the preschool year. As preschool continues to become increasingly commonplace and more is expected of preschool teachers, it is necessary to consider the social and emotional well-being of the workforce. It is easy to think of various ways in which the early childhood teaching profession is stressful as well as ways in which the workforce may not be adequately supported. Emerging evidence suggests that stress reduction or mindfulness-based interventions offer a promising means of decreasing teachers' depressive symptoms (e.g., Gold et al., 2010; Jennings, Frank, Snowberg, Coccia, & Greenberg, 2013; Roeser et al., 2013). More wide-scale efforts are needed to holistically support early childhood teachers, which will ultimately benefit the youngest learners.

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