



Teacher depression as a dynamic variable: Exploring the nature and predictors of change over the head start year



Annemarie H. Hindman^{a,*}, Andres S. Bustamante^b

^a Temple University, USA

^b University of California, Irvine, USA

ABSTRACT

This study used the Family and Child Experiences Survey, 2009 cohort, to explore the levels of depression among a nationally representative sample of Head Start teachers at the beginning and end of the preschool year. Results showed that one in three Head Start teachers reported some depression either in fall or spring, and that change in depression between fall and spring was commonplace. Characteristics of individuals (initial depression, Hispanic/Latino ethnicity), classrooms (class size, number of DLLs, average child prosocial skills), and the workplace (peer depression, curriculum support, positive workplace climate, number of employer-provided benefits) were linked to change in teacher depression. Moreover, reduced depression over the course of the year was uniquely predictive of children's gains in prosocial skills and declines in problem behaviors, as rated by teachers; however, no associations emerged between teacher depression and parent-rated child socioemotional outcomes. Overall, results undergird the importance of considering teacher depression as a dynamic construct in early education settings. In addition, findings highlight common method variance as a potential methodological challenge in this line of research for which future studies should carefully account.

Introduction

There is clear evidence in the literature that mental health and wellness is an important but little-understood facet of a teacher's professional and personal experience (Jennings, 2016; Roeser, Skinner, Beers, & Jennings, 2012). Of particular importance is teacher depression, which may be quite widespread across the field (Whitaker, Dearth-Wesley, & Gooze, 2015). Examining the nature and frequency of depression among teachers may be particularly pressing in early childhood (EC) education, including preschool or prekindergarten, in light of the high cognitive demands and emotional strain, as well as the comparatively low pay, attendant to these positions (Whitebook, McLean, Austin, & Edwards, 2018). An especially important group to explore includes Head Start preschool teachers, who serve the nation's most vulnerable learners in some of the highest need communities. Little is known about depression within this group (Becker, Gallagher, & Whitaker, 2017), particularly regarding how depression changes over the year and which contextual, workplace factors play a role over time (Roberts et al., 2017, b). Thus, the current longitudinal study explores the nature and predictors of teacher depression and its dynamic change between two points in time, in a nationally representative sample of Head Start lead teachers, as well as its unique links to children's learning and development throughout preschool.

We begin by explaining the nature and extent of depression among adults, including teachers. We situate these findings in the Demand-

Support-Control framework of workplace factors that might contribute to (i.e., exacerbate or ameliorate) teacher depression, and we summarize the empirical literature regarding various relevant factors in EC settings. Thereafter, we use a recent cohort (2009) of the nationally representative Family and Child Experiences Survey dataset to examine how Head Start teachers' self-reported symptoms of depression change from fall to spring of one academic year, as well as how specific demand, support, and control factors uniquely predict this change. Finally, we test how change in teacher depression relates to preschoolers' cognitive and socioemotional learning. Ultimately, this work offers a rich and comprehensive exploration of EC teacher depression as a dynamic construct in the nation's largest and highest need early intervention context.

Prevalence of depression among adults

Depression, as defined as by the DSM-5 (American Psychiatric Association, 2013), has multiple symptoms, the core of which include frequent and prolonged depressed mood (e.g., sadness, hopelessness, emptiness) and diminished interest in most daily activities. Other characteristics that may, in varied combinations, accompany these core symptoms include difficulty concentrating or making decisions, fatigue and sleeping disturbances, feelings of lethargy or agitation, inappropriate and consuming feelings of guilt, and even persistent thoughts of death. Major depression is relatively common among

* Corresponding author at: 1301 Cecil B. Moore Avenue, Ritter Hall 435, Philadelphia, PA 19122, USA.

E-mail address: ahindman@temple.edu (A.H. Hindman).

American adults, affecting an estimated 16 million people each year, or approximately 7% the population (NIMH, 2018). An additional 1.5% of the population experiences dysthymia, or chronic, low-level depression (Kessler, Chiu, Demler, Merikangas, & Walters, 2005).

Depression is rooted in a complex array of chemical reactions in the brain, which are in turn affected by a large constellation of factors, including those of biological (e.g., genetics, hormones, illness), environmental (e.g., diet, stressful or traumatic events) and cognitive (e.g., coping skills) provenance (Gotlib & Hammen, 2014; Rantala, Luoto, Krams, & Karlsson, 2018). Accordingly, depression is a dynamic condition, with some suffers experiencing temporary bouts, while other find that symptoms wax and wane over the course of their lifetime (Chondros et al., 2018; Heinz et al., 2018). At any given time, though, the prevalence of depression is substantially higher – up to 1.7 times greater – among women (Albert, 2015). Given its high overall prevalence and multifaceted and potentially devastating symptoms, depression represents one of the greatest contributors to disability designation – especially for women – in the nation, as well as around the world (NIMH, 2018). And, as a relatively large percentage of the adult population struggles with depression, this condition has an important, if sometimes unseen, presence in nearly all workplaces, potentially affecting attendance, productivity, interpersonal relationships in collaborative tasks, and likelihood of quitting (NIMH, 2018).

Prevalence and impact of depression among teachers

There is considerable evidence that depression, as well as related negative emotions including burnout, depersonalization, and anxiety, are common among teachers in the primary and secondary grades, both throughout the United States (Grund, Brassler, & Fries, 2016; Hargreaves, 1998; Jennings & Greenberg, 2009; Montgomery & Rupp, 2005; Richards, Levesque-Bristol, Templin, & Graber, 2016) and around the globe (Papastyliaou, Kaila, & Polychronopoulos, 2009). This teacher depression also matters for students, predicting negative emotion (Oberle & Schonert-Reichl, 2016) and smaller achievement gains (Klusmann, Richter, & Lüdtke, 2016) among primary and secondary students. The mechanisms behind this association are likely quite similar to those underlying the effects of parental depression on child outcomes (most frequently, maternal depression, but see Paulson & Bazemore, 2010 for information on paternal depression); an extensive literature shows that more depressed adults offer less verbal and emotional responsiveness toward children as well as less overall cognitive and social engagement, which in turn translates into fewer scaffolded opportunities for children to build language and social competence (Ahun et al., 2017; Baker & Kuhn, 2018; Mazza et al., 2017; Norcross, Leerkes, & Zhou, 2017). It is likely that, in parallel to families, depression among teachers consumes cognitive and emotional energy, leaving these caregivers with fewer personal resources to engage with and respond to children.

Mounting evidence suggests that teacher depression may be widespread in EC classrooms. First, Whitaker et al. (2015) surveyed 1001 Pennsylvania Head Start lead and assistant teachers online, and fully 25% reported clinically significant levels of depression (marked by a score on the Center for Epidemiological Studies-Depression (CES-D) tool at or above 16). Further, more self-reported workplace distress among teachers was associated with more self-reported teacher-child conflict. A subsequent study by Roberts, LoCasale-Crouch, Hamre, and DeCoster (2016) used the nationally representative Family and Child Experiences Survey (FACES) dataset (2009 cohort) to explore depression among Head Start educators. The study averaged Head Start teachers' fall and spring self-reports of depression, determining that 7% of teachers experienced clinically significant levels of depression, while an additional 70% experienced at least some (i.e., sub-clinical) degree of symptoms during the year. Moreover, teacher depression was linked to slower child social skill development, whether those skills were rated by teachers or parents. Interestingly, though, links between teacher

depression and child outcomes were not mediated by the quality of teacher-child interaction, suggesting that there may be a variety of pathways by which teacher depression makes its way to children's skills, and implying that effective interventions to buffer these adverse outcomes would ideally be multifaceted.

Growing concerns about teacher depression in EC dovetail with observations regarding less-than-optimally effective instruction. High-quality EC education is widely recognized as a critical early investment in children's academic success that pays substantial dividends over time, particularly for children from households in poverty who may need extra support to build the specific language, literacy, mathematics, and social skills that they will need in kindergarten (Englund, White, Reynolds, Schweinhart, & Campbell, 2014; Reynolds, 2010). However, EC classroom instructional and affective quality is often low, particularly in settings serving children in poverty who arguably need these experiences the most (Pianta, LaParo, & Hamre, 2006). Moreover, despite a great deal of recent private and public funding efforts, relatively few improvements in EC instructional quality have been realized (Jackson et al., 2007; PCER, 2008; U.S. Department of Health and Human Services, 2010), leaving the nation's early socioeconomic achievement gap largely unchanged (Neuenschwander, Friedman-Krauss, Raver, & Blair, 2017). Finally, EC teacher turnover rates remain high – for example, Head Start loses 25% of teachers each year, as compared to 8% among K-3 teachers – meaning that advances made by professional development efforts may be quickly lost. Overall, then, as EC faces considerable, systemic challenges to teacher quality and child outcomes, improving teacher well-being (particularly lowering depression) may be a critical but unexplored keystone in a structure that could undergird greater success. What remains uncertain, however, is which specific factors attendant to the workplace context might contribute to EC teacher depression, particularly as it might increase or diminish over the academic year.

Why EC teachers might feel depressed: the demand-control-support model

As above, depression is thought to grow from and fluctuate with a complex array of factors whose individual and cumulative influence likely differs across individuals. However, a considerable body of work has begun to explore how features of the workplace might uniquely improve (or, unfortunately, worsen) depression symptoms among employees (Kahn & Byosiore, 1992; Kelloway & Barling, 2010; Rafferty & Griffin, 2006; Sonnentag & Frese, 2003). In particular, Karasek's demand-control-support model (DSC; Johnson & Hall, 1988; Karasek Jr, 1979) suggests that workers' outcomes are connected to the degree of challenge, autonomy, and assistance attendant to their role. Below, we use this theory as a lens to elucidate how EC working conditions are, in many ways, alarmingly poor, even as the stakes for teachers' success are enormously high, a combination that may foster depression among some educators.

Demand

The DSC model suggests that worker well-being first depends upon the demands of the position, including the degree to which these demands draw on workers' resources related to time, emotional balance, attention, cognitive load, background knowledge, and expertise. Karasek and colleagues (Karasek Jr, 1979) posited that very high-demand jobs – specifically, those for which employees face significant barriers to carrying out tasks successfully – place greater burdens on well-being, which in turn raises workers' risks for adverse outcomes such as depression.

Child behavior. Among the chief job demands reported by EC teachers is disruptive and/or off-task child behavior (Rimm-Kaufman, La Paro, Downer, and Pianta, 2005). Because preschool classrooms generally involve just two teachers serving at least 16 children ages 3–5, even one child with challenging behaviors (e.g., aggression, hyperactivity, or

even withdrawal) can consume one or both teachers' attention and engender dysregulation among peers (Brock & Beaman-Diglia, 2018). In turn, classroom chaos can drain teacher energy and promote depression (Jennings, 2015; Malinen & Savolainen, 2016; Milatz, Lüftenegger, & Schober, 2015). Given that many EC teachers report high levels of problem behaviors in their classrooms (Downer, Rimm-Kaufman, & Pianta, 2007), this issue may be widespread.

Child skills. A lack of background knowledge among students can increase the complexity and individualization of instruction needed. For example, children whose native language is not English (Klusmann et al., 2016; Weinstein & Trickett, 2016), termed dual language learners (DLLs), often need additional instruction (Katz, 1999) that requires supplementary practices (Hammer, Jia, & Uchikoshi, 2011) and materials (Markham, 1999; Naqvi, Thorne, Pfitscher, Nordstokke, & McKeough, 2013). Similar needs may emerge among native English speakers whose language skills are less mature upon entry into school (Hindman, Skibbe, Miller, & Zimmerman, 2010). Relatedly, classrooms with a high proportion of younger children may be more demanding, both linguistically and behaviorally.

Class size. Although maximum teacher: child ratios are tightly controlled by state (and, for Head Start, federal) legislation, teaching a relatively larger class of children that approaches the allowed maximum might strain teachers' attention and energy.

Control

The second key feature of the DSC involves the extent to which the worker has control, most often operationalized as decision latitude or discretion, over their job-related activities. In general, Karasek and colleagues (Karasek Jr, 1979) posited that more control would be linked to more adaptive outcomes.

Curricular decision-making power. Many teachers in K-12 settings perceive themselves as having little flexibility in how they spend their classroom time and energy (Fernet & Austin, 2014; Fernet et al., 2016), and the same appears to be true in EC. Modern, high-quality curricula are often quite specific in their scope and sequence of activities (e.g., Opening the World of Learning, Tools of the Mind, Creative Curriculum), offering very detailed guidance, especially around code-focused literacy instruction and some features of mathematics (Neuman, Newman, & Dwyer, 2010). Increased frequency and standardization have also emerged regarding assessment (including curriculum-based progress monitoring) and documentation of children's learning (Akers et al., 2015; Leana, Appelbaum, & Shevchuk, 2009; Whitaker et al., 2015). However, child skills and interests are often quite diverse in EC (Denton & West, 2002), requiring teachers to individualize instruction. Accordingly, a lack of curricular authority for teachers is linked to adverse outcomes for their well-being (Evers, Yamkovenko, & Van Amersfoort, 2017).

Job satisfaction. Job satisfaction, as measured by indicators such as enjoying the tasks that comprise a position, believing that one's work has value, and anticipating choosing the same job again if given the opportunity, reflects in large part a teacher's perception that he or she has the expertise and tools needed to successfully carry out assigned tasks. As such, this variable is most congruent with the Control category. Job satisfaction is linked to positive affective outcomes in the workplace (Farinde-Wu & Fitchett, 2018). Indeed, in EC and other fields, teachers' job satisfaction, and particularly their bonds with and dedication to the children and families they support, may provide a buffer against potentially adverse effects of stressors (Carson, Baumgartner, & Ota, 2017; Toker, 2011).

Support

Over time, the DCS model has evolved to include a third component reflecting support in the workplace which, like control, was broadly hypothesized to advance positive outcomes (Chen, 2016).

Social support. Social support includes strong and rewarding relationships with employees, peers, and superiors, as well as the absence of conflict. The DCS model specifically highlighted social support as a critical resource, and recent work robustly supports this hypothesis (Chen, 2016; Fernet et al., 2016; Johnson, Pas, Loh, Debnam, & Bradshaw, 2017). It is plausible that social support offers educators, including teachers, the opportunity to process negative emotions, reducing their adverse impact. However, given the teamwork involved in EC, it is also possible that positive social interactions lead to more productive teaching partnerships, which may in turn ease workday challenges.

Skill supports. Research in education (e.g., Demerouti, Bakker, Nachreiner, & Schaufeli, 2001; Nahrgang, Morgeson, & Hofmann, 2011; Schaufeli & Taris, 2014) has broadened the array of potential workplace supports in the DSC to include pre-service preparation and in-service experience in the field (Lauermann & König, 2016). In EC, although many experienced teachers are employed, teacher preparation is highly variable, with Child Development Associate credentials or two-year associate's degrees serving as the terminal degree in most settings (although Head Start and many state-funded public prekindergarten programs have begun to require bachelor's degrees for some teachers).

Curricular training. One specific support of value is ongoing professional development that helps teachers become fluent, expert users of complex curriculum packages, able to make use of opportunities to adjust curricula to their classroom's needs (Yoon, Duncan, Lee, Scarloss, & Shapley, 2007). Both EC and K-12 programs vary in the prevalence of curricular training, which affects teachers' instructional facility (Dailey & Robinson, 2016). Particularly in Head Start, frequent changes in curriculum-related policies (see ACF, 2015) as well as aligned PD (Howard et al., 2013) can further impede teachers' mastery of target instructional practices.

Compensation. Compensation (i.e., salary and benefits) flags among EC teachers. Infant and toddler teachers are in the third percentile of all workers in pay, while preschool teachers are in the 19th percentile (Lowe & Vandell, 2017). Accordingly, an astonishing 40% of Head Start teachers receive such low pay that they qualify for federal needs-based assistance (e.g., Medicaid, SNAP), including Head Start for their own children (Whitebook, McLean, & Austin, 2016).

Summary

Because growing up in poverty places young children at risk for academic difficulty, it is imperative to understand the prevalence of demand, control, and support factors on teachers in high-need communities, especially in national-scale programs such as Head Start.

Current study research questions

The current study fills the gaps in the literature by posing four research questions:

1. In a nationally representative sample, what is the nature and variability in Head Start of teacher self-reported depression at the beginning and end of the academic year, and how do teachers change between these two time points? In the absence of prior studies on this point, we anticipated that at least some teachers would report changes in their depression levels – likely some increasing and some decreasing – but that, given national population

prevalence data, most teachers would report no depression at any point throughout the year.

2. What demand, control, and support factors predict initial teacher depression and change over time? In light of the prior literature, we expected that higher ratings on demand-related variables would be linked to increased depression over the year, whereas greater control and support would be linked to lessened depression. Associations would likely be modest, given that most teachers are unlikely to report depression at all.
3. How do initial teacher depression and change in depression over the year uniquely relate to observed classroom quality? Given prior findings, we hypothesized that greater fall depression or increased depression from fall to spring would be reflected in lower classroom quality, while lower initial or steadily lessening depression would be linked to higher quality.
4. How do initial teacher depression and change in depression over the year uniquely predict Head Start children's cognitive and social-emotional outcomes, directly and through classroom quality, accounting for a variety of background factors? We anticipated that both higher initial depression and increased depression over the year would predict less child learning, and that the inverse pattern would emerge for initially low and/or systematically lessened depression. Moreover, we considered that relations might be attenuated among parent-rated child outcomes, given the absence of common method (i.e., teacher-report) variance.

Method

Procedure

These data are drawn from the Family and Child Experiences Survey (FACES), 2009 cohort, a large-scale, nationally representative study of children and families in their first year of Head Start preschool (West, Tarullo, Aikens, Malone, & Carlson, 2011). FACES 2009 is the second-most-recent dataset in the series and was used by Roberts et al. (2016) to study teacher depression, affording comparisons between these two studies.

Head start and FACES

Head Start is a federally funded preschool program targeting children and families in or near poverty. Active in all 50 states and the District of Columbia, Head Start serves > 1,000,000 families each year and, as such, represents the single largest educational intervention aimed at this population. Children attend school for up to two academic years, including preschool for 3–4-year-old children and pre-kindergarten for 4–5-year-old children. Participants in this cohort of the FACES study were selected from the total population of Head Start programs in the United States and then stratified into groups with approximately equal enrollments using key demographic variables (e.g., geographic region, metropolitan status, percent minority, auspice type, and percent of English language learners). Using probability-proportional-to-size methods, particular programs were identified, individual centers within each program were selected, classrooms in each center were chosen, and a fixed number of children from selected classrooms were recruited. Approximately 90% of eligible children, families, and educators consented to participate.

Data collection

Teachers were surveyed twice, in fall and spring, on their levels of depression, and in spring they also commented on their perceptions of their workplace. Also in spring, program administrators (i.e., directors and education coordinators) offered information about workplace compensation and climate. Teachers' classrooms were directly observed in spring. Finally, both three- and four-year-old Head Start children were individually and directly assessed on vocabulary in fall and spring. Also at both the fall and spring time points, teachers and parents

Table 1
Descriptive Statistics.

Variable	Mean	SD	Range	Percent
Teacher variables				
Depression, fall	4.27	4.68	0–36	
Depression, spring	3.82	4.43	0–25	
CLASS instructional support	2.29	0.65	1.00–4.56	
CLASS emotional support	5.30	0.50	2.50–6.38	
CLASS classroom organization	4.65	0.65	2.33–6.17	
Class size	17.15	2.11	8–20	
Number of 3 s in class	6.60	5.14	0–18	
Number of DLLs in class	4.64	5.55	0–20	
Curriculum support	4.82	2.30	0–8	
Job satisfaction	4.55	0.66	1–5	
Positive workplace climate	3.77	0.71	1–5	
Salary, in dollars	27,407	10,250	10,000–50,000	
Hours of work per week	38.05	3.58	8–40	
Experience in years	13.02	8.81	0–30	
Curriculum decision making				79%
Receives benefits				80%
Education				
Working toward Associate's degree				17%
Associate's degree				35%
Bachelor's degree				37%
Master's degree				11%
Ethnicity (choose all that apply)				
African American				31%
Hispanic/Latino				21%
Other background				18%
White				53%
Gender				
Female				99%
Male				1%
Child variables				
Child age in months, fall	45.91	6.58	27–32	
Maternal depression score in spring	4.69	5.66	0–36	
Gender				
Female				50%
Male				50%
Ethnicity				
African American				35%
Hispanic/Latino				35%
Other				8%
White				22%
Dual language learner				
Yes				27%
No				73%
Maternal education				
No high school diploma				36%
High school diploma				64%

separately reported on children's social competence and problem behaviors.

Data weights

The FACES team constructed a series of weights that allows for the calculation of parameter estimates that represent the larger population of children who began their first year of Head Start in 2009; in other words, weights adjust estimates to be representative of the national population at that time, taking some attrition into account. In this study, for analyses with teacher-level outcomes, we used variable T12OCLSWT, and for child-level outcomes, we used variable PRA12OCW. Weights were normalized to have a mean of 1.

Participants

Participants included 362 teachers serving a total of 2381 children enrolled in the FACES study (noting that not all children in each classroom were enrolled in FACES, so teachers taught > 6–7 children). Because these data were de-identified by the original research team before distribution, this study was certified as exempt by our

university's IRB. Complete descriptive data are provided in Table 1; however, a brief summary follows.

Teachers

Nearly all (99%) were women. Half (53%) of teachers reported their race/ethnicity as white, while 31% were Black and 21% were Hispanic/Latino (categories not mutually exclusive). Overall, 17% of teachers had a high school degree, 35% of teachers held an associate's degree, 37% held a bachelor's degree, and 11% held a master's degree. Teachers had an average of 13 years of experience in teaching ($SD = 9$ years).

Children

On average, children were 46 months of age ($SD = 6$ months) in fall, with 49% beginning their preschool year and 51% starting their pre-kindergarten year. The sample was evenly divided by gender. Most children were Black (35%) or Hispanic/Latino (35%), while 22% were white and 8% were of other backgrounds. One in four children (27%) spoke a language other than English at home, primarily Spanish. Among mothers, 33% had not completed high school, 34% had a high school degree only, 25% had enrolled in a 2- or 4-year college (including completing an AA), and 8% had a bachelor's degree. The average income-to-poverty ratio was 2.52, indicating a high degree of disadvantage, as expected.

Classroom composition

Average class size was 17.15 children ($SD = 2.11$). Average number of three-year-olds was 6.60 ($SD = 5.14$), or 38% of the class. Average number of DLLs was 4.64 ($SD = 5.55$), or 27% of the class.

Measures

Teacher depression

Teacher depression was measured twice, in fall and spring, using the Center for Epidemiological Studies-Depression (CES-D) tool (Radloff, 1977; Radloff & Locke, 1986). This short, self-report form included 12 items on which respondents rated the extent to which particular challenges (e.g., "I have trouble shaking off the blues" or "Everything I do is an effort") described their own experiences from 0 (rarely or never) to 3 (most or all of the time). A sum of the items was created. Evidence from a wealth of research, including FACES reports, has established that all items of this tool load onto one factor; we replicated this result in the current study, and internal reliability of the items was adequate ($\alpha = 0.82$ for fall and 0.81 for spring).

Demand-related variables

To tap classroom composition, teachers reported on their class size, number of DLLs, and number of three-year-olds in fall. To tap child behavior, in fall, parents reported on children's prosocial skills (see below). Finally, to tap child skills, in fall, assessors gauged children's receptive vocabulary (see below). These were aggregated to the classroom level so as to yield one value for each teacher that could predict change in depression.

Control-related variables

To tap curricular decision-making power, in fall, teachers were asked, "Who makes most decisions about the curriculum," with response options including administrators, teachers, parents, or someone else.

To gauge job satisfaction, in spring, teachers responded to three items, including "I enjoy my present teaching job," "I make a difference to children," and "If I could start over, I would choose teaching." Teachers used a 5-point scale (from strongly disagree to strongly agree). Items had adequate internal reliability ($\alpha = 0.80$), and a single mean score among the items was created.

Support-related variables

To tap social support, in spring, teachers responded to 13 items ($\alpha = 0.92$) reflecting positive social support, including "The center promotes teamwork among teachers," "Teachers don't feel isolated," and "The atmosphere is free from gossip." Teachers rated each item from 1 (strongly disagree) to 5 (strongly agree). A mean score was created across all items.

For skill support, education and experience were measured with the teacher fall background survey. Regarding compensation, in fall, teachers reported on their total salary, benefits, and hours worked per week.

Tapping curricular training, in spring, teachers were asked whether or not they had received any of nine kinds of curricular training (e.g., "Help understanding the curriculum" and "Opportunities to observe the curriculum in use"); we conceptualized these items as an index, such that a "yes" score on one question would not necessarily be correlated with a "yes" score on any others, and we calculated a total sum without exploration of inter-item reliability (Babbie, 2012).

Classroom quality

Classroom quality was measured using the Classroom Assessment Scoring System (CLASS; Pianta et al., 2006) during a four-hour direct observation. The CLASS measures the quality of interaction in three domains: Instructional Support (including the three subscales of Concept Development, Language Modeling, and Quality of Feedback), Emotional Support (including the three subscales of Positive Climate, Negative Climate, Teacher Sensitivity, and Regard for Student Perspectives), and Classroom Organization (including the three subscales of Behavior Management, Productivity, and Instructional Formats). Items are scored on a 7-point scale, with higher scores reflecting higher quality care. Internal consistency for the three domains ranged from 0.79 (Instructional Support) to 0.91 (Emotional Support). The average inter-rater reliability (within one point of ratings from master raters) was 87%.

Child outcomes

Vocabulary was directly and individually assessed in fall and spring by a trained assessor. Prosocial skills and problem behaviors were assessed in the fall and spring of the first year of Head Start by the parent, and also separately by their teacher.

Vocabulary. Children were directly assessed on a the Peabody Picture Vocabulary Test-4 (PPVT; Dunn & Dunn, 2007). The PPVT is a well-established measure of English receptive vocabulary in which children choose one target image out of four to match a prompt provided by the experimenter. All children were assessed in English. The measure has high reliability in standardization samples (Dunn & Dunn, 2007), with internal consistency above 0.96, test-reliability above 0.92, and alternate-form reliability above 0.87. In the FACES 2009 study, internal reliability was high in fall (0.97) and spring (0.95). This measure provides a raw score, an age-normed standardized score, and an IRT score that accounts for item difficulty (W score). In this study, W scores were used in analyses to capture change from fall to spring. However, it should be noted that this measure was normed only on monolingual children, meaning that PPVT scores of the Spanish-English bilingual children in the current study must be considered a general estimate rather than a precise measurement. In fall, the average W score on this measure was 100.82 ($SD = 24.01$), and the average W score increased about one-half of a standard deviation over the year ($M = 113.05$, $SD = 20.168$).

Prosocial skills. Parents assessed children's prosocial skills using 16 items drawn from the Personal Maturity Subscale, the Social Skills Rating System, and the Preschool Learning Behaviors Scale (PLBS) (McDermott, Rikoon, Waterman, & Fantuzzo, 2012). Parents rated the degree to which a statement (e.g., "Makes friends easily") accurately

described their child on a scale from 1 (not true) to 3 (often or very true). Items tapped into children's engagement in activities, cooperation and compliance, and appropriate attention management. Internal consistency (alpha) values for all component measures contributing to this social tool exceeded 0.72; reliability for this study was not reported by the FACES team, and item-level data are not available in light of copyright issues (see User's Guide; Malone et al., 2013). In general, parents rated children's prosocial skills as relatively high ($M = 12.08$, $SD = 2.63$ in fall and $M = 12.67$, $SD = 2.50$ in spring).

Teachers assessed children's prosocial skills using items from the Personal Maturity Scale (Entwisle & Alexander, 1998; Zill & Daily, 1993) and the Social Skills Rating System (SSRS; Gresham & Elliot, 1990). Teachers responded to 12 items using a 3-point rating scale very similar to the one presented to parents (i.e., 1 = never, 3 = very often), noting how well a statement reflected a child's behavior over the past month. Each child received a total score summing across all items (possible range = 12–36). Throughout FACES, including the 2009 cohort, alpha reliability met or exceeded 0.85. On average, teachers rated children's prosocial skills as relatively high ($M = 28.18$, $SD = 4.68$ in fall and $M = 29.92$, $SD = 4.30$ in spring).

Problem behaviors. Parents rated children's problem behaviors on 21 items drawn from the Behavior Problems Index (Peterson & Zill, 1986), including items focused on aggression, hyperactivity, and social withdrawal. As with prosocial items, parents rated the degree to which an item characterized their own child's actions on a 3-point scale (1 = not at all, 3 = often). This tool has an internal reliability ranging from 0.88 to 0.89 in other large-scale, national studies (NLSY; Berry, Bridges, & Zaslow, 2004). Overall, parents reported that children had few problem behaviors ($M = 5.73$, $SD = 3.71$ in fall and $M = 5.50$, $SD = 3.67$ in spring).

Teachers rated children's problem behaviors using 14 items drawn from the Personal Maturity Scale (Entwisle & Alexander, 1998) and the Behavior Problems Index (Peterson & Zill, 1986); items addressed aggression, hyperactivity, and social withdrawal and were rated on a 3-point scale (i.e., not true to very true). Alpha reliability exceeded 0.82 to 0.86. On average, teachers rated problem behaviors as relatively low ($M = 4.01$, $SD = 4.32$ in fall and $M = 3.81$, $SD = 4.27$ in spring).

Missing data

As above, weights accounted for a good deal of missing data, adjusting parameter estimates by drawing from participants with complete data so that estimates continued to represent the larger population. At the teacher level, for those with non-zero weights (i.e., those with requisite teacher and classroom observation data), no more than three teachers (< 1% of the sample) were missing data on any variable. At the child level, for those with non-zero weights (i.e., those with requisite teacher, classroom, parent, and direct assessment data), missingness was higher. Of the 2381 children in the FACES 2009 weighted sample, fully 200 were missing information on one or more background factors (e.g., maternal education, poverty-to-income ratio data), with higher rates for missing parent depression data at either time point ($n = 294$) or disability status ($n = 320$). Fewer than 100 children were missing teacher-reported social skills data, but up to 265 were missing parent-reported social skills data. Thus, up to 13% of children were missing at least one piece of information. ANOVA and chi-square analyses showed that missingness was related to factors such as lower vocabulary and minority ethnicity; consequently, we considered data to be missing at random (which, somewhat counterintuitively, refers to data that are missing in relation to covariates included in the study but, to the best of our knowledge, not in relation to the values of that variable itself) (see Widaman, 2006). Because listwise deletion has the potential to introduce bias into the sample of this nature (see Allison, 2001; Enders, 2010), we used multiple imputation in the SPSS Missing Values module and created five complete datasets. Outcome variables (i.e.,

vocabulary, parent- and teacher-rated social skills) were not imputed but instead were used as predictors in imputation models for other variables. Resulting means and standard deviations for imputed variables were identical to those of the variables in the original data.

Results

Question 1: nature and variability of depression

Descriptive analyses showed that teacher self-reported depression levels were, on average, quite low in fall ($M = 4.27$, $SD = 4.68$, range = 0 to 36) and in spring ($M = 3.82$, $SD = 4.43$, range = 0 to 25). Paired-samples *t*-tests revealed that these values were not significantly different, and that rates of depression were stable throughout the year, $t(359) = 1.54$, $p = .124$, and $d = 0.10$. However, while the majority of Head Start teachers (65%) reported no depression, it is important to note that a considerable minority of teachers (35%, or more than one in three) expressed at least moderate depression at each time point. Specifically, in fall, fully 25% of teachers expressed mild depression, while 7% expressed moderate depression and 3% expressed severe depression. In spring, these numbers were only slightly different, with 67% of teachers expressing no depression, 22% reporting mild depression, 8% reporting moderate depression, and 3% reporting severe depression.

Interestingly, while there was little change in the total number of teachers reporting depression, the bivariate correlation between depression scores in fall and spring was relatively low ($r = 0.27$, $p < .001$), suggesting that some teachers became more depressed over the year while others became less depressed. In fact, a total of 52 teachers, or 16%, moved from reporting some degree of depression to no depression, while 59 teachers (14%) moved in the opposite direction. In other words, 30% of teachers changed in status during the year, and 53% of teachers reported experiencing some depression on at least one occasion over the school year.

Question 2: predictors of depression

Analytic strategy

Because teachers ($n = 362$) were nested within Head Start centers ($n = 127$), we employed two-level hierarchical linear models to test predictors of teacher depression. We constructed two models: one in which fall depression was the outcome, and a second in which spring depression was the outcome (including fall depression as a predictor). In this way, we were able to examine how individual and contextual factors uniquely related to both teacher self-reported depression in fall and the difference in self-reported depression between fall and spring. We used HLM version 7.01. All variables were grand-mean centered, given (a) the small number of teachers per center, as well as (b) the absence of theoretical evidence for meaningful differences in effects between centers, and (c) indications from preliminary models that effects of predictors did not vary across centers (i.e., p for all random slopes > 0.20). We would note that, while both teacher depression variables were right-skewed (as most teachers expressed no depression at each time point), residuals of the models were normally distributed.

Fall depression

The fully unconditional model showed that 5% of the total variance in fall depression was clustered between centers ($p = .005$). As in Table 2, individual background factors were unrelated to how Head Start teachers rated their own depression in fall, including experience, education, and remuneration (i.e., salary and benefits). Ultimately, the full model explained all significant variance between centers ($p = .096$).

Spring depression

This model (see Table 3) included the predictors from the fall

Table 2
Predictors of Teacher Depression in Fall.

Fixed effect	Coefficient	Standard error	t-ratio	Approx. <i>d.f.</i>	<i>p</i> value
Intercept	4.34	0.30	14.38	59	< 0.001
Teacher experience	-0.03	0.038	-0.94	265	0.349
Teacher bachelor's degree	-0.55	0.76	-0.73	265	0.466
Teacher master's degree	-0.21	1.00	-0.21	265	0.831
Hispanic/Latino	-0.65	0.83	-0.78	265	0.436
African American	1.17	0.73	1.61	265	0.109
Other background	0.25	0.93	0.26	265	0.792
Teacher Benefits	-1.41	1.20	-1.28	265	0.200
Salary per hour	-0.00	0.00	-0.68	265	0.496

Random Effect	Standard deviation	Variance component	Chi-square	<i>d.f.</i>	<i>p</i> value
Intercept, U_0	0.45	0.20	73.58	59	0.096
Level 1, r	4.66	21.67			

depression model but also included fall depression and demand, control, and support variables reflecting facets of the workplace that would become relevant over the course of the year. All variables were grand-mean centered, except for fall depression, which we group-mean centered because initial models showed that its slope varied across centers ($p < .001$). In addition, to account for fall depression in the estimation of the intercept, we included a variable for center-aggregated teacher fall depression at level 2. The fully unconditional model showed that 8% of the variance in spring depression lay between centers ($p < .001$).

Results from the final model with all predictors revealed that teachers who were more depressed in fall, relative to other teachers in their center, were more depressed in spring ($B = 0.21, p = .006$). Teachers were also more depressed in spring if there were higher overall levels of depression in their center ($B = 0.43, p = .004, d = 0.05$). Regarding personal background characteristics, spring depression varied reliably with only one ethnic identification, as it

Table 3
Predictors of Teacher Depression in Spring.

Fixed Effect	Coefficient	Standard error	t-ratio	Approx. <i>d.f.</i>	<i>p</i> -Value
Intercept	3.75	0.21	18.10	58	< 0.001
Average depression in center	0.43	0.14	3.01	58	0.004
Teacher depression, fall	0.21	0.07	2.88	59	0.006
Class size	0.29	0.13	2.33	195	0.021
Number of 3 s in class	0.10	0.06	1.79	195	0.075
Number of DLLs in class	-0.18	0.08	-2.30	195	0.022
Curriculum support	-0.20	0.10	-2.03	195	0.043
Decision making	0.08	0.57	0.14	195	0.888
Teacher experience	-0.00	0.02	-0.03	195	0.977
Teacher bachelor's degree	0.44	0.59	0.75	195	0.454
Teacher master's degree	-0.16	0.94	-0.16	195	0.869
Teacher is Hispanic/Latino	3.02	0.86	3.50	195	< 0.001
Teacher is African American	0.47	0.71	0.67	195	0.504
Teacher of other background	-0.46	1.05	-0.44	195	0.659
Teacher job satisfaction	-0.47	0.33	-1.44	195	0.152
Positive workplace climate	-0.82	0.38	-2.17	195	0.031
Benefits	2.06	0.95	2.18	195	0.031
Class average child vocabulary	0.03	0.02	1.21	195	0.227
Class average child social skills	-0.50	0.20	-2.48	195	0.014
Salary per hour	0.00	0.00	1.70	195	0.091

Random Effect	Standard deviation	Variance component	Chi-square	<i>d.f.</i>	<i>p</i> value
Intercept, U_0	0.52	0.27	66.07	58	0.218
Teacher depression score, fall, U_1	0.22	0.04	83.93	59	0.018
Level 1, r	3.74	14.02			

increased over the year for those of Hispanic/Latino backgrounds relative to those who were white ($B = 3.02, p < .001, d = 0.68$). Regarding demands, depression increased over the year for teachers with larger classes ($B = 0.29, p = .021, d = 0.07$) but decreased for teachers with larger numbers of DLLs ($B = -0.18, p = .022, d = 0.04$). Depression also decreased over the year for teachers in classrooms with higher average levels of child social competence ($B = -0.50, p = .014, d = 0.11$). Regarding control, teacher depression did not change in relation to curricular decision-making latitude or teacher job satisfaction. Regarding supports, depression decreased for teachers with a more positive workplace social support climate ($B = -0.82, p = .031, d = 0.19$). In addition, depression decreased for those teachers with access to more curriculum guidance ($B = -0.20, p = .043, d = 0.05$). Contrary to hypotheses, depression also increased for teachers whose centers provided more benefits ($B = 2.06, p = .031, d = 0.46$). In the final model, all significant variance at level 2 was explained ($p = .218$), but significant variability remained in the random slope of fall depression ($p = .018$).

Question 3: teacher depression and classroom quality

To understand the links between teacher depression and classroom quality, we conducted an additional, two-level regression on the outcome of classroom quality, as measured by a composite (average) of the three CLASS domains (see Hamre, Hatfield, Pianta, & Jamil, 2014). All predictors from Question 2 were included in this model.

Residualized change variable

Our predictor of greatest interest was change in teacher depression from fall to spring. To capture change, we used the spring teacher depression residual score from model 2 above. Teachers with larger residual values from model 2 had higher increases in depression from fall to spring than the average teacher in the sample. Put another way, teachers with higher residuals for spring depression had higher actual spring depression levels than the model predicted they would, based upon their fall depression and numerous covariates. We also included teacher depression in spring to account for absolute values of depression; this approach allowed us to account for a (hypothetical) situation

Table 4
Teacher Depression and Classroom Quality.

Fixed Effect	Coefficient	Standard error	t-ratio	Approx. <i>d.f.</i>	<i>p</i> -Value
Intercept INTRCPT2, γ_{00}	4.11	0.04	109.63	58	< 0.001
Teacher depression in center	0.022	0.02	1.08	58	0.286
Fall depression score	-0.01	0.01	-1.33	254	0.184
Class size	-0.02	0.02	-0.96	254	0.340
Number of DLLs	0.02	0.01	4.07	254	< 0.001
Curriculum supports	-0.01	0.01	-0.77	254	0.442
Teacher experience	-0.00	0.00	-0.40	254	0.689
Teacher bachelor's degree	0.01	0.06	0.23	254	0.816
Teacher master's degree	0.05	0.11	0.42	254	0.674
Teacher is Hispanic/Latino	-0.21	0.11	-1.85	254	0.066
Teacher is African American	-0.16	0.08	-1.99	254	0.048
Teacher of other background	0.07	0.09	0.77	254	0.444
Teacher job satisfaction	0.08	0.05	1.75	254	0.082
Positive workplace climate	0.00	0.05	0.06	254	0.961
Benefits	0.17	0.13	1.32	254	0.187
Fall child vocabulary	0.00	0.00	1.68	254	0.093
Fall social skills, parent rated	0.01	0.02	0.33	254	0.739
Salary per hour	0.00	0.00	0.04	254	0.971
Residualized change	0.01	0.01	1.84	254	0.068

Random effect	Standard deviation	Variance component	Chi-square	<i>d.f.</i>	<i>p</i> value
Intercept, U_{00}	0.17	0.03	111.85	58	< 0.001
Level 1, <i>r</i>	0.44	0.19			

in which two teachers both increased 5 points from fall to spring, but one had much higher levels of depression overall. Thus, this model examined how initial depression, as well as change in depression, were uniquely linked to classroom quality (i.e., CLASS), net of the effects of a variety of classroom, teacher background, and teacher well-being variables.

As in Table 4, net of everything else in the model, no significant association between teacher depression in fall and classroom quality emerged ($B = -0.01, p = .184$). Similarly, overall teacher depression within a center was not linked to individual teacher classroom quality ($B = 0.02, p = .286$). However, change in teacher depression over the year was, net of the effects of the other variables in the model, marginally associated with classroom quality ($B = 0.01, p = .068, d = 0.02$). As exploratory analyses, we tested whether effects were similar for each of the three individual domains of the CLASS; no effects arose for fall depression, but change in depression was marginally linked to both Instructional Support ($B = 0.01, p = .078, d = 0.02$) and Classroom Organization ($B = 0.01, p = .069, d = 0.02$).

Question 4: teacher depression and child outcomes

Analytic strategy

Because children ($n = 2380$) were nested within teachers ($n = 362$), which were in turn nested within centers ($n = 127$), we employed three-level hierarchical linear models, with separate models for each child outcome (vocabulary, parent-rated prosocial skills, teacher-rated prosocial skills, parent-rated problem behaviors, and teacher-rated problem behaviors). Here again, predictors of interest were teacher fall depression and teacher change in depression from fall to spring. Because no significant associations emerged, we did not pursue further analysis of the potential mediating role of classroom quality in the link between teacher depression and child outcomes. Using HLM version 7.01, all variables were grand-mean centered. Key results are presented in Table 5, and complete results are available upon request from the authors.

Vocabulary

In total, 19% of the variance in spring PPVT *W* scores outcome was between centers, and 7% was between teachers, with significant

variance at both levels ($p < .001$). Apart from the array of covariates included in the model, teacher depression in the fall was not uniquely predictive of children's vocabulary learning over the year ($B = 0.08, p = .291$), nor was change in teacher depression from fall to spring ($B = -0.04, p = .644$).

Teacher-rated prosocial skills

In total, 6% of the variance was between centers, and 14% was between teachers, with significant variance at both levels ($p < .001$). Teacher depression in the fall was not predictive of children's prosocial skills as rated by the teacher ($B = -0.02, p = .264$). However, children whose teachers became more depressed from fall to spring had lower prosocial skills ($B = -0.07, p = .036, d = -0.02$).

Teacher-rated behavior problems

In total, 3% of the variance lay between centers and 17% was between teachers, where $p = .003$ and $p < .001$, respectively. Teacher depression in fall was not linked to children's behavior problems over the Head Start year ($B = 0.02, p = .299$). However, in classrooms where teachers became more depressed by spring, children's behavior problems worsened ($B = 0.05, p = .015, d = 0.01$). All variance between centers was explained ($p = .109$), but variability between teachers remained ($p < .001$).

Parent-rated prosocial skills

In total, < 1% of the variance was between centers ($p = .045$), and 2% of the variance was between teachers ($p = .077$). Teacher depression in spring was not related to children's prosocial skills, as rated by their parents ($B = -0.00, p = .834$). Change in teacher depression from fall to spring was also not related to children's parent-rated prosocial skills ($B = -0.02, p = .102$). Significant variance remained between centers ($p = .012$) but not teachers ($p = .321$).

Parent-rated behavior problems

In total, 3% of variance was between centers ($p < .001$), and 4% of variance was between classrooms ($p < .001$). Teacher depression in the fall was not related to parent ratings of children's behavior problems over the year ($B = 0.02, p = .134$), nor was change in teacher depression from fall to spring ($B = 0.03, p = .146$). No variance between

Table 5
Summary of Contributions of Depression to Child Outcomes.

	Vocabulary	Parent-rated Social Skills	Teacher-rated Social Skills	Parent-rated Problem Behaviors	Teacher-rated Problem Behaviors
Fall depression	0.08	0.00	−0.02	0.02	0.02
Change in depression	−0.04	−0.02	−0.07*	0.03	0.05*

* Indicates $p < .05$.

centers remained ($p = .291$), although significant variance remained between teachers ($p = .025$).

Discussion

This study examines teacher self-reported depression in Head Start and provides a snapshot of teachers' experiences across the nation. A significant minority of Head Start teachers reported some level of depression in fall and/or spring, with approximately one in four teachers reporting mild depression, while one in 10 reported either moderate or severe depression. Importantly, depression was not a stable trait or phenomenon; 30% of teachers changed in status on this variable during the school year (i.e., reported depression in the fall and not the spring or vice versa), with very small predictive associations for individual and environmental demand and support characteristics. Moreover, results from this study demonstrated that change in depression across the year, apart from initial levels of depression, was uniquely, albeit modestly, linked to children's prosocial skills and behavior problems. However, these patterns were apparent only when teachers rated both their own depression and children's social skills, raising questions about common method variance for future research to explore.

Individual factors are linked to head start teacher depression

While few individual characteristics (e.g., education, experience) predicted teacher depression in fall or over the year, those of Hispanic/Latino backgrounds became more depressed over the year, accounting for a collection of covariates. In fact, this association was among the largest in the study. This finding comports with evidence from the broader literature that, in the United States, Latina women face higher depression risks than women of other ethnic backgrounds (Shattell, Smith, Quinlan-Colwell, & Villalba, 2008; please note that nearly all FACES teachers were women). In particular, one study has indicated that high demand and control and low support were more strongly linked to depression for Latina women than for other professionals (Arcury, Grzywacz, Chen, Mora, & Quandt, 2014), a finding echoed by other recent evidence (Arcury et al., 2018). At the same time, commonly used treatment techniques (e.g., cognitive-behavioral therapy) have been developed largely outside of Latinx cultures, impeding their cultural relevance and sensitivity, and thus their effectiveness (Escobar & Gorey, 2018).

The driving force behind this association is not, at this time, transparent. In the larger literature, a commonly studied contributor to depression among Latinx individuals involves conflict between their home culture and the larger United States (Santos, Kossakowski, Schwartz, Beeber, & Fried, 2018). However, much of this work focuses on recent immigrants, a category into which only some of Head Start's teachers of Latino ethnicity fit. Another possible issue driving this result might involve Latino teachers' perceptions of racial or linguistic inequities (Garcini et al., 2018). A third possibility could involve greater pressure on Latino teachers to work with teachers and families speaking a language other than English, for which translation could become burdensome. Taken together, this result demands future study, perhaps with an in-depth, qualitative examination that could reveal patterns across individuals' lived experiences.

Workplace factors matter for head start teacher depression

This is the first study to highlight specific workplace factors that uniquely predicted changes in teacher depression in a nationally representative sample of Head Start educators, using the Demand-Support-Control approach as a guiding framework. In general, demand-related variables were linked to increased depression. Conversely, support-related variables were largely related to reduced depression. Control-related variables were not uniquely predictive of change in depression. Below, we explain key points.

Demand

A number of relations between teacher depression and potentially stressful classroom composition issues emerged, implying that some particular classroom demands may require careful attention in the effort to safeguard teacher well-being as well as classroom instructional quality. First, teachers with larger class sizes became (subtly) more depressed over the school year, accounting for a variety of relevant covariates. This evidence may indicate that working with more children at one time engenders greater stress; a parallel result has emerged from the maternal depression literature (Wenze & Battle, 2018). That said, it could also be the case that teachers were assigned more children because they were viewed in their programs as the most competent teachers, and that they were also assigned other tasks as well which, taken together, resulted in an adverse impact on well-being.

Conversely, depression decreased slightly but significantly over the year for teachers with more DLLs and for children with higher average levels of social competence in their classroom. Given that the vast majority of DLLs in this sample were of Latino backgrounds (> 90%), and that previous research suggests that executive functioning skills are a strength of Latino children (Bustamante & Hindman, 2018; Galindo & Fuller, 2010), higher levels of executive functioning competence may explain why having more dual language learners in a classroom would relate to decreased teacher depression. Alternatively, because DLL children often make larger academic and social gains in preschool (Oades-Sese, Esquivel, Kaliski, & Maniatis, 2011; White & Greenfield, 2017), it could be that teachers notice these gains and enter into a positive feedback loop wherein their increased confidence and efficacy about teaching leads to more positive teacher-child interactions and thereafter improved child outcomes, in an ongoing loop. The same model could be relevant for children with strong social skills.

Although these results do not imply causality, and further research is needed, future initiatives supporting teacher mental health could potentially aim to provide more manageable class sizes and to furnish teachers with strategies to support children's language skills and social competence. All of these aspects of the classroom may in turn create a more harmonious and instructionally effective environment characterized by virtuous cycles of interaction between teachers and children. Too often, the literatures on instructional rigor and on teacher and student well-being are conceptualized as distinct, when in fact the mechanisms that drive both may interlace.

Support

Depression also decreased slightly for teachers with a more positive workplace social support climate. As in prior work, feelings of connectedness to peers are uplifting and can actually help with creative and collaborative problem solving. In addition, teachers' own

depression was linked to the overall level of depression in their workplace. This finding may suggest that moods are “contagious”, but it could also reinforce the idea that teachers who do not need to cope with depressive symptoms are able to dedicate more energy to improving their center and supporting their peers, thus directly removing burdens from others. In either case, these findings suggest that focusing not just on individual teachers but on groups or cohorts of teachers as social units may provide opportunities to build positive teacher mental health.

Access to more curriculum guidance was related to slightly decreased depression. This result indicates that when teachers are better equipped to implement and adapt their program's curriculum plan, they experience less persistent helplessness, sadness, and frustration. This link could be rooted in teachers' perceptions of competence, in that a deeper understanding of the curriculum may provide a stronger sense of mastery and confidence. Alternatively, or even in addition, it may be that curriculum guidance actually results in more effective instruction, which in turn improves teachers' feelings of mastery and confidence. This result, while correlational, may support the utility of curricular training initiatives, which can often be discouragingly costly and time-consuming but can have far-reaching benefits for teacher and children.

One surprising association emerged among support variables, in that depression increased slightly over the year for teachers whose centers provided more benefits. Particularly in light of the low rates of salary and benefits that EC teachers receive (see [Whitebook et al., 2016](#)), it is unlikely that this link is causal in nature. Instead, this counterintuitive result may imply that teachers with more benefits were better able to seek diagnosis for feelings of depression, thus increasing the frequency with which they reported these concerns.

Control

Only two variables related to control in the FACES array were particularly salient for the current study, and neither was uniquely linked to teacher depression. On one hand, this result may indicate that, for Head Start teachers (at least in 2009), the extent to which they sense that they have control over their own professional responsibilities is highly aligned with the demands they face (which undermine control) and the supports they can access (which support control). However, given the preponderance of evidence to the contrary, it is also quite plausible that future research must explore relevant variables that might describe control. For example, teachers might derive important benefits from latitude over their own choices in PD opportunities, family engagement strategies, and organizational advancement trajectories.

Summary

Examining findings together, two main points emerge. To begin with, effect sizes of the personal and professional factors in the current study are, in general, very small; these very modest effects show that none of the factors explored here represents a “magic bullet” or perfect solution to the challenge of teacher depression. However, two points here merit consideration. First, teachers responded to this survey in a business-as-usual setting, in which teacher well-being was not a uniform focus. Effect sizes of target interventions crafted around these correlational items might be considerably stronger. Second, these analyses feature a large number of covariates, which, relative to much prior work, may allow a more nuanced exploration of the specific, unique variability in teacher depression accounted for by the predictors in these models. As a second overarching point, the demand-, support-, and control-related features of workplace under examination could actually dovetail in teachers' real-world settings. For example, initiatives that support teachers in working together, as a team, to manage their curriculum might offer multiple, interlocking benefits, creating positive and self-sustaining synergies.

Teacher depression matters for child outcomes, but in nuanced ways

This study also explored the implications of teacher depression for child outcomes. In contrast to previous examinations of maternal depression ([Ahuja et al., 2017](#)), neither teachers' initial depression, nor their change in depression over the year, predicted gains in vocabulary. One explanation may be that, on average, preschool (including both Head Start and other contexts) has relatively weak effects on children's vocabulary, especially when measuring outcomes with standardized tools such as the PPVT-4 ([Skibbe, Hindman, Connor, & Morrison, 2013](#)). Therefore, it could be the case that teacher behavior, and thus adverse effects of depression on behavior, are apparent in other, more proximal child variables (e.g., taught words, MLU); future research could explore this possibility.

Interestingly, while depression at the beginning of the year did not predict teachers' own ratings of children's social skills and behavior problems, change in depression over the year predicted both of these outcomes. This suggests that, considering children's development over the 9-month academic term, a teacher's baseline level of depression may matter less than how he or she copes with stressors throughout the subsequent months. This potentially exciting finding reinforces the idea (noted above) that providing teachers with the proper supports and resources to improve their mental health across the school year is a worthwhile endeavor and, indeed, could have direct benefits for the social-emotional outcomes of the children in their classrooms. Put another way, when considering children's social and emotional learning, attending to teachers' social and emotional resources is critical as well.

Interestingly, no relations emerged between teacher depression and parent ratings of children's social skills and behavior problems, contradicting prior research (e.g., [Roberts et al., 2016](#)). The chief distinction between these two studies is the inclusion in the current study of not only initial teacher depression but also residualized change in teacher depression from fall to spring. These dual measures of teacher depression may offer a more precise and specific model, which allows for better attribution of outcome variance to relevant predictors. Accordingly, it may be that teacher depression is more linked to children's classroom behavior because bidirectional feedback loops that might underlie these effects develop in the classroom context alone. For example, teachers working in classrooms in which a substantial number of children struggle with social competence may find themselves more stressed and, ultimately, more depressed, which may in turn lead them to employ less optimal behavior management strategies, perpetuating the unfortunate cycle. Conversely, as teachers' symptoms dissipate, children's classroom social behavior might improve, which in turn promotes teacher well-being, in a continuous loop. In the home, however, children's behavior could be very different and much more closely connected to parents' immediate actions than teachers' distal behaviors.

However, akin to robust findings in the maternal depression literature ([Baumann, Pelham, Lang, Jacob, & Blumenthal, 2004](#); [Chi & Hinshaw, 2002](#); [Youngstrom, Izard, & Ackerman, 1999](#)), it is also possible that changes in teacher's self-reported depression are linked to changes in teachers' own perceptions of children's skills, even if children are exhibiting the same behavior. In other words, more depressed teachers might view problematic child behavior more negatively than they would if their symptoms were reduced. Despite this uncertainty—and fully acknowledging that teachers' perceptions influence the outcomes of teacher rating scales—teacher ratings of children's behavior consistently predict later academic and social emotional outcomes, making them important tools in early childhood research ([Bargagliotti, Gottfried, & Guarino, 2017](#); [Hindman et al., 2010](#)). Future studies on this topic should continue to use multi-method and multi-rater approaches to measurement, as well as statistical methods that account for variance at multiple levels (e.g., child and teacher).

Limitations & future directions

Four primary limitations in the current study highlight productive avenues for future research. First, given evidence that, for many teachers, depression status changes over the course of the year, future work should use more frequent and more nuanced measures of teacher depression to gain a more complete picture of the antecedents and consequences of variation in mental health. A minimum of three, and ideally four or more, measurement time points would afford growth modeling, through which researchers could explore the rate and shape of change in teacher depression (Curran, Obeidat, & Losardo, 2010; Fitzmaurice, Laird, & Ware, 2011). Moreover, in addition to widely used tools such as the CES-D, it might be helpful to include other measures of teacher stress and burnout, and potentially to integrate interviews to better understand teachers' situations. Finally, collecting information about children's outcomes at multiple points in time would afford cross-lagged models that capture possible bidirectional associations between teacher and child behavior.

Second, in this study, teacher depression was not linked to classroom quality, as gauged by the CLASS (Pianta et al., 2006). As a gold-standard tool in early childhood, the CLASS is designed to offer a relatively broad view of teacher-child interaction. It may be the case that a measure more focused specifically on teacher-student closeness or conflict might offer more insight into features of adult-child exchanges that are more proximally affected by teacher depression.

Third, the current study examines relations between teachers' practice and children's outcomes without the benefit of in-depth information about teacher-child relationships. For example, there may be important cultural differences in what emotions are most rewarded and how feelings should be expressed. Consequently, the degree to which teachers and children "match" one another in their understanding of these issues may be an important area to explore, in addition to the increasingly salient importance of ethnic and linguistic congruence between the teacher and child (Downer, Goble, Myers, & Pianta, 2016; Sandilos, Rimm-Kaufman, & Cohen, 2017).

Finally, only a minority of teachers report any symptoms of depression in fall and/or spring, and only a small number of children are rated by parents and/or teachers as experiencing notable behavioral concerns. Although not limitations (rather, these are phenomena), there may be merit in subsequent research that would more closely explore these sub-populations within the nationally representative sample in order to understand whether additional, nuanced patterns of association emerge between adult and child behaviors.

Conclusion

Early childhood teachers, and particularly those serving high-need populations, face a number of stressors that might undermine their well-being, including depression. This study explored Head Start teacher depression over the course of the preschool year. Results indicated that 30% of teachers reported at least mild depressive symptoms at one point during the year. Several workplace demands were linked to increasing depression, whereas several workplace supports were associated with reduced depression. Regardless of teacher self-reported depression at the start of the year, reductions in depression were linked to increases in children's prosocial skills and decreases in problem behaviors, at least as rated by teachers. Overall, results undergird the importance of considering depression as an important and dynamic construct in early education settings.

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