Relations of Early Childhood Education Teachers’ Depressive Symptoms, Job-Related Stress, and Professional Motivation to Beliefs About Children and Teaching Practices

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ABSTRACT

Research Findings: This study used teacher questionnaires to investigate the relationships of early childhood education teachers’ depressive symptoms, professional motivation, and job-related stress to their beliefs about children and teaching practices. Teachers (N = 207) were recruited from early childhood education programs in the southern United States. Path analyses showed that teachers who exhibited fewer depressive symptoms were more likely to have a career orientation to their jobs and indicated feeling less job-related stress. Teachers with a career orientation to their jobs were also more likely to have child-centered beliefs and endorse developmentally appropriate teaching practices. Teachers’ job-related stress, however, was not related to beliefs about children or teaching practices. Practice or Policy: These results suggest that teachers’ psychological and job-related well-being are linked to their beliefs about children and teaching practice in early childhood education. It is therefore important to provide support systems and preventive programs for teachers to enhance their well-being.

Teachers in early childhood education (ECE) settings play a critical role in creating positive learning environments and promoting children’s development and learning (Howes, Fuligni, Hong, Huang, & Lara-Cinisomo, 2013). ECE teachers’ beliefs about children and developmentally appropriate practice (DAP; Charlesworth, Hart, Burts, Mosley, & Fleege, 1993) provide valuable insights into why some teachers choose to engage in recommended best practices but others do not. Several studies have found that ECE teachers’ beliefs about children and DAP are associated with child care quality (Charlesworth et al., 1993; Clarke-Steward, Vandell, Burchinal, O’Brien, & McCartney, 2002; Forry et al., 2013; Hughes-Belding, Hegland, Stein, Sideris, & Bryant, 2012; Maxwell, McWilliam, Hermmeter, Ault, & Schuster, 2001; McMullen et al., 2006), social-emotional support (Pianta et al., 2005), and instructional support (Clarke-Stewart et al., 2002; Hughes-Belding et al., 2012; McMullen, 1999; Pianta et al., 2005). ECE teachers’ beliefs are also related to children’s school readiness (Forry et al., 2013). Despite the significance of ECE teachers’ beliefs about children and DAP, little attention has been paid to factors that predict these beliefs.

One factor that may possibly be related to ECE teachers’ beliefs about children and DAP is teacher well-being. Specifically, teachers with greater feelings of well-being would be more likely to have the psychological resources to be attentive to their interactions with children and to the classroom environment. It is surprising, however, that psychological and job-related well-being have not received much research attention (Hall-Kenyon, Bullough, MacKay, & Marshall, 2014), despite the fact that they are known to be associated with teaching practices and children’s school readiness (e.g., Curbow, Spratt,
Recent research efforts have shown that interventions that focus on ECE teachers’ psychological (Hatton-Bowers, 2018) and job-related (Lang, Jeon, & Buettner, 2018) well-being help ECE teachers manage their psychological distress and improve their support of children in their classrooms. ECE teachers’ psychological and job-related well-being may help them have more child-centered beliefs and endorse classroom best practices as well as improve the actual quality of their teaching. Thus, it is important to identify possible factors associated with ECE teachers’ beliefs about children and DAP, such as their psychological well-being (e.g., depression) and job-related well-being (e.g., job-related stress, job motivation, and satisfaction). The current study examined relationships between ECE teachers’ depressive symptoms, their professional motivation, their job-related stress, and their beliefs about children and DAP. We also examined whether ECE teachers’ professional motivation and job-related stress mediate the associations of depressive symptoms with their beliefs about children and DAP.

Depressive symptoms and beliefs about children and DAP

ECE teachers’ self-reported experiencing of depressive symptoms varies from 6% to 24% across studies (Forry et al., 2013; Hamre & Pianta, 2004; Whitaker, Becker, Herman, & Gooze, 2013; Whitebook et al., 2004). Depressive symptoms are more pronounced among ECE teachers who serve children from low-income families; for example, 24% of teachers in Head Start and Early Head Start programs reported having had depressive symptoms (Whitaker et al., 2013). This rate is higher than in a nonclinical sample of women in the general population (8.5%; National Institute of Mental Health, 2016) and among low-income women on welfare in the United States (12%; Jayakody, Danziger, & Pollack, 2000).

Despite the concern about ECE teachers’ depressive symptoms, there are mixed findings on the links between depressive symptoms and teaching practice. ECE teachers’ depressive symptoms have been negatively linked to classroom quality and children’s school readiness in some studies (Hamre & Pianta, 2004; Jeon, Buettner, & Snyder, 2014; Weaver, 2002). For example, ECE teachers who reported having had more depressive symptoms were less sensitive and more withdrawn in their interactions with children than those reporting fewer depressive symptoms (Hamre & Pianta, 2004). However, other studies have failed to find such a relationship (e.g., Clarke-Stewart et al., 2002; Forry et al., 2013; Roberts, LoCasale-Crouch, Hamre, & DeCoster, 2016). These mixed findings may be attributable to the use of different methods of collecting data on teachers’ depressive symptoms and their teaching practices and perhaps the use of different populations. Previous research has focused on an association between ECE teachers’ depressive symptoms and their teaching practices (e.g., Hamre & Pianta, 2004) as well as children’s behavior in the classroom (e.g., Jeon et al., 2014). However, it is less clear whether and how ECE teachers’ depressive symptoms are linked to their beliefs about children and DAP (e.g., direct and indirect processes). Given the accumulated evidence on the associations between teachers’ beliefs and practices (e.g., Hughes-Belding et al., 2012; Maxwell et al., 2001; McCarty, Abbott-Shim, & Lambert, 2001; McMullen et al., 2006), there may be a link between ECE teachers’ depressive symptoms and their beliefs.

Job-related well-being and beliefs about children and DAP

Researchers have characterized job-related well-being among ECE teachers as their having a positive outlook and attitude toward their jobs, including motivation to work with children, and low levels of stress (Kaiser, Rogers, & Kasper, 1993; Kontos, Howes, Shinn, & Galinsky, 1995; Moriarty, Edmonds, Blatchford, & Martin, 2001). Teachers’ positive attitudes toward their jobs are likely to be associated with the quality of their teaching and interactions with children. For example, family child care providers who expressed higher levels of professional motivation by endorsing child care as their chosen occupation were more likely to provide higher quality care (e.g., Forry et al., 2013; Kontos et al., 1995). There may be a link between ECE teachers’ professional motivation and the quality of
their practice because those who are more committed to their jobs tend to have more child-centered beliefs and also to endorse DAP (Buchanan, Burts, Binder, White, & Charlesworth, 1998; Forry et al., 2013; Hur, Jeon, & Buettner, 2016). This may in turn lead them to provide children with higher quality care and to use more DAP.

Although many ECE teachers are highly motivated and committed to their jobs, working in ECE settings is physically and psychologically demanding, which places them at risk for job-related stress (Wagner et al., 2013). For example, Layzer and Goodson (2006) found that 63% of family child care providers in the National Study of Child Care for Low-Income Families experienced job-related stress. Job-related stress often derives from children’s behavior and guidance issues; conflict or poor communication with families, colleagues, and administrative staff; low status and compensation; limited resources; and time pressures (Curbow et al., 2000; Kelly & Berthelsen, 1995; McCrath & Huntington, 2007).

The relationship between ECE teachers’ job-related stress and the quality of care that they provide is less clear. For example, Sandilos et al. (2015) did not find any relationship between ECE teachers’ perceived job-related stress and classroom quality. However, Whitaker, Dearth-Wesley, and Gooze (2015) found that Head Start teachers who perceived having higher job-related stress had poorer quality interactions with children, whereas Ghazvini and Mullis (2002) found that ECE teachers who reported more job-related stress provided better overall classroom quality but less sensitive care. Kontos et al. (1995) also found that family child care providers who reported having higher job-related stress were observed providing higher quality care. Based on these findings (Ghazvini & Mullis, 2002; Kontos et al., 1995; Whitaker et al., 2015), ECE teachers who have less support and more demands in their workplace may provide better overall quality of care but be less psychologically able to interact positively with children, with the exception in the findings of Sandilos et al. (2015).

As one of the few studies that has examined the connections between both ECE teachers’ job-related satisfaction and stress and their child-centered beliefs, Hur et al. (2016) found that ECE teachers who were highly satisfied with their jobs had more child-centered beliefs than those who were not as satisfied. It is surprising that those with higher levels of job stress tended to have more child-centered beliefs as well. Hur et al. speculated that teachers’ job-related satisfaction and stress could be an indicator of how much they are committed to and care about their work with children rather than a barrier that interferes with their work. This claim is supported by other studies (e.g., Jeon, Buettner, & Grant, 2018; Kontos et al., 1995) that showed that ECE teachers who reported higher levels of job-related stress provided higher overall classroom quality. The complexity of these associations clearly merits further investigation.

**Depressive symptoms, job-related well-being, and beliefs about children and DAP**

ECE teachers’ depressive symptoms influence not only the quality of their teaching practice and interactions with children (e.g., Sandilos et al., 2015) but also their job-related well-being, including professional motivation and job-related stress (e.g., Whitaker et al., 2015). Whitaker et al. (2015) found that Head Start teachers who had more depressive symptoms perceived more job-related stress. Ukrainian teachers working at an orphanage or in preschools who had more depressive symptoms reported having less job motivation and more job-related stress (Raskin, Kotake, Easterbrooks, Ebert, & Miller, 2015). In addition, Forry et al. (2013) found that family child care providers’ professional motivation, job-related stress, and beliefs predicted the observed quality of care. However, Forry et al. (2013) did not find a link between family child care providers’ depressive symptoms and the observed quality of care. Unlike Forry et al., Sandilos et al. (2015) found that ECE teachers who had depressive symptoms tended to have less job-related stress and provided a lower quality of teaching practice, but there was no relation between their job-related stress and their teaching practice.

These studies are unique because only a few studies have simultaneously examined ECE providers’ care (Forry et al., 2013) and teachers’ teaching practices (Sandilos et al., 2015) along with
psychological and job-related well-being and beliefs. However, their findings indicate that associations between ECE providers’ and teachers’ psychological well-being (depressive symptoms), job-related well-being (job motivation, stress, and support), beliefs about teaching practice, and teaching practice are unclear and complex. More comprehensive models are needed to understand these complex relationships between ECE teachers’ psychological and job-related well-being and their beliefs about children and DAP.

The current study

We examined the associations between ECE teachers’ depressive symptoms, professional motivation, job-related stress, and beliefs about children and DAP. Based on findings of previous studies, we hypothesized that ECE teachers’ psychological well-being, professional motivation, and job-related stress would be associated with their beliefs about children and DAP. Furthermore, we hypothesized that ECE teachers’ professional motivation and job-related stress would mediate the link between their depressive symptoms and beliefs about children and DAP. The conceptual model of direct and indirect associations between teachers’ depressive symptoms and their beliefs via their relation to teachers’ job-related well-being for the current study is presented in Figure 1.

The present research questions include the following:

1. Are ECE teachers’ depressive symptoms related to their professional motivation, job-related stress, and beliefs about children and DAP?
2. Are ECE teachers’ professional motivation and job-related stress related to their beliefs about children and DAP?
3. Do ECE teachers’ depressive symptoms mediate their beliefs about children and DAP through professional motivation and job-related stress?

Method

Participants

ECE teachers who were working in center-based programs (e.g., preschool, child care centers) were recruited through both passive and active recruitment by in-service teacher trainers from two local child care resource and referral agencies in a southern state in the United States. These teachers attended various in-service trainings because the state required ECE teachers to

Figure 1. Conceptual model. DAP = developmentally appropriate practice.
receive at least 12 hr of training each year. Teacher survey packages, including teacher questionnaires and a consent form, were delivered to ECE teachers who attended various in-service trainings. In-service teacher trainers from one child care resource and referral agency used passive recruitment to recruit participants \( (n = 118) \) by allowing ECE teachers who were willing to participate in the study to take the teacher survey package. This passive recruitment was slow to recruit participants, so we later decided to use an active recruitment process whereby an in-service teacher trainer from another local agency distributed the teacher survey package to all teachers \( (n = 221) \) who attended in-service training. Through the active recruitment, we had a 45% \( (n = 100) \) response rate. Both of these recruitment methods involved convenience sampling, which is a nonprobability sampling technique, because we approached ECE teachers who attended various in-service trainings required by the state. ECE teachers returned the completed questionnaires and a consent form in a sealed envelope that was provided to them by the agencies or teacher trainers. Participation was voluntary and anonymous, and no incentives were provided for participation. Of the ECE teachers \( (N = 218) \) who participated in the study, 11 provided incomplete data and were excluded from the present study, which left 207 \( (94.95\%) \) ECE teachers in the final sample.

Participants' demographic characteristics are displayed in Table 1. The majority of participating teachers were female \( (n = 203, 98.1\%) \). About two thirds of the teachers were Euro-American, and slightly less than a third were African American. About a third of participating teachers had a bachelor’s degree or higher. Of the 91 ECE teachers who had an associate’s degree or higher, 50 held degrees in ECE or a related field. Of all teachers, approximately one quarter held degrees in ECE or a related field.

### Table 1. Demographic characteristics of participants.

<table>
<thead>
<tr>
<th>Variable</th>
<th>n (%)</th>
<th>Missing, n (%)</th>
<th>M</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>202 (97.6)</td>
<td>5 (2.4)</td>
<td>38.22</td>
<td>13.11</td>
<td>17</td>
<td>66</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>206 (99.5)</td>
<td>1 (0.5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Euro-American</td>
<td>135 (65.5)</td>
<td>1 (0.5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td>65 (31.4)</td>
<td>1 (0.5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>6 (2.9)</td>
<td>1 (0.5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>206 (99.5)</td>
<td>1 (0.5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than high school</td>
<td>1 (0.5)</td>
<td>1 (0.5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High school/GED</td>
<td>36 (17.4)</td>
<td>1 (0.5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some college</td>
<td>78 (37.7)</td>
<td>1 (0.5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Associate’s degree</td>
<td>24 (11.6)</td>
<td>1 (0.5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BA or higher</td>
<td>67 (32.4)</td>
<td>1 (0.5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Major in ECE/CD</td>
<td>50 (24.2)</td>
<td>1 (0.5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CDA</td>
<td>203 (98.1)</td>
<td>4 (1.9)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>29 (14.0)</td>
<td>1 (0.5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working</td>
<td>12 (5.8)</td>
<td>1 (0.5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T.E.A.C.H.</td>
<td>23 (11.1)</td>
<td>1 (0.5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experience(^{b}) (years)</td>
<td>198 (95.7)</td>
<td>9 (4.3)</td>
<td>5.56</td>
<td>5.69</td>
<td>0</td>
<td>27</td>
</tr>
<tr>
<td>Professional membership(^{c})</td>
<td>41 (19.8)</td>
<td>1 (0.5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wage(^{e}) ($)</td>
<td>166 (80.2)</td>
<td>41 (19.8)</td>
<td>1,7148</td>
<td>8,807</td>
<td>1,661</td>
<td>56,160</td>
</tr>
<tr>
<td>Depressive symptoms</td>
<td>0.52</td>
<td>0.86</td>
<td>0</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professional motivation</td>
<td>4.12</td>
<td>0.50</td>
<td>2.75</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job-related stress</td>
<td>2.45</td>
<td>0.47</td>
<td>1</td>
<td>4.19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child-centered beliefs</td>
<td>3.12</td>
<td>0.60</td>
<td>1.38</td>
<td>4.67</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beliefs about DAP</td>
<td>3.35</td>
<td>0.57</td>
<td>1.64</td>
<td>4.64</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. \( N = 207 \). GED = General Educational Development test; BA = bachelor’s degree; ECE/CD = early childhood education/child development; CDA = Child Development Associate credential; T.E.A.C.H. = Teacher Education and Compensation Helps Early Childhood program; DAP = developmentally appropriate practice.

\(^{a}\)Only applicable to teachers who held an associate’s degree or higher. However, the percentage represents the fraction of teachers who majored in ECE or CD among all participating teachers. \(^{b}\)Experience working in ECE settings. \(^{c}\)Membership in any ECE professional organization. \(^{d}\)Annual salary as an ECE teacher.
**Measures**

The self-administered teacher questionnaires included questions regarding depressive symptoms, professional motivation, job-related stress, beliefs about children and DAP, as well as teachers’ demographic information.

**Depressive symptoms.** The current study included three dichotomous items from a depression screening tool (RAND Health, 1998). To capture teachers’ depressive symptoms, the items asked whether the respondent had had depressive feelings or sad moods for days during two or more years in their lives, for 2 weeks in the past year, and for 1 week in the past month. The RAND Health (1998) team found 50% positive predictive value in the depression screener from a large sample of clinical patients identified using the full version of the Composite International Diagnostic Interview screening scale, the sensitivity of which is acceptable for clinical patients (Booth, Kirchner, Hamilton, Harrell, & Smith, 1998; Robins et al., 1988). Composite scores were calculated for the current study, with higher scores indicating greater risk of depression.

**Professional motivation.** Kontos et al. (1995) developed a scale to measure the extent to which teachers view their jobs as a career and are intrinsically motivated toward their profession. The scale consists of 13 statements starting with “I see my current child care position as ...” Example items include “I see my current child care position as my career or profession,” “I see my current child care position as a job with a paycheck,” and “I see my current child care position as a job in which I have the opportunity to learn and grow.” Each statement was rated on a 5-point rating scale from 1 (not at all the way I feel) to 5 (exactly the way I feel). A previous study used composite scores with only six items after omitting uncorrelated items based on exploratory factor analysis and reported that Cronbach’s alpha was .74 (Hughes-Belding et al., 2012). However, we included 10 items, excluding three items (”a stepping stone to a related career or profession,” “a way of helping someone out,” and “work that is very difficult”) that were uncorrelated with the total score for the items (rs = −.14, −.03, and .21, respectively) after examining each item and considering its conceptual meaning. In the current sample, Cronbach’s alpha was .78.

**Job-related stress.** The current study used the adapted Child Care Worker Job Stress Inventory (CCW-JSI; Curbow et al., 2000). The original version of CCW-JSI consists of 56 items in three subscales (17 items in each subscale) and Job Specific Demands (five items). The CCW-JSI is a 5-point rating scale that asks how often each statement happens at work and includes such items as “I feel like I have to be a parent and a teacher to the children” from the Job Demands subscale, “I see that my work is making a difference with a child” from the Job Resources subscale, “Getting parents to be consistent with you on how to deal with a child” from the Job Control subscale, and “I feel that my director is never around when I need help” from the Job Specific Demands portion of the questionnaire. The reliability and convergent and discriminant validity of the CCW-JSI were examined (Curbow et al., 2000) using other measures for both family child care provider and center-based teacher samples. Gilliam and Shahar (2006) found that teachers’ CCW-JSI scores were associated with preschoolers’ expulsion. The current study used 21 items from the CCW-JSI: six items from the Job Demands subscale, five items related to Job Specific Demands for teachers, five items from the Job Resources subscale, and five items from the Job Control subscale. This abbreviated version of the measure was used in a large study (Bryant et al., 2009; Hughes-Belding et al., 2012). These researchers created an overall composite score and reported that Cronbach’s alpha was .69 for family child care providers (Hughes-Belding et al., 2012). For ECE teachers, internal consistency was .84 for Job Demands, .69 for Job Specific Demands, .84 for Job Resources, and .66 for Job Control (Bryant et al., 2009). In the current sample, we only used the composite score for job-related stress, which had a Cronbach’s alpha of .77, indicating acceptable internal consistency.
Child-centered beliefs. The current study used the Parental Modernity Scale (Schaefer & Edgerton, 1985), which measures the extent to which respondents tend to have traditional authoritarian beliefs or child-centered beliefs. This scale was developed to capture parents’ beliefs and has been used in several studies with ECE teachers and home-based child care providers (Dowsett, Huston, Imes, & Gennetian, 2008; Hughes-Belding et al., 2012; La Paro et al., 2009). The 16 items on this scale were rated from 1 (strongly disagree) to 5 (strongly agree). Example items include “In my opinion, children should learn best by doing things themselves rather than listening to others,” “In my opinion, children have a right to their own point of view and should be allowed to express it,” and “In my opinion, children’s learning results mainly from being presented basic information again and again.” After we reverse-coded items asking about traditional authoritarian beliefs, we calculated composite scores, with higher scores indicating more child-centered beliefs. In a previous study, Cronbach’s alphas were .92 for home-based child care providers and .94 for ECE teachers (Bryant et al., 2009). In the current sample, Cronbach’s alpha was .75, which is acceptable but lower than in the previous study. This lower internal consistency might be due to differences in characteristics of the ECE teachers in the current study and those who participated in the large cross-state intervention study.

Beliefs about DAP. The Teacher Beliefs Scale (TBS; Charlesworth, Hart, & Burts, 1991; Hart et al., 1990) was developed to measure teachers’ beliefs about various classroom practices based on DAP established by the National Association for the Education of Young Children (Bredekamp & Copple, 1997). The TBS includes 30 items with responses ranging from 1 (strongly disagree) to 5 (strongly agree). Several researchers have examined the reliability and validity of the TBS (Burts, Hart, Charlesworth, & Kirk, 1990; Charlesworth, Hart, Burts, & Hernandez, 1991). The TBS has been adapted and used for large research and evaluation projects, such as the Head Start Family and Child Experiences Survey (Hulsey et al., 2011), and by the Quality Intervention for Early Care and Education Partnership research team (Bryant et al., 2009). The current study used the adapted version of the TBS, which consists of 14 items. In a previous study, the adapted TBS resulted in Cronbach’s alphas of .69 for home-based child care providers and .82 for ECE teachers (Bryant et al., 2009). In the current sample, Cronbach’s alpha was .72. After we reverse-coded items asking about developmentally inappropriate practices, we calculated composite scores, with higher scores indicating that teachers more strongly endorsed DAP.

Covariates. Given existing evidence that characteristics of ECE teachers, such as their education and experiences, are linked to their beliefs, such as child-centered beliefs (Abbott-Shim, Lambert, & McCarty, 2000; Hughes-Belding et al., 2012), the current study included (a) ECE teachers’ years of education, (b) their total years of experience teaching in ECE settings, and (c) whether their major in college was in ECE, child development, or a related field as covariates in the prediction of their beliefs about children and DAP. If teachers did not have an associate’s degree or higher, we coded their major as not ECE.

Data analyses
Preliminary analyses were conducted to examine the state of the obtained data and to test the statistical assumptions of path analysis, which include normality, linearity, and the absence of multicollinearity. We assessed normality by examining skewness and kurtosis. We assessed linearity and multicollinearity by examining bivariate correlations. There were no significant violations of the assumptions; therefore, we determined that path analysis was an appropriate approach for addressing the current research questions by testing the proposed model. We performed path analyses using Mplus Version 7 (Muthén & Muthén, 2012). To examine model fit, we used multiple indices because chi-square is liberal and sensitive to the size of the sample and correlations between study variables (Kenny, 2014): root mean square error of approximation (RMSEA), comparative fit index (CFI), Tucker–Lewis index (TLI), and
standardized root-mean-square residual (SRMR) including the chi-square statistic. In general, CFI and TLI close to .9 and RMSEA and SRMR less than .05 would indicate a good fit (Bollen, 1989; Kenny, 2014; Kenny & McCaugh, 2003; MacCallum, Browne, & Sugawara, 1996).

Results

Preliminary analyses

Table 1 displays means and standard deviations for the study variables. The skewness (range = −0.52 to 0.08) and kurtosis (range = −0.32 to 0.59) for the predicted variables and the skewness (1.64) and kurtosis (1.78) for the depressive symptoms score indicated that the normality of the distribution was acceptable. According to the Pearson correlation coefficients in Table 2, teachers who were older were more likely to have years of experience working in ECE settings and to view their current jobs as being professional. ECE teachers who had more years of education were more likely to have majored in ECE or areas related to ECE, to get paid more, to have more child-centered beliefs, and to endorse DAP. Teachers who had more experience working in ECE settings were more likely to get paid more and to endorse DAP but to have more depressive symptoms. ECE teachers who had higher wages were more likely to have higher professional motivation and tended to have more child-centered beliefs and endorse DAP. They were less likely to have job-related stress. ECE teachers who had more depressive symptoms tended to be less likely to view their current jobs as professional and more likely to perceive job-related stress. ECE teachers who were more likely to view their current jobs as professional reported having less job-related stress, had more child-centered beliefs, and endorsed DAP. ECE teachers’ job-related stress was not associated with their beliefs about children and DAP. ECE teachers who demonstrated having more child-centered beliefs were more likely to endorse DAP.

Path analysis

We examined the study model (see Figure 1) after controlling for ECE teachers’ years of education, major in ECE or a related field, and years of experience teaching in ECE settings. The model fit indices indicated tolerable fit, N = 207, χ²(7) = 15.594, p = .0291, RMSEA = .077, CFI = .947, TLI = .833, SRMR = .039. In the study model (see Figure 2), ECE teachers’ depressive symptoms were related to their professional motivation and job-related stress, which indicates that ECE teachers who reported more depressive symptoms were less likely to view their jobs as professional and were more likely to perceive job-related stress. We found that the direct paths between ECE teachers’ depressive symptoms and beliefs about children and DAP were not statistically significant. ECE teachers who viewed their jobs as professional were more likely to have child-centered beliefs and to endorse DAP. Their beliefs about children and DAP were positively correlated with each other, which indicates that ECE teachers who had more child-centered beliefs were more likely to endorse DAP.

Table 2. Correlations between study variables.

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2. Education (years)</td>
<td>−.03</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>3. Major in ECE/CD</td>
<td>−.10</td>
<td>.61***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Experience (years)</td>
<td>.58***</td>
<td>.03</td>
<td>.08</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Wage ($)</td>
<td>.11</td>
<td>.27***</td>
<td>.38***</td>
<td>.20*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Depressive symptoms</td>
<td>−.14</td>
<td>.02</td>
<td>.08</td>
<td>−.15*</td>
<td>−.03</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Professional motivation</td>
<td>.27***</td>
<td>.03</td>
<td>.08</td>
<td>.19**</td>
<td>.19*</td>
<td>−.25***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Job-related stress</td>
<td>−.05</td>
<td>.04</td>
<td>−.02</td>
<td>.05</td>
<td>−.17*</td>
<td>.25***</td>
<td>−.29***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Beliefs about children</td>
<td>.12</td>
<td>.25***</td>
<td>.22*</td>
<td>.10</td>
<td>.21**</td>
<td>−.13</td>
<td>.23***</td>
<td>−.06</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Beliefs about DAP</td>
<td>.12</td>
<td>.28***</td>
<td>.38***</td>
<td>.30***</td>
<td>.42***</td>
<td>−.04</td>
<td>.23***</td>
<td>−.06</td>
<td>.53***</td>
<td></td>
</tr>
</tbody>
</table>

Note. N = 207. Not all valid Ns equal 207 because of missing values (Ns = 202–207). ECE/CD = early childhood education/child development; DAP = developmentally appropriate practice.

*p < .05. **p < .01. ***p < .001.
endorse DAP. However, ECE teachers’ job-related stress was not correlated with their beliefs about children or DAP.

Indirect influences of ECE teachers’ depressive symptoms on their beliefs about children and DAP were examined. Indirect influences of teachers’ depressive symptoms on their beliefs about children were seen through professional motivation ($\beta = -0.04$, $SE = 0.02$, $p = 0.032$) but not through job-related stress. Similarly, indirect influences of ECE teachers’ depressive symptoms on beliefs about DAP were seen through professional motivation ($\beta = -0.04$, $SE = 0.02$, $p = 0.026$) but not through job-related stress. These findings indicate that ECE teachers who had depressive symptoms were less likely to have professional motivation, which in turn was related to their being less likely to have child-centered beliefs and endorse DAP.

**Discussion**

The current study investigated relationships between ECE teachers’ depressive symptoms, professional motivation, job-related stress, and beliefs about children and DAP by testing indirect and direct paths between their depressive symptoms and their beliefs using path analysis. We found that ECE teachers who reported higher levels of depressive symptoms had less professional motivation and more job-related stress. ECE teachers who had higher professional motivation had more child-centered beliefs and endorsed DAP, but their job-related stress was not associated with their beliefs. Professional motivation mediated the relationship between ECE teachers’ depressive symptoms and their beliefs about children and DAP but not through their job-related stress.

The current study makes several contributions to the limited literature on ECE teachers’ psychological and job-related well-being and their relation to their beliefs. It also offers implications for how to promote teachers’ child-centered and developmentally appropriate beliefs and practices in ECE. Several researchers have found negative links between ECE teachers’ depressive symptoms and their teaching practices (e.g., Clarke-Stewart et al., 2002; Hamre & Pianta, 2004; Jeon et al., 2014; Sandilos et al., 2015; Weaver, 2002) and positive links between ECE teachers’ beliefs and their teaching practices (Charlesworth et al., 1993; Hughes-Belding et al., 2012; McMullen et al., 2006; Pianta et al., 2005). However, the current study is one of the few studies that has examined the links between ECE teachers’ psychological and job-related well-being and their beliefs about children and DAP including both direct and indirect links between their psychological well-being and beliefs through job-related well-being.

The current study found that ECE teachers who had depressive symptoms tended to have lower professional motivation and more job-related stress. These findings confirm those of previous studies that found that ECE teachers who had higher depressive symptoms had lower professional motivation (Raskin et al., 2015), greater job-related stress (Raskin et al., 2015; Whitaker et al., 2015), and less job-related support (Sandilos et al., 2015). Unlike previous studies (Raskin et al., 2015;
Sandilos et al., 2015; Whitaker et al., 2015) that examined bivariate relationships between ECE teachers’ psychological and job-related well-being, we examined relationships between ECE teachers’ depressive symptoms, professional motivation, and job-related stress simultaneously using path modeling. The current study showed a unique contribution of ECE teachers’ depression to professional motivation and job-related stress. Findings of the current study and the previous studies (e.g., Raskin et al., 2015; Whitaker et al., 2015) demonstrate that ECE teachers’ psychological well-being is related to their job-related well-being, such as professional motivation and job-related stress.

The hypothesis on direct links between ECE teachers’ depressive symptoms and their beliefs about children and DAP was not supported by our data. Our findings are similar to those of previous studies that did not find a relationship between ECE teachers’ depressive symptoms and their care and teaching practice (e.g., Clarke-Stewart et al., 2002; Forry et al., 2013; Roberts et al., 2016) but different from those of other studies that found a negative relationship between ECE teachers’ depressive symptoms and their teaching practice (Hamre & Pianta, 2004; Sandilos et al., 2015). However, it should be noted that the focus of the previous studies was on ECE teachers’ practices, not on their beliefs, which limits the relevance of a direct comparison with our findings. Our findings and those of previous studies suggest that ECE teachers’ depressive symptoms may have different relationships with their practices and beliefs about children and DAP. For example, ECE teachers’ beliefs about children and DAP are more likely influenced by their education and experience, whereas their teaching effectiveness may be more influenced by their psychological and job-related well-being. More research evidence is needed to confirm the null findings on direct links between ECE teachers’ psychological well-being and their beliefs.

Our findings on the associations between ECE teachers’ job-related well-being and their beliefs was partially supported. We found that ECE teachers who had higher professional motivation tended to have more child-centered beliefs and to endorse DAP. These findings extend previous studies that have found positive links between ECE teachers’ professional motivation and the quality of their teaching (Forry et al., 2013; Kontos et al., 1995). ECE teachers who view their jobs as professional are more committed to their jobs, have more child-centered beliefs, and endorse DAP, which in turn may lead to their providing a high-quality learning environment and positive interactions with children (Buchanan et al., 1998; Forry et al., 2013; Hur et al., 2016).

However, we did not find a significant association between ECE teachers’ job-related stress and their beliefs. Because there was no link between teachers’ job-related stress and their beliefs, there was no indirect link of ECE teachers’ job-related stress between their depression and beliefs. This null finding was not expected because several previous studies showed that teachers’ job-related stress predicted more traditional beliefs about children (Hur et al., 2016), poorer relationships with children in Head Start programs (Whitaker et al., 2015), and poorer classroom quality (Ghazvini & Mullis, 2002). There are several possible explanations for the discrepancies between our findings and those of the previous studies. First, ECE teachers’ job-related stress may not be directly linked to their beliefs but may be indirectly linked through different processes. For example, ECE teachers’ severity of depression or other characteristics (e.g., work climate, support, educational attainment, and wages) may influence the relationship between their job-related stress and their beliefs about children and teaching practice. Second, ECE teachers’ job-related stress is multidimensional and was measured with three different subscales (Specific Demands, Job Demands, and Job Resources), which may differently link to their beliefs and practices. For example, ECE teachers’ depressive symptoms were associated with job resources but not their job control (Raskin et al., 2015). Only job control among the dimensions of job-related stress predicted teacher–child relationships (Whitaker et al., 2015). We used overall job-related stress in our path model, which may have contributed to the discrepancy with previous findings. Third, it is possible that ECE teachers’ job-related stress may play a different role in the associations between their depressive symptoms and beliefs. For example, ECE teachers’ job-related stress may moderate the links between their psychological well-being, professional motivation, and teaching practices, which is similar to the findings of a recent study that found that job-related stress moderated the effect of professional development on teaching practice.
Fourth, there may be no link between job-related stress and beliefs about children and DAP, which is similar to the findings of Sandilos et al. (2015), who observed no link between ECE teachers’ job-related control and their teaching practice. Further investigation is necessary to determine the relationship between multiple aspects of ECE teachers’ job-related stress and their beliefs about children and practice.

Even though we did not find direct links between ECE teachers’ depressive symptoms and their beliefs about children and DAP, we found that teachers’ depressive symptoms were linked to their beliefs indirectly through their professional motivation. This means that ECE teachers who have more depressive symptoms have lower professional motivation, which in turn influences their perceptions of children and their DAP beliefs. The current study is the first attempt to examine the mediating role of stress and professional motivation between teachers’ depressive symptoms and their beliefs, and the results partially support this mediation. Further investigation of these mediating links between teachers’ psychological well-being and their beliefs about teaching practice and actual teaching through job-related well-being is warranted to confirm our findings.

Limitations
This study addressed the gap in the extant literature on ECE teachers’ psychological and job-related well-being and provides new knowledge of links between critical teacher variables. However, it has several limitations worthy of mention. First, this study captures only a snapshot in time and does not provide a longitudinal look at the associations. Even though our conceptual model was developed based on the extant literature, the correlational nature of the study does not guarantee causality between the study variables. Second, previous studies have found links between ECE teachers’ beliefs and their teaching practice and interactions with children (Charlesworth et al., 1993; Clarke-Stewart et al., 2002; Hughes-Belding et al., 2012; McMullen et al., 2006; Pianta et al., 2005), but the current study examined only ECE teachers’ beliefs and their associations with their psychological and job-related well-being. Investigation of ECE teachers’ actual observed teaching practices and interactions with children and other such variables as physical environment, work climate, and support will further contribute to understanding the role of ECE teachers’ well-being in the classroom. This would also avoid the issue of shared variance among study variables, which the current study had because it used all teacher-reported data.

Third, we used ECE teachers’ self-reported feelings of depression as a measure of their psychological well-being, which provides one aspect of multifaceted psychological well-being. Future research using a comprehensive clinical measure is necessary to examine ECE teachers’ psychological well-being, including both positive and negative aspects of their psychological well-being. In addition, we collected data from ECE teachers working in one geographic area in the United States using a convenience sampling method. Obtaining a representative sample of ECE teachers from a variety of geographic locations with a more rigorous sampling method (e.g., stratified random sampling) could improve the generalizability of the research findings. Last, it is important to note that ECE teachers’ job-related well-being and their beliefs about children and DAP may vary across different types of ECE programs. Although we recruited teachers who worked in center-based ECE settings (e.g., preschool, child care), we did not collect information on the type of ECE program (e.g., Head Start) in which participants worked.

Implications for practice, policy, and future research
The current study highlights the important role of ECE teachers’ psychological and job-related well-being in their positive beliefs. Teachers’ psychological well-being is an important yet frequently overlooked area in ECE research (Hamre & Pianta, 2004). Given the prevalence of depressive symptoms among ECE teachers and their importance to teachers’ job-related well-being, beliefs about children and practice, and actual teaching practice (e.g., Hamre & Pianta, 2004; Jeon et al., 2014; Whitaker et al., 2015), ECE teachers’ psychological and job-related well-being is an important research area for understanding the pathways to their belief systems and teaching practice. Future
studies with more rigorous research methods and more comprehensive models merit consideration. Based on these research findings, furthermore, more accessible supportive systems and intervention programs should be developed to enhance ECE teachers’ well-being, and their effectiveness should be investigated.

Support systems and preventive and intervention programs targeting ECE teachers’ well-being may foster positive beliefs, which may promote the quality of ECE teaching that enhances children’s learning and development. Recent efforts that include well-being programs in various formats that address ECE teachers’ mental health concerns include support groups focusing on self-care and mindfulness training (e.g., Hatton-Bowers, 2018; Lang et al., 2018). Professional development focusing on reducing ECE teachers’ job-related stress, promoting job support, and enhancing empowerment in the workplace (e.g., Hatton-Bowers, 2018; Lang et al., 2018; Sandilos et al., 2018) may improve their view of their job and teaching practice. Administrators and ECE leaders also need to ensure that ECE teachers have access to existing community-based and Web-based resources related to psychological well-being in an effort to reduce teachers’ depressive symptoms and stress and promote their professional motivation.

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Disclosure statement

No potential conflict of interest was reported by the authors.

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