Understanding Early Childhood Educators' Well-being: Links to Professional Development, Teacher-Child Interactions and Child Outcomes

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A Dissertation

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The Faculty of the Curry School of Education

University of Virginia

In Partial Fulfillment

of the Requirements for the Degree

Doctor of Philosophy

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by

Amy Roberts

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ABSTRACT

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This dissertation presents three independent studies that all focus on understanding early childhood educators' well-being. The first study identifies characteristics of pre-kindergarten teachers that relate to teachers' responsiveness to the professional development program MyTeachingPartner. Teachers' anxiety and readiness to change related to multiple indicators of responsiveness. Teachers who were more anxious and less ready to change were less responsive to the intervention. The second study examines how Head Start teachers' depressive symptoms relate to their provision of emotionally supportive interactions and children's social and emotional development. A direct association was found between teachers' depressive symptoms and children's social-emotional outcomes. Children in classrooms with more depressed teachers made significantly fewer positive gains in problem behaviors and social skills. The third study utilized a mixed methods approach to explore if and why preschool teachers' self-efficacy, burnout, and stress, changed in the Effective Classroom Interactions online professional development intervention. Teachers who took the online course experienced increased emotional exhaustion and decreased self-efficacy when not provided opportunities to express emotions and/or receive supportive feedback. Collectively, these three studies demonstrate the importance of teachers' well-being in (1) engaging in professional development (2) supporting children's development, as well as (3) how professional development impacts teachers' well-being.

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APPROVAL OF THE DISSERTATION

This dissertation, "Understanding Early Childhood Educators' Well-being: Links to Professional Development, Teacher-Child Interactions and Child Outcomes" has been approved by the Graduate Faculty of the Curry School of Education in partial fulfillment of the requirements for the degree of Doctor of Philosophy

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DEDICATION

I dedicate this work to the early childhood workforce who shape the lives of our youngest learners and for whom I have the utmost respect. I also dedicate this work to Mary Roberts, who told me to find what I love and make a career out of it; thank you for everything. Lastly, I dedicate this work to Denise Friedman who first introduced me to educational research and helped me turn this dream into reality.

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Understanding Early Childhood Educators' Well-being: Rationale and Conceptual Link

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The Three-Manuscript Dissertation: Overview

This dissertation presents a line of research exploring early childhood educators' well-being in the context of professional development and the classroom. This dissertation follows the requirements of the manuscript-style dissertation option, as defined in the Curry School of Education Ph.D. Dissertation Manual (2015). The manuscript-style dissertation calls for students to submit an introduction (linking document) describing the conceptual and theoretical linkages among all three manuscripts, and three papers ready for submission. In adherence with these guidelines, I am the first author on all three studies included in this dissertation. Study 1 has been published in *Prevention Science*. Study 2 has been published in *Early Education and Development*; links appear below. Study 3 will be submitted for publication upon completion. All three studies are conceptually linked while providing unique contributions to the field. The remainder of this document discusses the rationale for the current line of research and the theoretical framework shared by the three studies. Following the linking document, each of the three manuscripts are presented.

Roberts, A. M., LoCasale-Crouch, J., DeCoster, J., Hamre, B. K., Downer, J. T, Williford, A., & Pianta, R.C. (2015). Individual and contextual factors associated with pre-kindergarten teachers' responsiveness to the MyTeachingPartner coaching intervention. *Prevention Science, 16*(8), 1044-1053. http://link.springer.com/article/10.1007/s11121-014-0533-8

Roberts, A., LoCasale-Crouch, J., Hamre, B., & DeCoster, J. (2016). Exploring teachers' depressive symptoms, interaction quality, and children's social-emotional development in Head Start. *Early Education and Development.* http://www.tandfonline.com/doi/abs/10.1080/10409289.2016.1127088

Understanding Early Childhood Educators' Well-being: Rationale and Conceptual Link

Children's early years are characterized by rapid maturation of social and cognitive skills that provide a strong basis for later learning (Shonkoff & Phillips, 2000). A child's early environment has been shown to be a fundamental contributor of this development (Fusaro & Nelson, 2009). Given that most children in the United States experience some type of early childhood education prior to formal schooling (Mamedova, Redford, & Zukerbeg, 2013), early childhood settings are increasingly important contexts for promoting positive development in young children. In particular, high quality teacher-child interactions characterized as supportive, sensitive, and stimulating are important levers for promoting children's development (Hamre, Downer, Jamil, & Pianta, 2012; Hamre, 2014; Mashburn et al., 2008; Yoshikawa et al., 2013).

Unfortunately, several studies suggest that the quality of early childhood teachers' interactions with children is not consistently high (e.g., La Paro et al., 2009; Phillips, Gormley, & Lowenstein, 2009; Pianta et al., 2005). As a result, efforts are underway to improve quality, and professional development has been deemed a successful mechanism for improving teacher-child interactions (e.g. Bierman, Nix, Greenberg, Blair, & Domitrovich, 2008; Domitrovich, et al., 2009; Pianta, Mashburn, Downer, Hamre & Justice, 2008). In order for quality improvement efforts to be successful, it is necessary to consider what aspects of early childhood education may be promoting or hindering the provision of high quality interactions (Pianta et al., 2005; Zaslow, Tout, Halle, Whittaker, & Lavelle, 2010). In particular, teachers' well-being has been associated with teachers' tendencies to form positive relationships with students, effectively manage their classrooms, and instruct students (Jennings & Greenberg, 2009). Given the focus on professional development in early childhood education (IOM & NRC, 2012), it is necessary to consider teachers' well-being in the context of professional development as well as in the broader context

of the classroom.

Understanding Well-being

Well-being is a multi-dimensional concept that generally refers to a person's positive health, contentment, accomplishment, and daily functioning, although the meaning of the term varies by application (Haworth & Hart, 2007). Within psychology, there are two main traditions for understanding well-being: hedonic and eudaimonic. The first approach, "hedonic", is concerned with feelings of satisfaction, happiness and contentment (Ryan & Deci, 2001). For instance, Diener & Lucas' (1999) hedonic conceptualization of subjective well-being consists of life satisfaction, the presence of positive mood, and the absence of negative mood. The second approach, "eudaimonic", is more concerned with maximizing human potential. Ryan and Deci (2000) propose that humans seek self-actualization through three components of well-being—autonomy, competence, and relatedness. Other eudaimonic theorists define well-being similarly as autonomy, personal growth, self-acceptance, life purpose, mastery, and positive relatedness (Ryff & Keyes, 1995).

Well-being in education, especially as it refers to teachers, is often associated with the absence of negative traits, namely lower stress and the avoidance of "burnout" (Roffey, 2012), and the presence of positive or enabling factors, such as positive affect, self-efficacy, or self-esteem (e.g., Jennings, 2015; McCallum & Price, 2010). Given the multi-dimensionality of the well-being construct, research studies tend to focus on specific aspects of teachers' well-being, such as teachers' feelings of competence or self-efficacy, burnout, depressive symptoms, etc. (Hall-Kenyon, Bullough, MacKay, & Marshall, 2014). To this end, teachers' well-being is a highly complex concept that requires an accumulation of research studies to fully understand, which ultimately warrants further exploration (e.g., Haworth & Hart, 2007; Henry, 2007; Ryan &

Deci, 2001).

Linking Teachers' Well-being to Teacher-Child Interactions and Child Outcomes

The Prosocial Classroom Model provides a theoretical explanation of how teacher well-being relates to classroom teaching practices and student outcomes (Jennings & Greenberg, 2009). According to this model teachers' well-being, along with their social-emotional competence, affects teachers' skills in forming positive relationships with students, effectively managing the classroom, and instructing students socially and emotionally. This then influences the climate of the classroom, which subsequently affects students' social, emotional, and academic outcomes (Jennings & Greenberg, 2009). There is evidence across multiple settings to suggest that these associations exist. In general, findings from these studies suggest that *various* aspects of teachers' well-being are fundamental to teachers' success in the classroom, with evidence that teachers' well-being relates both to teachers' interactions with children as well as children's outcomes (e.g., Dennis & O'Connor, 2013; Hamre & Pianta, 2004; Jeon, Buettner, & Snyder, 2014; Jennings, 2015; Zinsser, Bailey, Curby, Denham, & Bassett, 2013). Consistent with the Prosocial Classroom model, a 2015 report by the Institute of Medicine (IOM) and National Research Council (NRC), identifies the well-being of the early childhood educators as being fundamental to the provision of high quality services. As part of this model, they also acknowledge the role of professional development (IOM & NRC, 2015).

Linking Teachers' Well-being to Professional Development

Professional development is driven by the notion that the program or intervention will improve teachers' knowledge of children's development and their abilities to effectively interact with children, which will ultimately support children's development (Zaslow et al., 2010). According to the IOM and NRC (2015), professional development affects teachers' knowledge

and competences, which in turn affects teachers' well-being. This notion is perhaps best exemplified when we think about one particular aspect of teachers' well-being, such as stress. Professional development that conveys valuable information about how to handle challenging classroom situations may decrease teachers' stress by allowing them to effectively handle and defuse challenging situations when they arise (Friedman-Krauss, Raver, Neuspiel, & Kinsel, 2014). Although professional development may very well promote teachers' well-being, it is also worth considering the potential bidirectional association between teachers' well-being and professional development. In other words, it is equally possible that professional development affects teachers' well-being *and* teachers' well-being affects their approach to professional development. For instance, a body of work from intervention science suggests that facets of teachers' well-being may affect their engagement in professional development (Berkel, Mauricio, Schoenfelder, & Sandler, 2011), although findings tend to be mixed and vary by intervention study (Durlak, 2015).

Why Early Childhood?

Aside from the potential to positively impact children during a crucial developmental period (Shonkoff & Phillips, 2000), it is especially necessary to consider the well-being of early childhood educators because of the unique working conditions that characterize the field. Early childhood teachers' well-being may be influenced by working conditions, including compensation, benefits, opportunities for advancement, stressors, perceptions of the profession, and the availability of supportive services (IOM & NRC, 2015). In general, the early childhood workforce tends to be notably under-supported (Whitebook et al., 2014). For instance, early childhood teachers are paid substantially less than the K-12 workforce, a finding that has persisted for decades (Ryan & Whitebook, 2012; Whitebook, Phillips, & Howes, 2014). To put

this into context, in 2013 child care workers had a mean salary of $21,490, while elementary school teachers, on average, made $56,320 (DeNavas-Walt & Proctor, 2014; Whitebook et al., 2014). Subsequently, Whitebook, Phillips, and Howes (2014) estimate that 46% of child care workers utilized public support programs, such as food stamps or Medicaid, annually from 2007-2011, a rate just below that of fast food workers (52%). Such inadequate compensation poses challenges to attracting and maintaining high quality teachers, as evidenced by the profession's high turnover rates (Burton et al., 2002; Zaslow et al., 2010), and subsequently burdens teachers who choose to stay in the profession (Whitebook et al., 2014).

To summarize, high quality teacher-child interactions within early childhood settings support young children's development (Hamre, 2014; Shonkoff & Phillips, 2000; Yoshikawa et al., 2013). Professional development offers a promising means of improving the quality of teachers' interactions (Zaslow et al., 2010). Additionally, teachers' well-being has been shown to play a crucial role in the provision of high quality teacher-child interactions (Jennings & Greenberg, 2009). Integrating the Prosocial Classroom model (Jennings & Greenberg, 2009) with recent theoretical models proposed by the Institute of Medicine and National Research Council (IOM & NRC, 2015) allows well-being to be situated within the context of professional development, as well as within the context of the classroom (Figure 1). Given the multi-faceted nature of well-being (e.g., Haworth & Hart, 2007; Henry, 2007; Ryan & Deci, 2001), it is necessary for research studies to consider various facets of teachers' well-being to illuminate links to professional development, teacher-child interactions, and child outcomes.

Three-Study Approach

The goal of this dissertation is to present a line of research that further explores various facets of early childhood educators' well-being as they relate to teachers' responsiveness to

professional development, teacher-child interactions, and students' development, and to investigate the role of professional development in shaping teachers' well-being. These studies employ various analytic techniques and all have implications for how to best support teachers in future improvement efforts.

In the first study I employed a broad eudemonic approach to study teachers' well-being by investigating what characteristics of pre-kindergarten teachers and their environments related to teachers' responsiveness to a professional development program, the MyTeachingPartner coaching intervention. Specifically I explored teachers' demographic characteristics (education and experience), beliefs (self-efficacy, beliefs about intentional teaching, and adult-centered beliefs), psychological factors (readiness to change, anxiety, and conscientiousness), and contextual factors (work-related stress, school climate, and classroom poverty.) Using a series of multiple regressions, I identified which aspects of teachers' well-being and environment predicted four indicators of responsiveness: consultants' ratings of teachers' engagement, the number of coaching cycles attended, the amount of time spent accessing web resources, and teachers' self-reported satisfaction with the intervention.

Results from this study showed that related factors varied across the different indicators of responsiveness. Two psychological factors, anxiety and readiness to change, related to multiple indicators of responsiveness. In particular, teachers who were less anxious attended more coaching sessions and reported higher rates of satisfaction. Similarly, teachers who were characterized as being more ready to change attended more coaching sessions, utilized the website more frequently, and were rated by their coaches as being more engaged (Roberts et al., 2014). Overall, the results from this study suggest that various facets of teachers' well-being relate to teachers' responsiveness to professional development, and teachers' psychological well-

being is especially important. This information may be used to inform future improvement efforts and identify teachers in need of additional support.

The second study in this dissertation investigated one specific aspect of teachers' psychosocial well-being, their depressive symptoms, to see how it related to teachers' provision of emotionally supportive interactions and children's social and emotional development. This study utilized both parent and teacher reports of children's social skills and problem behaviors at two time points to understand how teachers' depressive symptoms related to children's social-emotional development. Data came from a large survey of Head Start teachers and the children in their classrooms. Building of the Prosocial Classroom Model (Jennings & Greenberg, 2009), this study used multi-level path analyses to test a mediation model in which teachers' provision of emotionally supportive interactions was hypothesized to mediate the association between teachers' depressive symptoms and children's problem behaviors and social skills. Although I found no evidence of mediation, there was a direct association between teachers' depressive symptoms and children's outcomes. Children in classrooms with more depressed teachers made significantly fewer positive gains in problem behaviors, as reported by both teachers and parents, and made fewer gains in social skills, as reported by teachers (Roberts, LoCasale-Crouch, Hamre, & DeCoster, 2016). Overall, these findings have implications for understanding teachers' psychosocial well-being and the types of supports teachers need.

Although the previous studies in this dissertation provided information about how teachers' well-being relates to their responsiveness to professional development, and their students' social-emotional development, they did not elucidate how well-being is affected *by* professional development. As a result, the third study used a mixed methods approach to understand how preschool teachers' well-being, namely teachers' self-efficacy, burnout, and

stress, changed in the context of the Effective Classroom Interactions (ECI) online professional development intervention. Teachers who participated in the intervention were randomized into one of three conditions: course-only, conference, and reflective writing, providing a unique opportunity to understand how teachers' well-being changed as a result of types of supports that were provided to teachers. Quantitative analyses revealed that teachers in the course-only condition experienced decreases in self-efficacy and increases in emotional exhaustion, a component of burnout. In contrast, teachers in the conference and reflective did not experience such negative effects, suggesting that these unique supports were protective. Qualitative analyses suggest that conference and reflective writing supports were supportive because they were emotionally evocative and allowed teachers to receive encouragement and advice from instructors. Findings from this study offer insight into how to effectively design future professional development to best support teachers' well-being.

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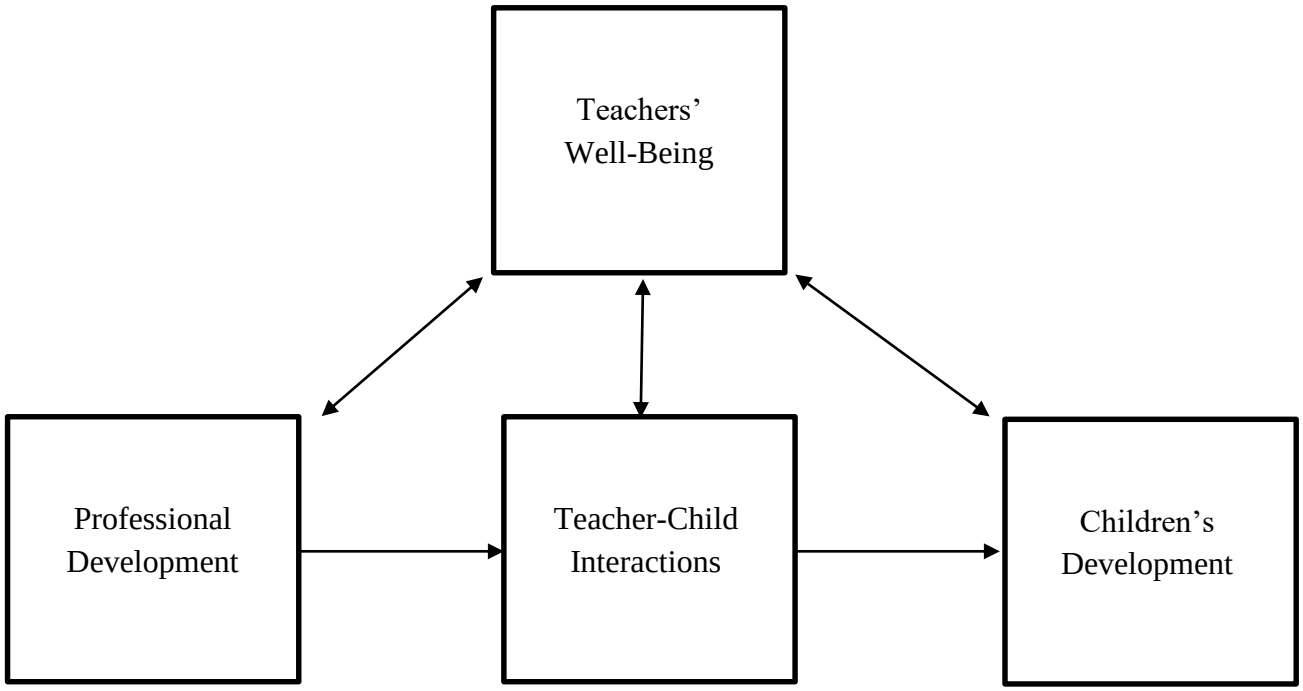
Figure 1

Theory of Change Motivating Aspects of the Three Dissertation Studies



Individual and Contextual Factors Associated with Pre-Kindergarten Teachers' Responsiveness to the MyTeachingPartner Coaching Intervention

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Abstract

With research findings indicating positive associations between teacher-child interaction quality and children's development and learning, many professional development efforts now focus on improving the ways in which teachers interact with children. Previous work found that MyTeachingPartner (MTP), a web-mediated coaching intervention, improved teachers' classroom interactions with children, and further analysis found that improvement in teachers' interactions was mediated by their responsiveness to the MTP intervention. The current study assessed how teacher characteristics, including demographics, beliefs, and psychological factors, as well as contextual characteristics related to multiple measures of teachers' responsiveness to MTP. Findings show that related factors vary across the different indicators of responsiveness. Specifically, the psychological factors of anxiety and readiness to change related to multiple indicators of responsiveness. Further, readiness to change and self-efficacious beliefs moderated the associations between classroom poverty and responsiveness. Study findings provide new insights into key teacher characteristics that might identify teachers in need of intervention adaptation or support to ultimately increase overall responsiveness.

Individual and Contextual Factors Associated with Pre-Kindergarten Teachers' Responsiveness to the MyTeachingPartner Coaching Intervention

Ongoing professional development has become a common feature of early childhood education, due in part to policy efforts seeking to promote teacher quality and child outcomes, such as Quality Rating and Improvement Systems (QRIS; Tout et al., 2010). Recently, early childhood professional development efforts have specifically sought to improve teacher-child interaction quality because of the consistent association with child outcomes (Burchinal et al., 2008; Hamre & Pianta, 2001; Yoshikawa et al., 2013). Despite the laudable emphasis placed on professional development, not all teachers respond to interventions in ways that maximize potential benefits. Responsiveness, defined as participants' involvement in and satisfaction with an intervention (Dane & Schneider, 1998; Durlak & DuPre, 2008), has been associated with intended intervention outcomes in various interventions (Baydar, Reid, & Webster-Stratton, 2003; Blake, Simkin, Ledsky, Perkins, & Calabrese, 2001; Garvey, Julion, Fogg, Kratovil, & Gross, 2006; Prado, Pantin, Schwartz, Lupei, & Szapocznik, 2006), including MyTeachingPartner (MTP; LoCasale-Crouch et al., 2013), an intervention shown to beneficially impact teacher-child interaction quality (Downer et al., 2013; Pianta, Mashburn, Downer, Hamre, & Justice, 2008). Given the importance of responsiveness, the present study explored the extent to which teacher characteristics, such as beliefs and psychological factors, as well as contextual characteristics related to responsiveness in the MTP intervention. An improved understanding of teachers' responsiveness may facilitate the identification of teachers in need of additional intervention support, maximize resources, and ultimately promote intervention benefits.

Professional Development Focused on Teacher-Child Interactions

Teacher-child interactions have received considerable attention in early childhood education due in part to their association with positive social-emotional and cognitive growth in young children (Burchinal et al., 2008; Peisner-Fienberg et al., 2001, Yoshikawa et al., 2013). Consequently, professional development has increasingly focused on training teachers to engage in positive interactions with children (Bierman, Nix, Greenberg, Blair, & Domitrovich, 2008; Domitrovich, Gest, Gill, Jones, & DeRousie, 2009; Pianta et al., 2008). Although a variety of intervention designs exist, coaching and consultation models have been deemed highly effective methods for delivering professional development interventions (Brennan, Bradley, Allen, & Perry, 2008; LoCasale-Crouch, Cabell, Jimenez, & Baldanza, 2014).

The MyTeachingPartner (MTP) intervention represents one coaching model focused on improving teacher-child interactions, where teachers regularly share videotaped classroom practice and receive direct feedback and support from a coach (Pianta et al., 2008) In addition, teachers receive access to web resources, such as video exemplars modeling positive classroom interactions. As part of the National Center for Research on Early Childhood Education (NCRECE) randomized control trial testing the MTP coaching intervention, as well as in a previous MTP trial, teachers who received coaching demonstrated significantly improved teacher-child interactions (Downer et al., 2013; Pianta et al., 2008).

Intervention Responsiveness

Conducting field-based randomized trials is a primary mechanism for determining impact; however, recent reviews of intervention evaluation studies underscore the importance of going beyond examining if an intervention works to the unpacking of "how" and why" it works (Berkel, Mauricio, Schoenfelder, & Sandler, 2011; Dane & Schneider, 1998; Domitrovich & Greenberg, 2000; Durlak & DuPre, 2008; Irwin & Supplee, 2012). Understanding how

participants vary in their intervention use and how that variation relates to program outcomes is crucial for advancing the use of such interventions across large numbers of teachers and settings, and for further refinement of treatments to obtain greater impact on desired outcomes (Irwin & Supplee, 2012; Knoche, Sheridan, Edwards, & Osborn, 2010; Summerfelt, 2003).

One theoretical model of implementation suggests that responsiveness, the extent to which participants are involved in and satisfied with the intervention (Dane & Schneider, 1998; Durlak & DuPre, 2008), mediates the association between facilitator behaviors, such as fidelity and quality, and intended program outcomes (Berkel et al., 2011). Unlike fidelity of implementation, responsiveness involves the behaviors of the participants, in this case teachers, rather than the behaviors of the program implementers, in this case coaches. Previously, responsiveness has been captured in various ways, including facilitator- or self-reports of participant engagement, session attendance, time spent on home practice assignments, and participant-reported satisfaction (Berkel et al., 2011). These various indicators of responsiveness have been shown to relate to improved intervention outcomes. For instance, participant satisfaction related to the potential long-term sustainability of a pre-kindergarten social skills intervention. In the same study, session attendance was linked to teachers' tendency to implement intervention content (Wenz-Gross & Upshur, 2012). Similarly, Domitrovich and colleagues (2009) found coach-reported engagement predicted all intended intervention outcomes in the REDI intervention, a program aimed at improving the quality of teacher-child interactions in Head Start.

Intervention responsiveness may be especially relevant in the context of coaching because such interventions usually require active participation and engagement with a coach (LoCasale-Crouch et al., 2014). Our team previously found that teachers' responsiveness

mediated the association between perceived intervention quality and changes in teacher-child interactions, suggesting that responsiveness is a critical component for promoting positive changes in teaching practice within MTP (LoCasale-Crouch et al., 2013). The present study, thus, seeks to unpack previous findings by identifying the factors that may inhibit or promote teachers' responsiveness in the MTP intervention.

Factors Associated with Responsiveness

Extant literature on responsiveness has typically focused on participants' demographic characteristics, such as educational attainment, race, and income (Berkel et al., 2011). Although the present study considered teacher demographics, we limited our focus to characteristics that are proximal to teaching: years of experience and education. Additionally, guided by ecological theory (Bronfenbrenner, 1976), we broadened our approach to also consider how individual teacher characteristics, specifically beliefs and psychological factors, as well as contextual features related to responsiveness in the MTP intervention.

Beliefs. Self-efficacious beliefs, child-centered beliefs, and beliefs about intentional teaching have been consistently related to teaching practice (Gibson & Dembo, 1984; Pianta et al, 2005). Self-efficacious teachers believe they can successfully teach and promote student learning (Soodak & Podell, 1996). Teachers who hold child-centered beliefs tend to support children's autonomy and engage in more positive interactions with children (Pianta et al., 2005). Further, teachers with intentional beliefs about teaching support the notion that children's learning is contingent upon intentional interactions in the classroom (Hamre et al., 2012). Although teachers' beliefs are important to practice, it is less clear how these beliefs may relate to intervention responsiveness.

Interestingly, previous studies find inconsistent patterns regarding the direction of the

association between self-efficacy and responsiveness. For instance, in a previous MTP trial, Downer, LoCasale-Crouch, Hamre, and Pianta (2009) found higher levels of self-efficacy were associated with greater utilization of web resources. On the contrary, other studies found that higher self-efficacy related to lower attendance, leading to the supposition that participants with lower self-efficacy may be more aware of their need for help and are therefore more apt to engage (Garvey et al., 2006). Ultimately, more clarification is needed concerning the strength and direction of the association between self-efficacy and responsiveness.

Child-centered beliefs and beliefs about intentional teaching may also be important beliefs to consider, especially in the context of the present study. To a certain extent, the MTP intervention presented material that supports both child-centeredness and intentionality. Teachers who hold such congruent beliefs may have been more inclined to engage in the intervention, perhaps due in part to the alignment between their beliefs and the intervention material (Wlodkowski, 2008). In fact, a previous MTP trial found that teachers with more child-centered beliefs were rated by coaches as being more responsive (Downer et al., 2009). Therefore, the present study investigated teachers' beliefs, specifically self-efficacy, child-centered beliefs, and beliefs about intentional teaching, in relation to intervention responsiveness.

Psychological Factors. Aspects of teachers' psychology, specifically anxiety, conscientiousness, and readiness to change, may be especially relevant to intervention responsiveness. Anxiety reduces working memory resources, making it difficult for learners to process and attend to stimuli (Eysenck & Calco, 1992), and is thought to be incongruent with intrinsic motivation (Pekrun, Goetz, Titz, & Perry, 2002). As a result, anxious teachers may be less attentive and less motivated and thus, less responsive to professional development interventions. Conscientiousness, a personality trait relating to dependability, thoroughness, and

organization, is associated with higher levels of personal accomplishment and lower levels of teacher burnout (Cano-Garcia, Padilla-Munoz & Carrasco-Ortiz, 2005; Kokkinos, 2007). Additionally, more conscientious learners have higher rates of class attendance and academic performance (Bauer & Liang, 2003; Webb, Christian, & Armitage, 2007). Despite the apparent relevance of both anxiety and conscientiousness, the investigation of how these factors relate to intervention responsiveness has not been extensively studied and was therefore considered in the present study. We hypothesized that less anxious and more conscientiousness teachers would be more responsive to the intervention.

Readiness to change has been conceptualized as a person's internal and external resources that facilitate change (Peterson & Baker, 2011). Though mostly confined to clinical and counseling literature, readiness to change has been associated with intervention responsiveness (DiClemente, Schlundt, & Gemmell, 2004). Readiness to change could be used to correctly identify 65% of participants who dropped out of a clinical intervention (Biller, Arnstein, Caudill, Federman, & Guberman, 2000). Recently, Peterson (2012) found that over one third of early childhood educators engaged in a coaching intervention were not ready to change their teaching practice. However, readiness to change has been most frequently measured using coach perceptions, which may conflate with other coach reported measures. As a result, the present study sought to use an objective measure of readiness to change to identify the extent to which it relates to teachers' responsiveness. It was anticipated that teachers rated as more ready to change would be more likely to engage in the intervention.

Contextual Characteristics. School climate and stress have been shown to influence teachers' motivation to engage in professional development. Wagner and French (2010) found that contextual factors predicted intrinsic interest in professional development, specifically

teachers' perceptions of supervisor support, co-worker relations, career satisfaction and work-related stress. Teachers who experience more work-related stress have lower rates of job satisfaction and higher rates of attrition (Farber, 1991) that may inhibit engagement on work-related tasks. Further, teachers who feel valued and supported at school are more inclined to take advantage of professional development (Atteberry & Bryk, 2011; Wagner & French, 2010). As a result, the present study explored the possible relationship between school climate, work-related stress, and teachers' responsiveness. We anticipated that more supportive environments characterized by less stress would be associated with greater teacher responsiveness.

Classroom poverty represents another contextual feature that may relate to teacher responsiveness. Teachers in high poverty classrooms with more at-risk students have more taxing professional demands (Ingersoll, 2004) that may hamper personal motivation and engagement in professional development. On the other hand, these teachers may feel more motivated to engage in professional development to obtain knowledge to overcome challenges. Though not extensively studied in relation to responsiveness, we also sought to examine the extent to which proactive qualities of the individual interacted with classroom poverty to relate to responsiveness. Specifically, we explored two features of demonstrated importance, self-efficacy and readiness to change, hypothesizing that these characteristics may be especially valuable for teachers working in at-risk classrooms. In sum, we explored the extent to which self-efficacy and readiness to change moderated the associations between classroom poverty and responsiveness.

Current Study

The present study sought to identify the individual and contextual factors that contribute to prekindergarten teachers' responsiveness to the NCRECE MTP intervention. Specifically, this study sought to determine: (1) What individual teacher (demographics, beliefs, psychological

factors) and contextual factors are associated with intervention responsiveness (coach-reported engagement, coaching session attendance, home practice use of web resources and participant satisfaction)? (2) To what extent do individual factors (self-efficacious beliefs and readiness to change) moderate the association between classroom poverty and responsiveness?

Method

NCRECE Overview and Participants

The NCRECE Professional Development Study was a randomized, controlled evaluation of two forms of professional development designed to improve preschool teachers' interactions with children. Teachers were randomized into treatment or control groups for the first phase, a 14 week course, and then re-randomized for the second phase, the MyTeachingPartner coaching intervention (Pianta et al., 2008). The present study focuses on participants (n = 205) in the coaching phase; of these participants, 37.6% were in the course condition in phase one and 62.4% were in the control condition or added in phase two. Most participants taught in Head Start programs (40.0%) or public schools (29.3%). The majority of participants held either an Associate's degree (29.5%) or a Bachelor's degree (35.3%), with some holding a Master's degree or higher (21.05%). On average, participants had about 10.6 years of experience teaching preschool (SD = 8.04).

Twelve coaches were hired, trained, and received ongoing support throughout the intervention. Coaches were required to have a general proficiency with technology and a minimum of a Master's degree in early childhood education or a related field (25.0% had above a Master's degree). On average, coaches had 13.67 years of teaching experience (SD = 9.71). All coaches were female. Coaches were trained on and supported in their implementation to promote consistent delivery across sites.

Measures

Independent variables were captured at the start of the intervention with the exception of school climate, which was measured at the end of the intervention. It was particularly relevant to consider teachers' perceptions of school climate post-intervention because new or novice teachers may not have fully formed ideas of school climate at the beginning of the intervention/school year. All multi-item measures discussed below were aggregated by calculating mean scores across items.

Demographics. A variety of demographic information, including total years of teaching experience and years of education, was reported by teachers.

Beliefs. Teachers completed surveys measuring beliefs, including an *ideas about children* measure (Schaefer & Edgerton, 1985) containing 16 items on a 5-point scale ($\alpha = .77$). Items measured the extent to which teachers believe learning should be child-focused (e.g., "Children learn best by doing things themselves rather than listening to others."). The *self-efficacy* measure (Tschannen-Moran & Woolfolk Hoy, 2001) contained 12 items on a 9-point scale ($\alpha = .92$; e.g., "How much can you do to motivate children who show low interest in activities?"). Lastly, teachers completed a *beliefs about intentional teaching* measure (Hamre et al., 2012) containing 11 items on a 5-point scale ($\alpha = .68$) and captured the extent to which children's learning is contingent upon intentional classroom interactions (e.g., "Young children learn best when teachers are actively involved in their play.").

Psychological Factors. Teachers completed psychological measures, including an *anxiety* measure based on the State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983). Teachers reported their feelings over the past week on 10 items on a 4-point scale ($\alpha = .80$; e.g., "I was tense."). They also completed a *conscientiousness* measure,

derived from the NEO Personality Assessment (Costa & McCrae, 1992), containing 12 items on a 5 point scale (α = .80). Teachers reported their agreement on items such as "I'm pretty good about pacing myself so as to get things done on time." Readiness to change was coded using teachers' responses to an open-ended question posed at the beginning of the intervention, "What are your hopes and goals for the consultancy process?" Given the open-ended nature of this question, this measurement technique offered an indirect means of assessing various components commonly associated with readiness to change. The *readiness to change* coding scheme contains 6 items rated 1 (no evidence) to 3 (conclusive evidence) assessing the extent to which teachers' responses demonstrated internal aspects (communication of values, self-efficacy, specificity of goals, positive affect) and external aspects (acknowledgement of external support) of readiness to change, as well as overall motivation to change (α = .64). Twenty percent of responses were double coded and showed high inter-rater reliability (ICC = .92).

Contextual Factors. Teachers completed a *school climate* measure (Tschannen-Moran, Parish, & DiPaolo, 2006) containing 10 items on a 5-point scale (α = .92). Each teacher rated his or her perception of school leadership and professional relationships (e.g., "The interactions between teachers are cooperative."). In addition, teachers completed a *work stress* measure (Fimian & Fastenau, 1990) containing 6 items rated 1 (no stress) to 5 (highly stressful) (α = .80; e.g., "My personal priorities are being shortchanged due to time demands."). Families of children in participating teachers' classrooms completed a demographic survey assessing family income. From this, we calculated *classroom poverty* as the proportion of children within the classroom whose parents reported their income was 1.5 times the national poverty threshold or less.

Intervention Responsiveness.

Consistent with theory (Berkel et al., 2010) and previous work (LoCasale-Crouch et al., 2013), we examined multiple indicators of responsiveness, including engagement, attendance, home practice, and participant satisfaction.

Engagement. At the end of the intervention, coaches reported the extent to which teachers were engaged with the intervention. The measure contained 7 items on a 5-point scale ($\alpha = .92$). Coaches rated teachers on items such as "Teacher implements new strategies and approaches" and "Teacher asks follow-up questions during discussions and in prompts."

Attendance. This was assessed by the total number of coaching cycles completed.

Home practice. Teachers had access to the MyTeachingPartner website that provided text and video examples of other teachers effectively interacting with children. To assess self-initiated usage of resources available on the MTP web-site, a web-tracking system documented the time spent on each web page. From this, a total amount of time spent was calculated in minutes, with a cut-off of fifteen minutes per page per session.

Participant satisfaction. At the conclusion of the coaching intervention, teachers reported their satisfaction with the intervention. The measure contained 10 items on a 5-point scale ($\alpha = .73$). Teachers reported on items such as "I had a good relationship with my NCRECE coach."

Results

Factors Associated with Responsiveness

Descriptives (Table 1) and bivariate correlations (Table 2) were examined. Two outcome variables, home practice and satisfaction were found to be skewed. As a result, a square root transformation was performed for home practice and a square transformation was performed for satisfaction, resulting in improved normality. Next, we determined the unique ability of each independent variable to explain each responsiveness outcome. Coach was used as a random

factor (ICCs ranged from .06-.10) which removed the random variability associated with the clustering of teachers within coaches, thus offering more robust results. We determined the amount of variability that was uniquely explained by each conceptual set of variables (i.e., demographic, beliefs, psychological, and contextual) by comparing the R^2 of full and reduced models (DeCoster, 2007). As a robustness check, we also tested the models with the inclusion of phase I treatment status (course or control); results did not change suggesting no significant relationship between phase I treatment status and responsiveness, and thus, no need to control for phase I treatment status. Analyses were conducted in Mplus version 6.11 (Muthén & Muthén, 2010) using full information maximum likelihood estimation. This estimation method allowed us to use all of the information available in each case, and has been identified as one of the best ways to handle missing data (Peugh & Enders, 2004). All models were significant and the standardized coefficients are presented in Table 3.

Engagement. Beliefs about intentional teaching, readiness to change, and school climate all significantly related to engagement, such that teachers who held more intentional beliefs about teaching, who were rated as more ready to change, and who perceived their work environments more favorably were rated by their coaches as more responsive. Contextual features explained the greatest portion of the variance (9.3%) followed by psychological factors (9.1%) and beliefs (5.3%), while demographics explained very little variance (1.1%).

Attendance. In this model, teachers' years of education, anxiety, and readiness to change all significantly related to teachers' intervention attendance, such that teachers with more years of experience, less anxiety, and rated as more ready to change completed more coaching cycles. Psychological factors accounted for the greatest portion of the variance (8.5%), followed by demographics (8.1%), contextual features (1.7%) and beliefs (0.7%).

Home Practice. Teachers' years of experience, child-centered beliefs, and readiness to change significantly related to home practice. More specifically, teachers with more years of experience, more child-centered beliefs, and rated as more ready to change spent more time accessing web resources. Beliefs accounted for 7.6% of the variance, followed by demographics (4.8%), contextual features (3.2%), and psychological factors (2.7%).

Participant Satisfaction. In this model, teachers' years of education and anxiety significantly related to participant satisfaction. Teachers with more years of experience and less anxiety rated the intervention more favorably. Beliefs accounted for 4.0% of the variance, followed by demographics (3.5%) psychological factors (2.7%), and contextual features (1.4%).

Individual and Contextual Relations to Responsiveness

Separate models were run with the inclusion of two interaction terms to see the extent to which teacher characteristics moderated the association between classroom poverty and responsiveness. Main effects were standardized before creating the interaction terms to reduce collinearity among the effects.

Self-Efficacy and Classroom Poverty. A significant interaction between self-efficacy and classroom poverty was found for participant satisfaction ($\beta = .15$, $p < .05$). Findings indicate that self-efficacy mattered very little in low poverty classrooms. However, in classrooms with high poverty, teachers with high self-efficacy reported greater satisfaction with the coaching intervention than teachers with low-self-efficacy. The interaction term was not significant for any of the other responsiveness variables.

Readiness to Change and Classroom Poverty. A significant interaction between readiness to change and classroom poverty was found for home practice ($\beta = .14$, $p < .01$). Similar to the previous finding, readiness to change mattered very little in low poverty

classrooms. However, teachers in high poverty classrooms who were rated as more ready to change spent more time accessing web resources than teachers who were rated as less ready to change. The interaction term was not significant for any of the other responsiveness variables.

Discussion

The goal of the present study was to identify the individual and contextual factors that related to teachers' responsiveness in the MTP coaching intervention. Findings implicate various characteristics, including demographics, beliefs, psychological factors, and context, as relating to responsiveness. These findings are discussed in more detail below.

Consistent with previous work, the present study found that beliefs related to intervention responsiveness (Downer et al., 2009). Specifically, teachers with more intentional and child-centered beliefs about teaching were found to be more responsive to the intervention. Teachers who held these beliefs may have found the intervention material to be well aligned with personal beliefs and were therefore more inclined to engage. Exposure to material that is incongruent with personally-held beliefs can be threatening and uncomfortable (Wlodkowski, 2008), which may impede responsiveness. As a result, to promote responsiveness, it may be helpful to confront incongruent beliefs and facilitate positive change at the beginning of the intervention.

When considering psychological factors, both readiness to change and anxiety related to multiple indicators of responsiveness. These findings are consistent with previous literature linking readiness to change and intervention responsiveness (Biller et al., 2000) and suggests that teachers identified as less ready to change at the start of the intervention may not be able to effectively engage. This finding is also consistent with theories of change that suggest that the psychological disposition to be ready to change often precedes behavioral change (Eccles & Wigfield, 2002; Prochaska, DiClemente, & Norcross, 1992). Similarly, our findings support the

notion that anxiety may reduce working memory resources and potentially hamper personal motivation (Eyesenk & Calco, 1992; Pekrun et al., 2002). As a result, it may be particularly beneficial to assess readiness to change and anxiety early in an intervention to provide targeted support to promote responsiveness in hopes of facilitating positive changes in teacher practice.

Our findings are consistent with previous work suggesting the necessity of considering both individual and contextual factors, individually and in combination, as they relate to intervention responsiveness (e.g., Atteberry & Bryk, 2011). In particular, teachers' perceptions of the supportive quality of professional relationships at the school were associated with engagement. This supports the notion that teachers who feel valued and supported at school may be more motivated to improve and thus more responsive to the intervention (Atteberry & Bryk, 2011; Wagner & French, 2010).

The psychological factor of conscientiousness, along with the contextual factors of work stress and classroom poverty did not significantly relate to any of the four indicators of responsiveness. Previous studies have linked conscientious to in-person class attendance in undergraduate classrooms (Webb et al., 2007), but this finding did not replicate in a web-mediated intervention for teachers. Furthermore, work stress has been linked to less intrinsic motivation for professional development in early child educators (Wagner & French, 2010), however, in the present study, we did not find a link between stress and intervention responsiveness. The lack of variability for both conscientiousness and stress may have contributed to these results. Further, although classroom poverty has not been extensively studied in relation to responsiveness, it did not uniquely relate to responsiveness in this study.

There was, however, a significant interaction between self-efficacy and classroom poverty. Teachers from high poverty classrooms with more self-efficacious beliefs tended to

report greater satisfaction with the intervention than less self-efficacious teachers from high poverty classrooms. Given that self-efficacious teachers believe they can successfully promote student learning (Soodak & Podell, 1996), it is possible that less self-efficacious teachers from more impoverished classrooms may have been more frustrated and less satisfied with the intervention due in part to their inability to identify the impact their teaching has on students' learning outcomes.

Similarly, a significant interaction was found between readiness to change and classroom poverty, such that teachers from high poverty classrooms who were rated as more ready to change utilized more web resources than teachers with low readiness to change from high poverty classrooms. It is well-documented that teachers who work in high poverty classrooms have taxing professional demands (Ingersoll, 2004).Therefore, teachers from high poverty classrooms who are less ready to change may be ill-equipped to persist in the intervention and maximize available resources.

Although the present study sought to examine factors associated with MTP intervention responsiveness beyond demographic characteristics, it is important to note the significant findings regarding education and experience. Given that less educated teachers attended fewer cycles and reported less satisfaction with the intervention and less experienced teachers utilized fewer resources, it may also be important to consider demographic characteristics in combination with other individual and contextual characteristics when seeking to promote intervention responsiveness. Thus, intervention developers need to think carefully about how to develop interventions that sustain teachers with diverse levels of education and experience, in conjunction with other pertinent individual and contextual factors.

Consistent with Berkel et al.'s (2011) supposition that multiple indicators may capture distinctly important features of intervention responsiveness, our findings indicate varied patterns across the individual elements. The four responsiveness variables in the present study, engagement, attendance, home practice, and participant satisfaction had unique associations with teacher and contextual characteristics. It would be beneficial for future studies to continue to explore multiple indicators of responsiveness to understand what factors relate to responsiveness.

Limitations & Future Directions

As with all studies, several limitations exist. First, given the nature of the study, no claims can be made to causation. Furthermore, the present study is limited by a relatively small sample size and large number of independent variables. Although the number of variables was justified due to the exploratory nature of the study, it is possible that relationships were not detectable due to limited power. Also, due to multicollinearity among some predictors (Table 2), suppression effects may have occurred. Comparing our results with the strength and direction of the bivariate correlations suggests that we may not have been able to detect certain relationships. However, this examination revealed that multicollinearity did not appear to inappropriately magnify results.

An additional limitation is school climate was measured at the end of the intervention; though justified, the timing limits extrapolations regarding the extent to which school climate should be a targeted focus of pre-intervention efforts. Future work should explore how pre-intervention school climate relates to responsiveness. It would also be insightful to conduct similar inquiries into responsiveness patterns using different intervention designs, such as online coursework, which require more email correspondence and self-paced lessons. Finally, the

present study focused solely on characteristics of teachers and context; however, it would be worthwhile for future work to unpack the "fit" or alignment between coaches and teachers.

Conclusion & Implications

Understanding intervention responsiveness is important for maximizing resources and ultimately promoting desired outcomes (Irwin & Supplee, 2012; Knoche et al., 2010; Summerfelt, 2003). This is especially true in the field of early childhood education where the enterprise of professional development is ever-growing, resulting in ample resources allocated to professional development interventions. Despite the potential promise of professional development, efforts may be unsuccessful if teachers are not responsive. Our findings indicate that a variety of individual and contextual factors relate to teachers' responsiveness. Psychological factors, specifically readiness to change and anxiety, related to several indicators of responsiveness. Given the consistency of these findings, intervention providers may find it advantageous to identify teachers low in readiness and/or high in anxiety to provide additional intervention support to promote responsiveness. To bolster readiness to change, and reduce anxiety, providers could work with teachers to discuss ideas, goals, and worries prior to the start of the intervention. Doing so could maximize resources and promote positive change in teachers. Similarly, teachers were less responsive when their beliefs were incongruent with the aims of the intervention. Thus, it may be beneficial to focus on aligning participant beliefs with intervention material early in an intervention. Finally, findings concerning the importance of psychological characteristics and beliefs were magnified for teachers in high poverty classrooms suggesting that fostering readiness to change and self-efficacy may be especially important for these teachers. Future work can use this new knowledge to adapt instruction, support teachers' efforts, and ultimately maximize intended intervention benefits.

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Table 1

Descriptive Statistics

Variable	*N*	Range	Mean (*SD*)
Demographics			
Years of Education	191	12.00- 19.00	15.63 (1.73)
Years of Experience	188	0- 43.00	14.15 (9.34)
Beliefs			
Self-Efficacy	174	3.50- 9.00	7.45 (0.89)
Adult-Centered Beliefs	154	1.19- 4.06	2.52 (0.59)
Beliefs about Intentional Teaching	146	2.18- 5.00	3.64 (.63)
Psychological			
Conscientiousness	190	2.92- 5.00	4.08 (0.46)
Anxiety	154	0- 2.10	0.77 (0.44)
Readiness to Change	146	1.00- 2.83	1.78 (0.44)
Contextual			
Work-Related Stress	153	1.00- 3.83	2.09 (0.73)
School Climate	139	1.70- 5.00	4.01 (0.76)
% Classroom Poverty	168	0- 1.00	0.86 (0.24)
Responsiveness outcomes			
Engagement	161	1.12- 5.00	3.67 (0.89)
Attendance	170	1.00- 21.00	10.12 (4.16)
Home Practice	205	0- 764.27	101.93 (139.60)
Participant Satisfaction	131	3.20- 5.00	4.69 (0.41)

Table 2

Bivariate Correlations among Independent Variables

	1	2	3	4	5	6	7	8	9	10	11
1. Years of Education	1										
2. Years of Experience	-.10	1									
3. Self-Efficacy	.06	-0.01	1								
4. Adult Centered Beliefs	-.27*	-0.07	-0.01	1							
5. Beliefs about Intentional Teaching	0.19*	0.16	0.16	-0.46*	1						
6. Conscientiousness	0.08	-0.11	0.16*	0.06	0.03	1					
7. Anxiety	0.13	-0.13	-0.19*	0.09	-.06	-0.30*	1				
8. Readiness to Change	0.20*	0.03	0.06	-0.16	0.19*	0.01	-0.13	1			
9. Work-Related Stress	-0.09	0.07	-0.11	-0.07	-0.05	-0.23*	0.12	0.06	1		
10. School Climate	0.01	-0.12	0.10	0.09	-0.02	0.10	0.03	-0.27*	-0.01	1	
11. Classroom Poverty	-0.29*	0.06	-0.05	0.22*	-0.16	0.02	-0.12	0.01	0.14	-0.15	1

Note: * = $p < .05$

Table 3

Standardized Coefficients from Models Predicting Responsiveness

	β (SE)			
Predictor	Engagement	Attendance	√Home Practice	Satisfaction²
Demographics	(ΔR^2 = .011)	(ΔR^2 =.081)	(ΔR^2 =.048)	(ΔR^2 =.035)
Years of Education	.087 (.095)	.305 (.099)**	.050 (.106)	.194 (.077)**
Years of Experience	.051 (.076)	-.054 (.064)	.214 (.063)**	-.010 (.124)
Beliefs	(ΔR^2 = .053)	(ΔR^2 =.007)	(ΔR^2 =.076)	(ΔR^2 =.040)
Self-Efficacy	-.003 (.067)	.013 (.065)	-.034 (.059)	.079 (.096)
Adult-Centered Beliefs	-.104 (.096)	-.051 (.096)	-.301 (.108)**	-.027 (.083)
Beliefs About Intentional Teaching	.180 (.080)*	.039 (.097)	-.021 (.101)	.172 (.127)
Psychological	(ΔR^2 = .091)	(ΔR^2 =.085)	(ΔR^2 =.027)	(ΔR^2 =.027)
Conscientiousness	.131 (.095)	.073 (.075)	.023 (.048)	-.047 (.048)
Anxiety	-.044 (.060)	-.224 (.113)*	.033 (.081)	-.174 (.049)***
Readiness to Change	.284 (.083)**	.181 (.065)**	.159 (.077)*	-.100 (.079)
Contextual	(ΔR^2 = .093)	(ΔR^2 =.017)	(ΔR^2 =.032)	(ΔR^2 =.014)
Work-Related Stress	.104 (.077)	.018 (.073)	.021 (.079)	.074 (.102)
School Climate	.202 (.044)***	.100 (.081)	.131 (.083)	.091 (.079)
% Classroom Poverty	-.183 (.099)	-.079 (.068)	.089 (.066)	.003 (.096)
Overall model R^2	.314***	.258***	.175***	.127*

Note: * = $p \leq .05$, ** = $p < .01$, *** = $p < .001$.

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

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Abstract

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

Keywords: teacher depression, social-emotional development, teacher-child interactions, early childhood, Head Start

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

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

Prior research in this area has been limited by focusing on associations between teacher depression and children's behavior problems at a single point in time (Jeon et al., 2014). The present study seeks to extend these findings by examining how teachers' depression relates to children's development of social skills and problem behaviors over the course of the preschool year. Furthermore, this study adds to the field by examining the extent to which depression relates to teacher-child interactions and children's social-emotional development specifically in Head Start programs. This focus is warranted given the large numbers of children in Head Start programs who are "at-risk" due to poverty-related adversity (Blair & Raver, 2012). Children growing up in adverse conditions are particularly susceptible to environmental stressors, including caregivers' depressive symptoms (Belsky, Bakerman-Kranenburg, & van IJzendoorn,

2007). The goal of Head Start is to offset children's risk by providing high quality early experiences, but this goal may not be realized if children are in classrooms where their teachers are depressed. In this paper we explore whether Head Start teachers' depressive symptoms relate to children's social-emotional development throughout the school year. We also examine whether the quality of teachers' interactions, specifically their provision of emotional support, mediate the association between teachers' depressive symptoms and children's social emotional development.

Theoretical Framework: Prosocial Classroom Model

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

Young Children's Social-Emotional Development

Social-emotional development is a broad, multi-faceted concept characterized by growth in various proactive skills and behaviors including recognizing and managing one's emotions, developing positive relationships with others, making responsible decisions, handling

challenging situations, and feeling empathy and concern for others (Collaborative for Academic, Social, and Emotional Learning [CASEL], 2013). In turn, social-emotional development is also characterized by the absence (or lower incidence) of "problem behaviors" including emotional distress and conduct problems (CASEL, 2013). Social-emotional development flourishes during the preschool years as children make strides in their capacity to understand and communicate with others, and recognize and control their own emotions and behaviors (Shonkoff & Phillips, 2000).

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

Young children develop social-emotional skills in context, largely through their interactions with adults, which includes parents as well as teachers or other formal care providers (Burchinal et. al, 2010; Hamre et al., 2013; Mashburn et al., 2008; Yoshikawa et al., 2013). Adults can model appropriate communication skills, encourage children to share ideas and experiences, and instruct children how to interact with peers and other adults (Thompson & Goodman, 2009; Thompson & Twibell, 2009). When children are in settings where adults are

responsive and emotionally supportive to their needs, they develop more secure attachments that facilitate the development of these skills (Mashburn et al., 2008; Shields et al., 2001). Emotionally supportive interactions are characterized by creating a positive classroom climate, expressing sensitivity and regard for students' feelings and perspectives, and avoiding negativity or harshness (Pianta, La Paro, & Hamre, 2008). Inconsistent or harsh caregiving can impede children's social-emotional development and put children at risk for later detriments. As discussed in the next section, caregiver depression has been shown to negatively relate to both the quality of interactions, as well as children's social-emotional development (Jeon et al., 2014).

Considering Teacher Depression

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

As part of the Pennsylvania Head Start Staff Wellness Survey, Whitaker, Becker, Herman, and Gooze (2013) compared the physical and mental health of teachers employed in

Head Start and Early Head Start programs with national samples of demographically similar women working in other professions. Overall, Head Start teachers had poorer mental and physical health than the broader population. Twenty-four percent of all teachers in the study were considered depressed based on a commonly used self-reported checklist of depressive symptoms (Center for Epidemiologic Studies Depression Scale [CES-D]; Radloff, 1977), whereas 18% of women in the comparison sample were considered depressed. Overall, this underscores the importance of further examining teacher depression among Head Start teachers. It is necessary to note that similar to previous work, we will use the term "depression" to refer to self-reported depressive symptoms rather than diagnosed clinical depression (Hamre & Pianta, 2004).

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

with child outcomes (i.e., Hamre et al., 2013) it is relevant to consider how Head Start teachers' depression relates to the quality of observed interactions, as well as teacher and parents reports of children's development.

Teacher depression and children's social-emotional development. Recent work has explored the relevance of depressive symptoms in directly explaining children's developmental outcomes, as well as the possible indirect effect, namely the mediating role of teacher quality (Jeon et al., 2014; McClean & Connor, 2015). For instance, McClean and Connor (2015) found that the quality of the classroom learning environment mediated the association between depressive symptoms and student achievement in third grade classrooms. Within early childhood, Jeon and colleagues (2014) used data from the Fragile Families and Child Wellbeing study (FFCWS), a longitudinal study of economically disadvantaged children born into single parent households, to explore the associations between teacher depression, global child-care quality, and teachers' and parents' reports of children's problem behaviors during the three-year-old year. Consistent with previous work, teachers who reported more depressive symptoms had lower global child-care quality scores. Additionally, teachers who exhibited higher levels of depressed mood reported more externalizing (i.e., impulsivity, lack of behavioral and attentional control) and internalizing (i.e., anxiety, withdrawal, sadness) problem behaviors for the children in their care. Parents whose children were in classrooms with teachers who had higher levels of depression reported that their children had more internalizing problem behaviors. Observed global child-care quality mediated these associations for teacher-reported problem behaviors (Jeon et al., 2014). The present study seeks to replicate and extend these findings by focusing explicitly on children served by Head Start, considering the possible mediational role of teacher-

child interactions specifically, and utilizing measures of children's reported behavior at multiple time points to estimate changes in children's social-emotional development during the year.

Present Study

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

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

Method

Participants

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

The sample for the present study is comprised of 2,203 children nested within 355 classrooms/teachers (in 118 centers/58 programs). Children and teachers were included if teachers remained in the same classroom, and thus worked with the same children for the duration of the school year. Nearly all of the teachers were female (97.9%) with an average age of 41 years (*SD* = 10.54; range: 23-59). Teachers were ethnically diverse with 47.8% indicating White, 34.8% Black, 21.1% Hispanic, and 17.7% Indian, Asian, or other (note: categories were non-mutually exclusive.) On average, teachers had 13.08 years of teaching experience (*SD* = 8.49; range: 0-30). Most teachers had at least some postsecondary education (94.6%);

specifically, 36.4% possessed Associate's degrees, 33.0% Bachelor's degrees, 8.4% Master's degrees.

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

Measures

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

Teacher depression was captured using the short-form of the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977). Teachers indicated how they felt about themselves and their lives in the past week using 12 items on a four point scale (1 = rarely or never; 5 = most or all). Items captured feelings and behaviors commonly associated with depression, such as "you could not shake off the blues, even with help from family and friends",

"everything you did was an effort", and feeling "sad" or "lonely." The CES-D was administered via in-person interviews during the fall of 2009 (α = .80) and the spring 2010 (α = .81). To estimate teachers' average depressive symptoms over the school year, a mean of the two time points was used in analyses (*r* = .38). Overall, 12.7% of teachers reported no depressed symptoms over the entire school year, an additional 80.2% had scores greater than zero, but less than 10 indicating some depressed symptoms, and 7.1% of teachers had scores greater than 10 indicating more pervasive symptoms. Although this scale does not constitute an official diagnosis of clinical depression, individuals who score at or above 10 are considered "depressed" (Radloff, 1977).

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

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

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

Teacher report. Teachers reported on children's skills and behavior in both the fall and spring, receiving an incentive payment for each completed form. Problem behaviors were reported using 14 items from an abbreviation of the Personal Maturity Scale (Entwisle, Alexander, Cadigan, & Pallis, 1987) and the Behavior Problems Index (Peterson & Zill, 1986).

Teachers indicated how often children engaged in aggressive, hyperactive, and anxious, depressed, or withdrawn behavior by indicating agreement with statements such as "the child hits/fights with others", "the child is very restless", and "the child is unhappy", using a three-point scale (1 = not true; 3 = very true or often true). Children's social skills were reported using 12 items drawn from the Social Skills Rating System (SSRS; Gresham & Elliott, 1990) and the Personal Maturity Scale (Entwisle et al., 1987). Teachers indicated the extent to which a given statement was characteristic of the child, such as the child "follows the teacher's directions" and "helps put things away", using a three-point scale (1 = never; 3 = very often).

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

Covariates, including teachers' years of experience, educational attainment, and number of aides present in the classroom, were collected during the teacher interview that occurred in the

fall. Teachers' ratings of school community and leadership were captured during the spring interview using a 12 item questionnaire based on the Policy and Program Management Inventory (Lambert, 2002). Teachers indicated the extent to which they agreed with statements about the workplace environment, such as "Your Head Start program makes teachers feel good about their jobs" and "Your Head Start programs provides freedom for teachers to create their own unique classrooms" using a five point scale (1 = strongly disagree; 5 = strongly agree). Scores ranged from 1-5 with an average of 3.69 (*SD* = .76, α = .92.) These covariates were selected based on previous research linking teachers' experience, education, number of classroom aides, and perceived school community with the quality of teacher-child interactions (e.g., Hamre & Pianta, 2004; McGinty, Justice, & Rimm-Kaufman, 2008; Pianta et al., 2005).

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

Results

First, descriptive statistics (Table 1) and bivariate correlations (Table 2) were examined. In order to adequately compare level 1 (child) and level 2 (teacher) variables, when appropriate, level 1 variables were aggregated to the classroom-level. Correlations were mostly modest, with the exception of reports of children's social skills and problem behaviors during the fall and spring, which tended to be highly correlated. The strength of the associations between teacher- and parent- reported behaviors were mostly modest, which is consistent with previous work

(Achenbach, McConaughty, & Howell, 1987; Winsler & Wallace, 2002), and is likely the result of behaviors being more or less salient in different contexts (i.e., home vs. school.) Across reporters, problem behaviors tended to decrease over time, while social skills tended increase (Table 1). Paired samples t-tests confirmed that all reports of children's problem behaviors and social skills were significantly different at the fall and spring time points.

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

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

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

Discussion

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

Depressive Symptoms and Children's Social-Emotional Development

Teachers and parents reported increases in problem behaviors, and teachers reported decreases in children's social skills, when children were in classrooms with more depressed teachers. These are important findings because although previous work found concurrent associations between teacher depression and children's social-emotional *skills* (Jeon et al., 2014),

[1] Noting the positive skew of teacher-reported problem behaviors, a square root transformation was performed and analyses were re-run. However, results did not change. Therefore, estimates from the original models are reported.

our findings show that teacher depression also has implications for children's *development* over the course of a school year. Overall, this supports the idea that teachers' own social-emotional competence and well-being, namely depression, relates to children's social-emotional growth (Jennings & Greenberg, 2009; Denham, Bassett, & Zinsser, 2012).

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

It is also possible that these results may be attributable to how children's behaviors and skills naturally vary across contexts, which subsequently impacts how adults in those contexts perceive a given child (Achenbach et al., 1987). For instance, a child may be more or less talkative in a classroom of 20 four-year-olds than he or she is at home with parents or siblings. In most cases, teachers have more opportunities to observe children's social behavior, at least among large groups of peers. Subsequently, it is normal for parents and teachers to vary in their ratings of preschool children's social skills and problem behaviors. Evidence suggests that

parents and teachers agree on social skills *less* than problem behaviors, perhaps because problem behaviors are particularly salient across contexts (Winsler & Wallace, 2002). Teacher depression may be associated with both increases in parent- and teacher-reported problem behaviors because such behaviors occurred in both home and school settings. In contrast, teacher depression may only negatively influence children's social skill development at school, but not at home or other out-of-school settings, at least in ways that are perceptible to parents.

Teachers' Depressive Symptoms and Emotionally Supportive Interactions

To explore the possible explanatory pathway between teachers' depression and children's social-emotional development, in the present study we considered teachers' emotionally supportive interactions as a mediator, but found no evidence of mediation. This is surprising given previous evidence linking teachers' depression to emotional support (Hamre & Pianta, 2004; Jennings, 2015a) and emotional support to children's social-emotional outcomes (Mashburn et al., 2008; Hamre et al., 2013). Although the reason for these null associations is unknown, it may be possible that the one day CLASS observation was not sensitive enough to provide a reliable estimate of teachers' *true* interactions with children. Perhaps depressed teachers were able to appear emotionally supportive on the day of observation, but this may not represent more typical daily interactions.

In a similar vein, previous work suggests that variability in emotional support, even the variability throughout a single day of observation, may actually be more indicative of children's outcomes than an overall mean score; teachers who are emotionally *inconsistent*, that is, at times appearing enthusiastic or attentive and at other times acting flat or withdrawn; this inconsistency may overburden children's self-regulatory resources (Curby, Brock, & Hamre, 2013; Curby et al., 2011; Tremblay et al., 2004; Zinsser, Bailey, Curby, Denham, & Bassett, 2013). Given that

depression relates to one's own personal management of emotions, and a large portion of the present sample consisted of teachers with some, though arguably mild, depressive symptomatology, it may be possible that teachers' *consistency* of emotional support may have related more strongly to depression, but this notion could not be ascertained in the present study.

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

Our exploration of Head Start teacher depression was particularly warranted based on recent estimates suggesting a high prevalence among this population of teachers (Whitaker et al., 2013). Interestingly, our study estimated that approximately 7% of Head Start teachers were considered depressed, which is noticeably less than recent estimates by Whitaker and colleagues (2013), who utilized anonymous survey techniques. Instead, our estimates were similar to other *less anonymous* survey techniques (e.g., 9% in Hamre & Pianta, 2004), suggesting that teachers

may underreport depressive symptoms in many research studies. It is possible that common societal stigmas related to various mental health disorders, including depression, may deter teachers from truthfully admitting their symptomatology and perhaps seeking help. As a result, it is extremely difficult to estimate the *true* incidence of depression among Head Start teachers. It is possible that the underreporting of depressive symptoms influenced our inability to detect mediation. Nevertheless, in the present study depressive symptoms, albeit underreported, significantly related to children's social-emotional development.

Limitations

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

Future Directions

Future work should continue to explore the association between teachers' mental health and children's development, and seek to better understand the explanatory pathways. To the

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

Conclusion & Implications

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

teachers' depressive symptoms (e.g., Gold et al., 2010; Jennings, Frank, Snowberg, Coccia, & Greenberg, 2013; Roeser et al., 2013). More wide-scale efforts are needed to holistically support early childhood teachers, which will ultimately benefit our youngest learners.

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Table 1

Descriptive Statistics

	Mean	S.D.	Range Observed	Possible Range	α
Teacher Depression	3.99	3.89	0-21.50	0-36	.80
Emotional Support	5.29	.51	2.50-6.38	0-7	.82
T-R Problem Behaviors: Fall	4.52	4.47	0-23	0-36	.88
T-R Problem Behaviors: Spring	4.29	4.61	0-28	0-36	.87
T-R Social Skills: Fall	15.40	4.84	0-24	0-24	.89
T-R Social Skills: Spring	17.25	4.64	0-24	0-24	.89
P-R Problem Behaviors: Fall	5.55	3.61	0-22	0-24	.72
P-R Problem Behaviors: Spring	5.38	3.54	0-24	0-24	.73
P-R Social Skills: Fall	12.05	2.55	3-16	0-16	.68
P-R Social Skills: Spring	12.35	2.49	2-16	0-16	.69

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

Table 2

Bivariate correlations

	1	2	3	4	5	6	7	8	9	10
1. Teacher Depression	1									
2. Emotional Support	.01	1								
3. T-R Problem Behaviors: Fall	.11*	-.02	1							
4. T-R Problem Behaviors: Spring	.19*	.08	.69*	1						
5. T-R Social Skills: Fall	-.07	.04	-.65*	-.47*	1					
6. T-R Social Skills: Spring	-.14*	.08	-.52*	-.66*	.62*	1				
7. P-R Problem Behaviors: Fall	.06	.00	.12*	.10*	-.13*	-.08*	1			
8. P-R Problem Behaviors: Spring	.15*	-.03	.16*	.16*	-.15*	-.13*	.59*	1		
9. P-R Social Skills: Fall	-.05	-.06	-.19*	-.16*	.18*	.15*	-.31*	-.27*	1	
10. P-R Social Skills: Spring	.02	-.02	-.19*	-.18*	.15*	.16*	-.22*	-.26*	.52*	1

Note: * = $p < .05$; T-R = teacher-reported; P-R = parent-reported.
Child level variables were aggregated up to classroom-level where appropriate.

Table 3

Coefficients from models with emotional support as the mediator

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

Preschool Teachers' Self-Efficacy, Burnout, and Stress in Online Professional Development: A Mixed Methods Approach to Understand Change

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Abstract:

This mixed methods study examines the impact of online professional development on preschool teachers' self-efficacy, burnout, and stress. Participating teachers (n = 89) were randomly assigned into four groups: one of three treatment conditions (course-only, conference, reflective writing) or a control group. All treatment conditions received a 14-week online course on teacher-child interactions, which included regular homework assignments and community discussion boards. The conference and reflective writing conditions received additional supports. Regression analyses revealed that teachers who were in the course-only treatment condition had decreased self-efficacy and increased emotional exhaustion, a component of burnout, relative to the control group. However, teachers in the conference and reflective writing conditions did not experience such negative effects. Qualitative analyses suggest that all teachers tended to focus on personal challenges within the course, but teachers who had access to conference and reflective writing supports benefited from the availability of emotional outlets and/or opportunities for feedback.

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Preschool Teachers' Self-Efficacy, Burnout, and Stress in Online Professional Development: A Mixed Methods Approach to Understand Change

High quality preschool, characterized by effective teacher-child interactions, can substantially foster young children's development (Burchinal et al., 2008; Campbell et al., 2014; Yoshikawa et al., 2013). Professional development (PD) has been shown to successfully improve teacher-child interactions (Bierman, Nix, Greenberg, Blair, & Domitrovich, 2008; Pianta, Mashburn, Downer, Hamre, & Justice, 2008; Raver et al., 2008). Furthermore, teachers' well-being relates how teachers interact with students, as well as students' success in the classroom (Jennings & Greenberg, 2009.) However, little is known about how PD affects teachers' well-being, especially when PD is delivered online.

Online PD may limit the support teachers would typically receive in in-person settings, which could negatively affect teachers' well-being (Smith, Ferguson, & Caris, 2001). Consequently, online learning is often intentionally designed to include various supportive elements, although it is not clear what elements are best (Moon, Passmore, Reiser, & Michaels, 2013), especially for teachers. In this study we utilized a mixed methods approach to first determine the extent to which facets of teachers' well-being, specifically self-efficacy, burnout, and stress, changed as a result of supports teachers received in the online course *Effective Classroom Interactions* (ECI.) Although effect estimates determine if change occurred, they do not necessarily suggest why (Rogers, 2000; Sheridan, Marvin, Edwards, & Knoche, 2009; Zaslow, 2009). Therefore, follow-up qualitative analyses were used to explore why teachers' well-being changed in ECI, which may have implications for the design of future PD.

Professional Development on Teacher-Child Interactions

Teacher-child interactions have been the target of many PD interventions and findings from these studies suggest that teacher-child interactions are amenable to change. Across recent PD studies, effect sizes range from .53 to .97 for teacher behaviors, suggesting considerable promise for using PD to improve teacher-child interactions (Bierman et al., 2008; Domitrovich, Gest, Gill, & Bierman et al., 2009; Pianta, Mashburn, et al., 2008; Raver et al., 2008). There is general consensus that "higher dose" or sustainable models of PD, which require ongoing exposure to material and repeated practice of skills, are best suited to convey complex or multifaceted material (Zaslow, Tout, Halle, Whittaker, & Lavelle, 2010). These types of PD allow learners to synthesize, integrate, and apply new knowledge and skills (Hamre, Downer, Jamil, & Pianta, 2012).

In particular, online learning has made higher dose PD more accessible, which is compatible with the needs of working adults, such as teachers, who may not be able to attend in-person trainings due to various constraints (Brock, 2010; Early & Winton, 2001; Norris, 2010). Aside from being cognitively engaging, online PD needs to facilitate reflective thinking and enable learners to receive supportive mentorship that meets learners' cognitive and affective needs (Prestridge & Tondeur, 2015). However, online learning has been scrutinized for being potentially impersonal or alienating to learners (Smith, Ferguson, & Caris, 2001), leading many to question how to design online PD to best support teachers' needs (e.g., Moon et al., 2013; Norris, 2010; Prestridge & Tondeur, 2015). Building off previous work, the ECI online course was intentionally designed to include various supportive elements.

The Effective Classroom Interactions course. The ECI course sought to improve teacher-child interactions by: providing information about child development and effective interactions; demonstrating, via video exemplars, what effective interactions look like; and

giving teachers opportunities to practice learned skills and observe and reflect on their practices (Hamre et al., 2012). Consistent with the "Inhibition Model", which suggests that opportunities to productively and constructively express oneself and one's emotions are favorable to inhibiting emotional expression (Rachman, 1980; Pennebaker, 1997), teachers were intentionally provided various expressive outlets within the course. All teachers had access to homework and discussion boards, which have been shown to support reflection, provide a sense of community, and allow learners to receive feedback (Dickinson & Brady, 2006; Norris, 2010). In addition, teachers were randomly assigned to receive additional supports, either one-on-one conferences with instructors or reflective writing assignments.

Conferences are based on a large body of literature on coaching and consultation suggesting that having an expert to personally confer with can support change (LoCasale-Crouch, Cabell, Jimenez, & Baldanza, 2014; Brennan, Bradley, Dallas Allen, & Perry, 2008). Reflective writing supports are based on research suggesting that personally reflecting on emotions and relationships through expressive writing (Pennebaker, 1997) may improve psychological health (Smyth, 1998) and facilitate intrinsic motivation (Sheldon & Lyubomirsky, 2006). A previous study found that teachers in the ECI conference group made the most advantageous changes to their teaching practices (Hamre, LoCasale-Crouch, Neesen, & Jimenez, 2014). In addition, further analyses found that teachers in the course-only condition (those who received neither conference nor reflective writing supports) utilized discussion boards and homework assignments more than teachers in the other conditions (LoCasale-Crouch, Hamre, Roberts, & Neesen, 2016). Taken together, this suggests that perhaps the discussion boards and homework assignments may have provided outlets to teachers who did not have access to reflective writing and conference supports.

Despite this new knowledge, little is known about how teachers' well-being changed in the ECI intervention. Teachers' well-being is thought to be especially important in PD that delivers socially and emotionally salient content, such as the ECI intervention, because such PD relies heavily on the teachers' own social-emotional skills (Jennings & Greenberg, 2009). Furthermore, the consideration of teachers' well-being is especially relevant in online PD, which may potentially isolate learners (Smith, Ferguson, & Caris, 2001).

The Importance of Teachers' Well-being

Teachers' well-being is a broad concept which encompasses a person's multidimensional evaluation of his or her life, including affective evaluation of emotions, abilities and moods (McGillivray, 2007). According to the Prosocial Classroom Model, teachers' well-being plays an important role in developing close relationships with students, creating healthier classroom environments, and ultimately, improving social and cognitive outcomes for students (Jennings & Greenberg, 2009). Various facets comprise teachers' well-being, including self-efficacy, burnout, and stress.

Self-efficacy refers to the belief in oneself to be successful and overcome challenges, and in the context of the classroom, to successfully teach and promote student learning (Soodak & Podell, 1996). Various studies have linked early childhood teachers' self-efficacy with teaching practices and child outcomes. For instance, more self-efficacious teachers reported closer, less conflictual relationships with their students (Chung, Marvin, & Churchill, 2005). Self-efficacy has been shown to relate positively to quality of instruction (Justice, Mashburn, Hamre, & Pianta, 2008) as well as students' achievement (Guo, Piasta, Justice, & Kaderavek, 2010.)

Stress & burnout. Stress refers to mental or emotional strain that results from adverse circumstances (Curbow, Spratt, Ungaretti, McDonnell, & Breckler, 2001). In early childhood

classrooms, there are various circumstances that may cause teachers to feel stressed, such as disruptive students, challenging working conditions, or workplace disputes (Friedman-Krauss, Raver, Morris, & Jones, 2014). The inability to effectively cope with chronic stressors may lead teachers to feel "burnt out", a psychological condition which encompasses emotional exhaustion, depersonalization, and lack of personal accomplishment (Maslach, 1993; Montgomery & Rupp, 2005). According to Maslach (1993) emotional exhaustion involves feelings of emotional frustration, fatigue and strain. Depersonalization refers to negative perceptions of others, and in the case of a teacher, it represents a lack of regard for and overall impersonality towards students. Lastly, personal accomplishment represents a person's self-evaluation in relation to his or her job performance (Maslach, 1993). Stress and burnout have been linked to various negative consequences, such as higher rates of teacher turnover, lower demonstrated quality, and more conflictual relationships with students (Curbow et al., 2001; Jennings & Greenberg, 2009; Yoon, 2002; Zinsser, Bailey, Curby, Denham, & Bassett, 2013).

Changes in Teachers' Well-being & the Role of PD Supports

Aside from intervention studies that explicitly target stress and burnout, such as mindfulness-based stress reduction programs (e.g.., Flook, Goldberg, Pinger, Bonus, & Davison, 2013), little is known about how teachers' feelings of self-efficacy, stress, and burnout change in PD, especially online PD. Theoretically, PD is thought to have either a promotive *or* hindering effect on many aspects of teachers' well-being, which may be determined, in part, by the types of supports that are provided during the PD program.

Change in self-efficacy. Self-efficacy may decline in PD, often referred to as the "implementation dip", due to a prior overestimation in self-efficacy that is realized by the teacher during PD (Ross, 1994; Woolfolk Hoy & Burke-Spero, 2005). Wheatley (2002) posits that such

dips may actually incite change or facilitate positive growth during the change process. However, it is thought that eventual rebounds in self-efficacy are ideal because they leave teachers with a sense of capability and agency (Tschannen-Moran & McMaster, 2009).

Tschannen-Moran and McMaster (2009) investigated how elementary school teachers' self-efficacy changed in PD that included various types of supports, one of which was a conference-like element. Interestingly, a large portion of the teachers who participated in PD without follow-up coaching, experienced decreases in their self-efficacy. In contrast, PD that included follow-up coaching supports had the strongest positive effects on self-efficacy, suggesting that the coaching support protected teachers from declines in self-efficacy (Tschannen-Moran & McMaster, 2009). Similar evidence has emerged from the field of early childhood mental health consultations. In a review of the literature, teachers who received collaborative support from a trained professional tended to experience gains in self-efficacy (Brennan et al., 2008). In sum, previous studies have shown that coaching supports can benefit teachers' self-efficacy. Therefore, it is worth considering whether the provision of conference supports within the context of online PD had a similar effect. In addition, this study also considered how online PD supports affect teachers' stress and burnout.

Change in stress & burnout. Similar to self-efficacy, mental health consultations have been shown to potentially alleviate job-related stress (Brennan et al., 2008). PD may reduce teachers' stress by providing new knowledge that can facilitate their use of effective classroom practices (Friedman-Krauss, Raver, Neuspiel, & Kinsel, 2014). Furthermore, several studies have investigated how baseline stress relates to early childhood teachers' engagement in PD. Teachers who report higher levels of initial stress and emotional exhaustion are more highly engaged in PD programs that provide coaching supports, suggesting that teachers may be motivated to

engage in the PD to obtain knowledge and strategies for dealing with stressful classroom situations (Li-Grining et al., 2010; Domitrovich, Gest, Gill, Jones & DeRousie, 2009). However, it is unclear what supports within PD may have allowed teachers, who were already feeling stressed at the beginning of the intervention, to persist in the PD.

To summarize, most of the previous work has focused primarily on the provision of coaching or conference supports when considering associations with teachers' well-being. The present study will extend previous work by also considering reflective writing, which, to our knowledge, has not been studied in relation to early childhood teachers' self-efficacy, burnout, and stress in PD.

Reflective writing. Despite the dearth of literature on teachers' use of reflective writing, a large body of literature in counseling and clinical psychology has examined how reflective writing affects well-being. Most studies compare individuals who have an opportunity to briefly write about emotional or traumatic experiences with individuals who write about emotionally neutral topics (Pennebaker, 1997; Smyth 1998). A meta-analyses reveals that reflective writing is associated with positive long-term outcomes, including psychological well-being, physiological functioning, and health behaviors. Interestingly, most studies showed that participants experienced greater distress *during* the reflective writing experience than control participants (Smyth, 1998). Extending these findings further, textual analyses of reflective writing samples suggest that "moderate" levels of negative emotions relate to the most optimal changes in well-being, but too much, or even too little negativity may be less beneficial (Pennebaker & Seagal, 1999). Overall, these studies suggest that if individuals use reflective writing exercises to express some negativity, they make the greatest gains in well-being despite initial discomfort. However,

it is unclear how reflective writing supports may affect teachers' well-being in the context of online PD.

Present Study

Given the increased offering of PD to early childhood teachers (IOM & NRC, 2012) and the expansion of online PD (Gill, 2011), it is important to understand the ways in which online PD impacts preschool teachers' well-being. In particular, we need a better understanding of how online PD should be designed, what types of supports should be included and why. The present study focuses on early childhood teachers in the context of the ECI online PD intervention to answer the following research questions:

1. To what extent did teachers' self-efficacy, burnout, and stress change as a result of the ECI professional development intervention? Specifically, how did change vary by intervention group (conference, reflective writing, course-only, or control)?
2. How does the content of what teachers expressed in various PD supports (conferences, reflective writing assignments, homework assignments and discussion board posts) inform why changes in teachers' self-efficacy, burnout and stress may have occurred?

Method

Participants

Preschool teachers were recruited to participate in the ECI course through local contacts in three geographically diverse locations across the United States. Recruited teachers were randomized into a control condition (n = 25) or one of three treatment conditions: course-only (n = 19), conference (n = 25), and reflective writing (n = 20), explained in greater detail below. Treatment teachers were also randomly assigned to one of three instructors who served as participants' main points-of-contact. The instructors were experts in the field of early childhood education and well-versed in the content.

The majority (98%) of teachers were female, 56.4% identified as White, 20.2% Hispanic, 10.6% Black, and 5.4% Asian, American Indian, multi-racial, or other. In terms of educational attainment, 36.3% of teachers had less than a Bachelor's degree, 43.6% had a Bachelor's degree, and 12.8% had a Master's degree. On average, teachers had 8.55 years of preschool teaching experience (*SD* = 7.30.) Participants' demographic information by treatment condition can be found in Table 1. T-tests were conducted to test for differences among treatment groups. The control group was significantly *less* ethnically diverse than all treatment groups. Teachers in the control group were also more likely to hold a Master's degree compared to the conference and reflective writing conditions. Lastly, the conference condition contained more teachers with less than a Bachelor's degree compared to the course-only condition. As a result, race and educational attainment were controlled for in subsequent analyses.

In terms of attrition, six treatment teachers completed the pre-course survey, but did not complete any of the course. An additional eight treatment teachers dropped at various points throughout the semester. The majority of these teachers (61%) reported leaving the course for time-related or personal reasons, 17% became ineligible to participate, and 22% reported 'miscellaneous' reasons. In the control group, an additional three teachers dropped before the study concluded. Two teachers became ineligible and the other left the study for 'miscellaneous' reasons. T-tests were conducted to determine whether teachers who dropped the course varied from teachers who persisted. Across all participants (treatment and control), teachers did not significantly vary in terms of demographic characteristics. However, teachers who persisted were more likely to have *lower* levels of initial emotional exhaustion ($M = 2.04$, $SD = .68$) than teachers who dropped ($M = 2.50$, $SD = .83$; $t\ (85) = -2.37$, $p = .02$). The same t-tests were conducted for only teachers who received treatment and no significant differences were found,

suggesting that the finding was largely driven by the control group. Due to the missing data strategy, described in more detail in the analysis section, this attrition does not impact the sample used in quantitative analyses (n = 89). Furthermore, given that qualitative data were only collected for teachers who were assigned to the treatment conditions, and not control, differential attrition in the control group did not affect our analyses.

ECI Course Overview

The Effective Classroom Interactions (ECI) online course was designed to improve teacher-child interactions. The course, entitled "Supporting Young Children's Social, Emotional, and Regulatory Development," was offered during the fall of 2012 and was designed to be completed in one academic semester. The content was based largely on the Teaching through Interactions (TTI) framework, specifically the domains of Emotional Support and Classroom Organization which relate to engaging in positive communication, being sensitive to children's needs, having regard for students, managing behavior, and organizing the classroom (Hamre et al., 2013; Pianta, La Paro. & Hamre, 2008).

All treatment groups had access to the same core coursework, including three modules consisting of 14 sessions. The first module, sessions 1 and 2, was introductory and provided general information about why interactions are important, what would be covered in the course, and the TTI framework (Hamre et al., 2013). The second module, sessions 3-7, focused on children's social-emotional development and how to facilitate children's development through building positive relationships, providing individualized support, supporting children's independence, and using a targeted strategy known as "Banking Time" (Driscoll & Pianta, 2010). The third module, sessions 9-13, focused on children's self-regulatory development and

how to support children's development through effectively managing behavior, using time effectively, and engaging children in learning.

Each session, designed to take teachers approximately 2-3 hours to complete, was composed of five to eight video-based lessons and interactive activities, short quizzes, and end-of-session tests. A midterm and final exam was administered during sessions 8 and 14, respectively. In addition, homework assignments and community discussion boards were available to all participants. Six lessons included homework assignments where teachers were asked to videotape their teaching practice, identify effective and less effective moments related to the particular dimensions of the TTI framework, reflect on how their teaching practice is influencing their students, how their practice has changed, and describe what they plan to do differently. Within each instructor-group teachers had access to a community discussion board for the duration of the course. Discussion board participation was voluntary. Discussion questions (Appendix A) were posed weekly and usually coincided with the content of the lesson.

Conference condition. In addition to the course material, teachers in the conference condition also had up to five one-on-one telephone conferences with their instructors. Conferences occurred biweekly and lasted approximately 30 minutes. Conferences were designed as opportunities for teachers to discuss concerns, ask questions, and receive feedback from their instructors. There were five main goals for the ECI conferences which were drawn from the coaching literature: (1) *relationship building* between the instructor and teacher, in which the instructor is consistent, supportive, empathetic, and appropriately challenging, (2) *building motivation to change and engagement in online materials* by getting to know the teacher, being responsive, providing perspective, and encouraging active participation, (3) *developing teachers' understanding of child development, effective teacher-child interactions,*

and targeted strategies by providing knowledge and making connections, (4) *building self-assessment and self-awareness skills* by encouraging observation and reflection and modeling such skills, and (5) *translating knowledge to practice* by assisting with planning and goal setting. Although instructors were encouraged to keep all five goals in mind for each conference, each conference did not necessarily need to achieve every goal, and the focus incorporated the teacher's personal questions or concerns.

Reflective writing condition. In addition to the course material, reflective writing teachers received supplemental writing prompts encouraging personal reflection on their teaching practice related to a specific child. The goal of the reflective writing assignment was to provide teachers an expressive outlet for reflecting on classroom challenges. Specifically, teachers in this condition were asked to identify a child with whom they had trouble interacting with effectively. Then these teachers were asked three questions at the end of each homework assignment. The questions were (1) "In what way do you think that the strengths and challenges you considered in this session impact your relationship with this child? How does your current relationship make you feel?" (2) "Write a paragraph describing this ideal relationship and the interaction that you would like to have with this child. How do you think this ideal relationship would make you feel?", and (3) "Describe the ways that specifically working on this relationship throughout the course might improve the effective interactions that you have with the rest of your students." Teachers composed and submitted their reflections online; teachers did not receive feedback.

Quantitative Measures

Teachers completed a battery of questionnaires before and after the course. Along with demographic information, teachers reported their feelings of self-efficacy, burnout, and stress,

described in greater detail below. Descriptive statistics for all measures can be found in Table 2 Mean scores were utilized for all measures.

Self-Efficacy was measured using the short-form Teacher's Sense of Self Efficacy Scale (Tschannen-Moran & Woolfolk Hoy, 2001). The scale has 12-items in which teachers self-assess their capabilities to bring about desired outcomes for students. The measure consists of three subscales, self-efficacy beliefs in: student engagement (e.g., "How much can you do to motivate children who show low interest in activities?), instructional strategies (i.e., "How much can you provide an alternative explanation or example when children are confused?"), and classroom management (i.e., "How much can you control disruptive behavior in the classroom?") An overall score that represents all self-efficacy belief was used in this study. Teachers answered the questions using a nine-point scale where one represents "never" and nine represents "a great deal". This measure has been shown to be valid and reliable in various studies (e.g., Tschannen-Moran & Woolfolk Hoy, 2001; Klassen et al., 2009) All scales demonstrate adequate internal consistency with Cronbach's alphas of .70 at pre and .89 at post.

Burnout was assessed using the Maslach Burnout Inventory–Educators Survey (MBI-ES; Maslach, Jackson, & Leiter, 1996). The scale has 22-items in which teachers rate their feelings about their job, with three subscales: emotional exhaustion (i.e., "I feel emotionally drained from my work"), depersonalization (i.e., "I feel I treat some students as if they were impersonal objects"), and personal accomplishment (i.e., "I feel I'm positively influencing other people's lives through my work.") Teachers reported the frequency with which they related to a given statement using a 7 point scale where 1 represents "never" and 7 represents "every day." The emotional exhaustion (α = .81 pre and post) and personal accomplishment (α = .65 pre and .82 post) subscales rendered high internal consistency; however, the depersonalization subscale

showed low internal consistency (α = .41 pre and .34 post), which may be due to the limited number of items in the scale, as well as the lack of variability in several items. Because of this ambiguity, the depersonalization subscale was excluded from further quantitative analyses. Similar to previous work (i.e., Byrne, 1993; Skaalvik & Skaavik, 2010), emotional exhaustion and personal accomplishment were explored separately in this study.

Stress was captured using the Depression, Anxiety, and Stress Scale-21 (DASS-21; Lovibond & Lovibond, 1995). The DASS-21 is a 21 item self-report measure of depression, anxiety, and stress. From this measure, we used the 7-item stress subscale. Respondents rated the extent to which the statements applied to them over the past week using a 4-point scale where 1 represents "did not apply at all" and 4 represents "applied to me most of the time. A sample item includes "I found it hard to wind down." The subscale demonstrated adequate internal consistency (α = .72) at both time points.

Qualitative Measure & Coding

A qualitative coding scheme was developed to assess conference transcripts, reflective writing assignments, homework assignments and discussion board posts for themes broadly related to self-efficacy, burnout, and stress. These efforts focused on various points throughout the course, specifically, session 4 (an "early" point in the course when the first homework assignment was administered); session 6 (the mid-point); and session 12 (the end of the course.) Specifically, a process of open coding occurred in which the primary researchers created a preliminary list of codes by reading through homework assignments, discussion boards, conferences, and reflective writing assignments, and identifying recurring and relevant codes. Codes were then organized into relevant themes. Efforts were made to provide consistency in codes across data sources, however, certain codes were only relevant to certain data sources.

Specifically, ‘instructor or peer feedback’ was only coded in discussion boards and conferences, which both allowed for discourse. The codes were organized broadly around the themes: *desire for change* (when teachers made plans or expressed intentions for change), *view of self* (statements or self-assessments teachers made about themselves), *view of children* (statements about students), *personal emotions* (sharing feelings, enthusiasm or doubt), *engagement with the task* (how the teacher interacted with the assignment), and *role of instructor or peer* (actions of the peer and/or instructor in discussion boards and conferences.) A list of codes and examples can be found in Appendix B.

An initial set of codes was used to train coders and ensure reliability. Five student-researcher coders spent several weeks engaged in practice-consensus coding, allowing them to become clear about the meaning of each code. After the first week, the codes were modified slightly as new codes emerged and a few existing codes were found to be redundant. Once all coders demonstrated an understanding of the codes and process, the coding team began double coding the aforementioned assignments. Assignments were randomly assigned to coding pairs. For homework and discussion boards, coders were blind to condition. Each coder within the pair independently coded each assignment. Then one coder within the pair was tasked with condensing duplicate codes and flagging discrepancies. Every two weeks the team reconvened to discuss any discrepancies and engage in discourse to reconcile codes. Usually the coders were able to reach agreement, but if not, the master coder, who helped develop the coding scheme, made the final decision. All coding was done using Dedoose.

Analytic Plan

Quantitative analyses. To determine the extent to which teachers’ self-efficacy, burnout, and stress changed as a result of the ECI professional development intervention, multiple regressions were conducted for each respective outcome. Specifically, the outcome (self-

efficacy, emotional exhaustion, personal accomplishment or stress at time 2) was regressed on the treatment group (course-only, conference, reflective writing, and control), demographic controls (race and education), and the corresponding measure at time 1, which allowed for an estimate of change in the given construct. For the first set of analyses, the control group was omitted from the model to serve as the reference group. Subsequently, models were rerun using all other possible reference groups. Analyses were also run for only teachers in the treatment conditions to test for significant differences among instructor groups; no significant results were found, and thus, results are reported for models utilizing all participants. Multiple imputation was used to address missing data (Enders, 2010; Schafer & Graham, 2002).

Effect sizes (Cohen's *d*s) were also calculated using the average gain scores for each treatment group compared to average gains scores for the control group. Specifically, gain scores were calculated for each teacher for each measure (self-efficacy, emotional exhaustion, personal accomplishment, and stress). Then scores for teachers within each treatment condition (course-only, conference, reflective writing, and control) were averaged to estimate a single average gain score per group. This strategy accounts for the baseline mean differences in the well-being outcomes among treatment groups.

Qualitative & mixed methods analyses. Throughout the coding process, the master coder created qualitative memos to capture notes on emerging themes; these served to guide later analyses. Furthermore, once coding ceased, we assessed what and how often teachers expressed codes in the various assignments. Specifically, means and standard deviations of each code were estimated to capture how many times, on average, teachers expressed each code per assignment. All analyses were done at the teacher level to estimate teachers average experiences in the course. Initially, these analyses included teachers across all treatment conditions to understand

how teachers generally used each assignment. Then similar analyses were conducted by treatment condition to observe group differences. As needed, the original data sources were reviewed and quotes were used to provide concrete evidence of themes. Review of memos and codes led to the creation of assertions that synthesized the evidence into coherent explanations (Miles, Huberman, & Saldana, 2014.)

Results

Quantitative Findings

Bivariate correlations among the well-being measures are located in Table 3. These measures were modestly correlated, but appeared to be distinct constructs. Results from the regression analyses are found in Table 4 and effect sizes in Table 5. Aside from pre-scores consistently relating to post-scores for all measures, several significant findings emerged. First, teachers in the course-only group became less self-efficacious as compared to teachers in the control group. The effect size (d = -.92) suggests high practical significance. Second, teachers in the course-only group became more emotionally exhausted as compared to the control group. Again, the effect size was high (d = .87.) No significant differences were found among the conference, reflective writing and control groups. Subsequently, regression models were run for all possible reference groups and no significant differences were found. Similarly, no significant differences were found for stress or personal accomplishment.

Although not statistically significant in the regression analyses, the Cohen's d estimates for self-efficacy suggest that the conference group fared better than the reflective writing group. While the conference group experienced little to no change in self-efficacy relative to the control group (d = .09), the reflective writing group tended to decrease (d = -.58.) Additionally, both the conference (d = .33) and reflective writing (d = .38) groups experienced slightly elevated emotional exhaustion relative to the control group, but not as high as the course-only group (d =

.87.) The course-only group also had notably higher rates of stress as compared to the control group (d = .68.)

Qualitative Findings

To understand how teachers interacted with and expressed themselves throughout the course, we looked at how teachers across all treatment conditions expressed themselves in the context of homework assignments, discussion board posts, conferences, and reflective writing exercises. Table 6 shows the frequency of codes expressed across all assignments. Specifically, the mean and standard deviation capture how many times, on average, teachers expressed each code per assignment. The percentages represent, of all codes, how frequently each code was expressed per assignment. As an example, in homework assignments teachers expressed a *desire for personal change* an average of 2.31 times per assignment (SD = .87.) And, overall, 33% of what teachers expressed in homework assignments was a desire for personal change. Figures 1 and 2 convey this information graphically. After examining patterns, reviewing themes and memos, we arrived at four assertions for why teachers' well-being changed as a result of ECI.

Assertion 1. Without adequate support, ECI may have led teachers to feel more emotionally exhausted and less self-efficacious because teachers fixated on weaknesses and challenges. As shown in Table 6, teachers tended to express personal weaknesses more frequently than strengths in all contexts. In discussion boards, 31% of what was coded was classified as personal weaknesses and only 5% was strengths. In homework, 11% was weaknesses and 7% was strengths. First, we will explore why the common supports, discussion boards and homework, may have caused teachers to share personal weaknesses.

Many of the discussion board questions explicitly asked teachers to focus on their challenges. Two of the three questions we considered in the present study were: *"What are the*

times in the day when you find it most challenging to…?" or "*Which of these dimensions are most challenging to you?"* The content of what teachers shared in discussion boards rarely deviated from the prompt so this focus on personal challenges was largely promoted by the question. Interestingly, however, even seemingly neutral discussion board questions, such as "Share what you plan to do…", also tended to prompt teachers to share challenges:

> Question: Share one way you plan to create more Positive Climate in your classroom this week. After you try it out, let your peers know how it went and what you learned.
>
> Teacher Post: Transitioning from free play to clean up is really hard. This week I am going to do more positive climate in my classroom by cheering and singing my clean-up song and cheer them up, for example, "I like the way Julio is cleaning"… It seems that children are just in a rush to clean toys and they don't pay attention to where the toys belong and I am just following them telling them "no- that toy doesn't go there, you need to go find the right bucket for legos" etc. This week I am going to make it fun. I am going to bring two clean up songs.

Teachers' tendency to focus on challenges was also demonstrated in homework. Homework assignments asked teachers to identify two moments from their videotaped classroom footage, one moment they classified as "effective" and one they classified as "less effective." Then teachers reflected on how their actions impacted their students and what they plan to do differently. Although homework questions were arguably more "balanced" than the discussion boards in terms of focusing on challenges *and* strengths, many teachers ruminated on what was not going well. Here is an excerpt from a homework assignment:

> Question: Describe specifically what you plan to do differently in your classroom related to Lack of Negativity.
>
> Response: I need to watch the tone I may have in my voice. I was not aware until watching the video. To my ear it sounded like a simple request, but on tape "William will be cleaning up the mess from the shelf" sounded very sarcastic.

The previous excerpts suggest that when teachers were asked to plan for change, it may have naturally invoked the consideration of shortcomings, and thus, a need for change. Overall, PD, in general, likely causes teachers to become aware of their personal challenges. In ECI, teachers were consistently asked to share their challenges, and even neutral questions naturally led teachers to share weaknesses. Overall, the rumination on challenges, which appears to be a product of both the design of ECI as well as teachers' natural tendencies to be self-critical, offer a possible explanation for why teachers became more emotionally exhausted and less self-efficacious. Keeping this in mind, we will now explore why teachers who received additional supports (conference or reflective writing) were protected from such negative effects.

Assertion 2. Conferences provided opportunities for teachers to discuss challenges with instructors and receive immediate feedback or encouragement, potentially protecting teachers from emotional exhaustion and lowered self-efficacy.

Consistent with other contexts, 19% of what teachers shared in conferences were personal weaknesses and only 7% were strengths, which further supports teachers' natural tendencies to focus on weaknesses. For example, without provocation from the instructor, a teacher shares the following challenge in a conference:

> Teacher: I always thought that I could do well in the sensitivity, but, you know, taping the class, I'm reevaluating…my definition cause I am sensitive to the ones involved in what I'm doing and feeding off of what they're saying and having communication back and forth with them, but when I watched the video I see children that are not involved and I thought 'well I need to concentrate more maybe in that direction.'

As described in greater detail below, the reciprocal nature of conferences allowed for teachers to receive immediate feedback when they shared challenges. In contrast, although discussion boards were designed to be reciprocal, 14% of the discussion board posts we considered received no reply. In other words, sharing on the discussion board did not guarantee a

response from peers or instructors. Furthermore, feedback provided in homework and discussion boards tended to be cursory, whereas conference feedback was much more thorough. This is important when we consider how frequently teachers were sharing personal weaknesses in both contexts, and how the quality of the instructor's (or peer's) response may have impacted the teacher's outlook. For example, here is an excerpt from a discussion board post and the response from a peer:

> Question: Which of these dimensions is the most challenging for you? Use this discussion to ask your peers for advice about how they practice this dimension in their classrooms.
>
> Teacher Post: Actually doing objectives for my activities is a very hard thing for me. I always tend to get behind when I am trying to plan my activities for a week's time.
>
> Peer: I agree!

Note how this particular discussion board question encouraged teachers to ask for peers' advice, but, as suggested by this example, this rarely happened. Furthermore, a peer responds in an empathetic way, but does not offer any solutions. Now consider the following excerpt from a conference:

> Teacher: I find myself finding more bad moments than good, I was like 'I should not have done that or I should not have said that – what could I have said different?' It's pretty good, it's making me think and how to talk with the children and make them think. It's good. But I could not spot the good things I did as easy as the bad things.
>
> Instructor: Yeah, that is pretty common, I think a lot of teachers are good at being self-critical, that's good you are improving, but I do encourage you to look for those moments, even if they're quick and seem subtle, that are good, where you see a clear connection between you and the children. I think we've found that a lot of teachers, that's the way they can grow the best – finding good moments and trying to recreate them as opposed to making the *less* good moments go away. So I encourage you with these homework assignments to try and really force yourself to find the good moments too, as

> many as you can. And try to figure out what the dynamics were that allowed the good moments to happen to help you recreate them

In this example the instructor encourages a self-critical teacher to consider all the things she is doing well and normalizes her feelings. This may have important implications for the teacher's sense of self-efficacy, as well as her emotional exhaustion. Personal weaknesses may overburden teachers, but a teacher who can also focus on what is going right, and recognize that challenges are normal part of teaching may be protected from declines in well-being.

Teachers' tendency to focus on personal challenges overlapped with their tendency to focus on children's challenging behaviors. Here is an example from a conference:

> Teacher: I've never had a challenging class like this. I usually have one or two. The tactics the early childhood behaviorist would give us would work and with this group of kids, it doesn't. Try to make it fun, like, let's go play a game so we try to change it. Sometimes it works like they like to pass the beanbag but all of a sudden, one kid hands it over to another kid hard and they start reacting and we have to stop it because there is a tantrum going on in one side of the circle.
>
> Instructor: I'm sensing some frustration, like, I've been trying so many things and nothing works. I can understand, it's what you said, it's the first time you get a challenging group and it is hard to adjust them and that changes how you view yourself a little bit, like, why is it that this is the first time this doesn't work? I can totally see where you're coming from.
>
> Teacher: And the early childhood specialist said it's not going to work overnight, like how it happened with past students cause she goes "you only had 1or 2 in your room, but this time it's different, you have 7 and then you have other active ones that are just typically active and stuff" so I was like "oh my gosh." I go home and I'm tired.
>
> Instructor: Oh yeah, it does sound like a terrible frustration and I guess, well, it being a challenging situation, it makes it more worth the time that your putting into the environment and creating nurturing environments…This is interesting because I was going over your homework. It's interesting, in your homework, you didn't mention any of this. It's totally fine that you didn't mention it, but it's such an interesting thing that's going on in your classroom and it will be so useful for us.

In this example, the teacher voices her concern about her students' behavior. It is important to note, as the instructor points out, the teacher is expressing different content in the conference than in her homework. It is possible that the teacher felt more comfortable conveying this information knowing a sympathetic ear was listening. The instructor's response is empathetic and supportive and is much different from the feedback the teacher might have received if she had talked about this challenge in her homework or discussion board post.

In conclusion, conferences provided opportunities for teachers to discuss challenges with instructors and receive immediate feedback or encouragement, which may suggest why teachers in this condition were able to avoid increases in emotional exhaustion and decreases in self-efficacy.

Assertion 3. Conferences and reflective writing tasks incited teachers to express emotions, especially positive emotions, which may have protected them from declines in self-efficacy and increases in emotional exhaustion.

So far we have considered teachers' focus on challenges and strengths. Now we will broaden our discussion to teachers' emotional expression more generally. Positive and negative emotions were coded when teachers made explicit statements about how they were feeling or how things were going. As suggested in Table 7, conferences and reflective writing were emotionally evocative. Overall, 26% of what was coded in conferences was classified as emotions (18% positive and 8% negative.) And in reflective writing exercises, 20% of what was coded was emotions (13% positive and 7% negative.) In contrast, less than 9% of what teachers expressed in homework and discussion board posts, respectively, were emotions. Why were conferences and reflective writing emotionally evocative?

Conferences provided rich opportunities for instructors to ask teachers how things were going or how they were feeling. For instance, in the following excerpt the instructor asked the teacher how the process of completing her homework was:

> Instructor: So why don't you…Again, I read your homework, but tell me a little bit about how it was.
>
> Teacher: It worked out pretty good. It was kind of fun, and you know, even watching the video when they did the sour and sweet, and that type of thing. It was kind of fun watching them stick out their tongues when I was talking about taste buds and everything

Within conferences teachers also expressed positive emotions about how the course was helping to change their practice, which likely supported their feelings of self-efficacy:

> Instructor: How is the process going for you- looking at your own classroom and reflecting on these questions? Tell me about that.
>
> Teacher; It's good! It's going really well; it's like I'm seeing a lot, that I'm trying a lot harder with, you know, the stuff that I'm learning. And I see it working, you know, pretty good with my class, and they seem to be doing pretty well with the videotaping…This class [ECI] is really helping me see all that stuff, like those videos and stuff that I watched, is like amazing, it makes you see, thinking back like "Wow! We really do that stuff!" All that stuff, like, it's really helping me a whole lot.

Similarly, reflective writing tasks were intentionally designed to encourage teachers' emotional expression:

> Question: In what ways do you think the strengths and challenges you considered in this session impact your relationship with this child? How does your current relationship make you feel?
>
> Response: I feel both positive and a little frustrated about our relationship. On the positive side, I have definitely bonded with him and I know he enjoys preschool. We engage with each other, share stories, give hugs, and I have genuine care and concern for his well-being and success at school. Where I am frustrated is that I feel like I'm constantly telling him to keep his hands to himself, sit up in group time, listen to others, sit nicely at snack time, and I don't feel like I'm getting anywhere with him in terms of his behavior

Here we see the teacher expresses both positive and negative emotions about her relationship with a particular student. This opportunity to express oneself emotionally—to label ones emotions and express both positivity and negativity—may have guarded against feelings of emotional exhaustion.

Across conferences and reflective writing assignments teachers tended to express more positive than negative emotions. The proclivity of teachers to express positive emotions may offer insight into why these teachers were able to avoid declines in self-efficacy. For instance, the same teacher who "didn't feel like she was getting anywhere" in the previous excerpt shared the following two weeks later in her reflective writing:

> I see progress in our relationship. I think I am developing a better understanding of who he is and how I can best support him in the classroom…Just seeing the progress in our relationship so far makes me feel great! It feels so good to know that he sees me as a person he can trust and depend on.

Teachers in the reflective writing condition were sharing their feelings about their relationship with a particular child, and how the course was impacting that relationship, whereas teachers in the conference condition tended to share how they felt about the course more broadly. Despite these differences, both groups of teachers were protected from declines in self-efficacy and increases in emotional exhaustion, suggesting that perhaps the ability to express emotions, in general, is important for teachers' well-being in online learning environments.

Assertion 4. Discussion boards provided the only opportunity for discourse for course-only and reflective writing teachers. However, these two groups used discussion boards differently which may explain why reflective writing teachers were less emotionally exhausted and more self-efficacious than course-only teachers.

As previously mentioned, discussion board questions prompted teachers to focus on challenges and tended *not* to be emotionally evocative. However, these patterns varied somewhat

by intervention group. Reflective writing teachers shared more emotions in discussion boards, whereas course-only teachers shared more about children's challenges (Figure 3.)

First, compared to course-only and conference teachers, teachers in the reflective writing condition expressed more emotions in discussion boards. It is possible that teachers, having strengthened their skills in identifying, labeling, and sharing emotions in reflective writing assignments, continued to share emotions in discussion board posts as well. For instance, a reflective writing teacher shared the following in a discussion board post:

> Question: What are the times in the day when you find it most challenging to have Regard for Child Perspectives? Write about how you'll work on increasing Regard during one of those moments in the next week.
>
> Response: For me the most challenging time is during circle time. I have some times that are just for the children to do but for the most part before this course I was a 'sit down and stay quiet' kind of teacher. Lately I have been striving to include my students in EVERYTHING that we do. It can be challenging and messy but I LOVE to see them smile when they have completed a new task. I plan to continue listening to my students and following their lead.

Again, this teacher shared a challenging moment, but also shared positive emotions about how she loves to see her students smile. In contrast, the following excerpt demonstrates a more typical response to the same question, which does not involve the same emotional sharing:

> [When] I find the most challenging to have Regard for Child Perspective is during our transition time. What I will do to work on increasing the Regard is read a story that they all enjoy and a music and movement to start off with. That way it can eliminate any challenges during the transitions.

For the reasons discussed in the previous section, reflective writing teachers who were more primed to share emotions may have continued to benefit from the availability of this expressive emotional outlet. Furthermore, sharing emotional content in discussion boards often resulted in teachers receiving more feedback or praise. For instance:

> Question: What are the times in the day when you find it most challenging to have Regard for Child Perspectives? Write about how you'll work on increasing Regard during one of those moments in the next week.
>
> Teacher: Right now my biggest struggle is circle time. It is very difficult for some of my three year olds to sit still, even for two minutes. I try to keep the time the class is sitting to a minimum…I still have some that are struggling with this. Also, if one person lies down on the floor, then half the class does it, the domino effect is what I call it and I have four students in particular that tend to follow the lead of the others. I know they are not misbehaving on purpose, they just think it's funny, but I worry about the safety of the class, bumping heads, stepping on fingers, simple accidents that can lead to someone getting hurt…So I guess I have a question, as I'm working to develop what we do during circle time, is it going against Regard for Child Perspectives if I guide them to a particular spot?...If anyone has any suggestions I would love to hear them!
>
> Instructor: Hi, Mary, great question! And I agree, it's very challenging to find that balance between Regard and keeping students safe. To provide one answer to your question, I want to ask you another question: are there any strategies you could use to teach children about safety and still allow them to move freely in circle time?
>
> Teacher: Actually that exact scenario happened today. As we were entering the classroom four students started running around the table. After they sat down I told them I was sad and asked them if they knew why. They knew exactly! [I told them a story about how it's not safe to run in the classroom.]…Another example, I had a little boy who didn't want to listen to the story, he was rolling on the floor making noises which disrupted the other students. I quietly told him he could go to another part of the room if he needed to do that. He did, but eventually made his way back to the group because he wanted to hear the story. After… I praised him for making such great choices!
>
> Peer: Circle time is always a challenge…I let them pick their own mat to sit on. We have one large circle, but they have freedom to pick inside the circle. I also use "fidgets" …either a rubber spikey ball or little silly putty, stress balls shaped like stars…this seems to work and we get through…whatever we are doing. They are still doing some type of movement but not disruptive...
>
> Teacher: Thanks, Dawn! I love your ideas and it really helps to hear real suggestions from other preschool teachers who understand the challenges of preschool classroom.
>
> *(Discussion continues; condensed for space)*

The previous excerpt demonstrates the teacher sharing emotions in many ways. First, she shares a negative emotion associated with classroom challenges, *"I worry about the safety of the*

class." She welcomes feedback in a very positive manner by first asking a question and then saying *"I would love to hear [suggestions!]"* Interestingly, in her second response she recounts a moment when she shared her emotions with students, *"I told them I was sad"*, and overall, she shares how things are improving. Finally, in her third response, the teacher expresses gratitude towards her peer, *"I love your ideas*." This teacher identified and shared positive and negative emotions throughout her discussion board posts, and also admits to sharing her emotions in her classroom, suggesting that the practice of labeling and sharing emotions within reflective writing assignments may have transferred to other contexts. Furthermore, as shown, the teacher received both praise and practical advice from her peers and the instructor, which may have positive implications for her self-efficacy and emotional exhaustion.

Second, course-only teachers tended to write more about children's negative attributes than teachers in the other conditions. This trend may offer further insight into why course-only teachers became more emotionally exhausted and less self-efficacious—perhaps they were unable to curb children's challenging behaviors and did not feel they had support in the online course to address these challenges. The following excerpt demonstrates this as a course-only teacher reflects on children's "wild behaviors."

> Question: What are the times in the day when you find it most challenging to have Regard for Child Perspectives? Write about how you'll work on increasing Regard during one of those moments in the next week.
>
> Response: The most challenging part of the day that I have Regard for Child Perspectives is when the children are in free play. I will work on this by having conversation with the children when they are in free play and interact with them to let them know I am having fun and maybe that will control some of their wild behaviors.
>
> Peer Response: Me too!

Interestingly, course-only teachers also received less praise from their peers and instructors (Figure 3.) It is possible that overly negative posts may have been less approachable

to peers. It appears that without alternative outlets of expression, either conferences or reflective writing tasks, course-only teachers were compelled to write about children's negative attributes in discussion boards; doing so may have further reduced the amount of positive feedback they received in these contexts, which may have also contributed to their decreased well-being.

It is important to note one counter-example. Although the pattern was for course-only teachers to be more negative about children in discussion boards, this was not always the case. The following excerpt, written by a reflective writing teacher, is both highly emotional as well as focused on children's negative attributes:

> Question: What are the times in the day when you find it most challenging to have Regard for Child Perspectives? Write about how you'll work on increasing Regard during one of those moments in the next week.
>
> Teacher: …I am sorry, but I have students who will literally take out someone if they are not given restrictions about where to sit or how to act…a few of them are completely clueless about how to act towards others or how to treat others…I feel like an awful teacher now, and fear that my class would self-destruct if I didn't keep some control. You guys don't know my students!!!...
>
> (No response)

As previously mentioned, reflective writing teachers tended to be more emotional in discussion boards, expressing both positive and negative emotions. This teacher demonstrates heightened negative emotional expression, specifically about children, which may have been unapproachable to her peers, offering an explanation for why no one responded. This instance highlights a shortcoming of the reflective writing condition, that is, the lack of guaranteed feedback. Although the reflective writing condition tended to protect teachers' well-being, it did not ensure it. Certain teachers, such as the one above, who were overly negative, hard on themselves, or hard on their students, may have benefited from more rigorous opportunities to receive feedback and encouragement from their instructor and peers. Nevertheless, the reflective

writing condition was generally protective of teachers' well-being relative to the course-only group. Teachers' differential utilization habits within discussion board may offer an additional explanation as to why these changes occurred in ECI.

Discussion

This mixed methods study explored how preschool teachers' self-efficacy, stress, and burnout changed during online PD and how various types of PD supports differentially affected teachers' well-being. Teachers who took the ECI course without reflective writing or conference supports had significant increases in emotional exhaustion and decreases in self-efficacy. Conference and reflective writing supports seemed to guard against declines in well-being. Our qualitative results, discussed in more detail below, offer possible explanations.

Supporting Teachers' Well-being in Online Learning Environments

The detriments of emotional exhaustion are well-documented; emotionally exhausted teachers have more conflictual relationships with students, demonstrate lower teaching quality, and leave the profession at higher rates (Curbow et al., 2001; Jennings & Greenberg, 2009; Yoon, 2002; Zinsser et al., 2013). Conversely, self-efficacy is thought to be necessary for teaching success as more self-efficacious teachers report closer, less conflictual relationships with their students and have higher quality instruction (Chung, et al., 2005; Justice, et al., 2008). In our study, course-only teachers who took ECI without access to conferences and reflective writing became more emotionally exhausted and less self-efficacious compared to teachers who did not take ECI, demonstrating they were not adequately supported.

The course-only teachers may have been overburdened by challenges, unable to identify strengths or areas of personal growth, and incapable of translating new knowledge into practice. This is consistent with findings from previous ECI studies showing that course-only teachers did

not make positive gains in teaching practices (Hamre et al., 2014). Our present study uncovered that course-only teachers tended to share more challenges about children within discussion boards, offering additional insight into why their well-being may have changed. Children's behavior problems are a common cause for concern for preschool teachers (Friedman-Krauss et al., 2014a). Although the ECI course delivered teaching strategies for building positive relationships with children, which should ideally help teachers manage children's challenging behaviors, course-only teachers may have felt overburdened.

In general, focusing on challenges or weaknesses may not, by itself, be detrimental. All teachers in the present study, even those who did not experience declines in well-being, frequently reflected on personal weaknesses. When learners recognize weaknesses, they can set goals and strive to improve (Wlodkowski, 2008). Problems arise, however, when learners feel incompetent or overwhelmed by self-perceived limitations (Knowles, Holton, & Swanson, 2012). Ultimately, course-only teachers may have felt emotionally exhausted and less self-efficacious because they lacked adequate support for translating self-perceived challenges into positive changes. However, teachers in the conference and reflective writing conditions, who were protected from such negative effects, seemed to benefit from additional supports that provided emotional outlets and/or feedback and discourse.

Emotional Outlets in Online Contexts

Both conferences and reflective writing supports were emotionally evocative offering an explanation as to why they protected teachers from feeling emotionally exhausted and less self-efficacious. Past research shows that personally reflecting on emotions and relationships through expressive writing can improve psychological health, which further supports the notion that constructive opportunities to express oneself and one's emotions are favorable to inhibiting

emotional expression (Pennebaker, 1997; Rachman, 1980; Smyth, 1998). Furthermore, it is possible that conferences and reflective writing exercises strengthened teachers' social-emotional competence which has been shown to relate to well-being (Jennings & Greenberg, 2009). For instance, upon reflecting on a challenging situation, either within a conference or reflective writing assignment, a teacher may recognize what triggers certain negative emotions ("When Aiden refuses to sit at circle time, I feel frustrated") or her own patterns of reactivity ("When I feel frustrated, my jaw clenches, I become tense, and my tone of voice becomes harsh.") Once the teacher is aware, she can manage her emotions and implement more effective strategies ("Instead of engaging in a power struggle with Aiden, I will use subtle cues to effectively redirect him.") Teachers who can effectively manage emotions and enact positive management strategies may feel more self-efficacious and less emotionally exhausted.

Our findings suggest it is beneficial to provide teachers opportunities to express their emotions in online contexts. In our study, generally, teachers did not to write about how they felt unless explicitly asked. To encourage emotional expression, future courses could provide emotional outlets for teachers by asking teachers how they are feeling, how things are going, and so on. Similar to the reflective writing exercise, teachers could reflect on a challenging classroom situation and think about how they are feeling and how the situation is improving based on what they are learning. As was true in ECI, these interventions can be brief, requiring just a few extra moments of the learner's time, but the benefits may be considerable.

Discourse and Feedback in Online Contexts

ECI provided two opportunities for back-and-forth discourse: conferences, which were only available to teachers in the conference condition, and discussion boards, which were available to all teachers taking the course. Conferences proved to be much more conducive to

rigorous and immediate feedback and affirmation. Teachers without such support, particularly course-only teachers, may have suffered from a lack of instructor and peer support. Reflective writing teachers may have avoided declines in well-being due to how the group tended to use discussion boards differently than course-only teachers. Reflective writing teachers shared more emotions and received more praise than course-only teachers. Praise or positive feedback can validate a person's competence (Wlodkowski, 2008). Important to note, however, qualitative analyses uncovered that discussion boards were not always supportive of reflective writing teachers, which shows that conferences were the best means of consistently providing feedback and allowing discourse in ECI.

Our findings support exigent literature by Tschannen-Moran and McMaster (2009) who found that coaching supports prevented declines in self-efficacy for elementary school teachers. Brennan and colleagues (2008) found similar benefits of such supports within the context of mental health consultations. However, contrary to the body of work on mental health consultations, our study did not find that conference supports necessarily increased self-efficacy for a large portion of teachers. Instead, conferences seemed to be more protective of losses. Feedback communicates important messages to the learner about his or her abilities and competence, which has implications for the teachers' self-efficacy (Wlodkowski, 2008). Furthermore, teachers who use feedback to enhance their self-awareness and knowledge of personal strengths and weaknesses may be less inclined to become emotionally exhausted. In particular, we found that positively focused feedback, which encouraged teachers to consider what is going well, was especially important.

Ultimately, these results underscore the importance of providing teachers rich opportunities for feedback and encouragement within online learning environments. To the

extent possible, PD implementers should provide teachers regular opportunities to meaningfully confer with peers and instructors. Joseph and Brennan (2013) found peer coaching to be a valuable strategy for pre-service teachers to give and receive peer feedback. A similar technique could be utilized for in-service teachers in PD, which is more cost-effective and scalable than relying solely on instructors. Teachers will inevitably face many challenges in PD, but allowing them to discuss these challenges can help put them on path towards positive change.

Although our study found little evidence of discussion boards being supportive, it is possible that such outlets could be redesigned in ways that ensure greater success. To provide better feedback, instructors and teaching assistants could ensure that all discussion board posts are responded to promptly, responses are empathetic to the teachers' concerns and more thorough feedback is provided, which is consistent with guidelines put forth by Wlodkowski (2008). PD implementers could incentivize peer participation within discussion boards, perhaps making participation mandatory or worth extra credit, to promote richer discussions. Additionally, discussion board questions could encourage teachers to reflect on the positive aspects of their teaching, instead of challenges, to naturally facilitate more positive thinking. We found teachers shared challenges without provocation so asking more positively-oriented questions may be most beneficial in online learning contexts.

Other Aspects of Teachers' Well-Being

Our study found no significant changes in two of the four well-being outcomes considered. Specifically, teachers' stress and personal accomplishment did not change as a result of the ECI course. Although the effect size for stress in the course-only group suggested that this group was feeling more stressed over time, the study may have been underpowered to detect this effect in regression analyses. The link between stress, self-efficacy, and emotional exhaustion

has previously been shown (e.g., Schwarzer & Hallum, 2008). However, it is important to note the distinctness of stress and emotional exhaustion in the present study. The emotional exhaustion measure specifically focused on feelings towards work ("I feel emotionally drained from my work."), whereas the stress measure was much more global ("I found it hard to wind down."), which may explain why emotional exhaustion, and not stress, was significant in the present study. Furthermore, the lack of significance regarding personal accomplishment is surprising given it is a component of burnout. However, past work has considered emotional exhaustion and depersonalization to be the most central components of burnout (Schaufeli & Salanova, 2007; Skaalvik & Skaalvik, 2010). Due to low internal consistency, we did not test depersonalization in the present study.

Limitations and Future Directions

This study presents several limitations. First, data were collected using convenience sampling which limits the generalizability of the results. In addition, this study had a relatively small sample, which may have limited our power to detect effects. Future work should continue to study how teacher' well-being changes in online PD using different samples of teachers, as well as different PD interventions. Next, qualitative analyses were used in an attempt to answer why changes in well-being occurred, however, we acknowledge that these are our interpretations of the data. Future mixed methods studies would also benefit from the incorporation of teacher interview or focus group data which would allow researchers to directly ask teachers if and why they felt more emotionally exhausted or less self-efficacious.

Given that feedback and reciprocal interactions appeared to be especially important, future work could explore whether more intensive feedback in discussion board posts or homework assignments might be equally beneficial. Furthermore, our study did not consider the

characteristics of teachers that may have related to changes in well-being, aside from the characteristics we included as covariates. It is possible that certain teacher characteristics may dictate the types of supports he or she needs. Future work could investigate the "fit" between teacher and intervention supports, to try to identify which supports are most effective to particular teachers. Similarly, the present study focused on how teachers' well-being changed by treatment group, rather than by individual. We acknowledge that there was heterogeneity in well-being change-scores within treatment groups. Therefore, future work should explore individual change, absent of or controlling for treatment group, to better understand how PD affects individual teachers' well-being.

Conclusion

Teaching is extremely demanding (Shulman, 2004). Teaching while also learning new skills, reflecting, and modifying practices—precisely what we ask teachers to do in PD—is additionally strenuous (Hamre et al., 2013). Given the relevance and demonstrated association with student outcomes (Jennings & Greenberg, 2009), it is necessary to determine how and why teachers' well-being changes in PD in order to best to support teachers. Evidence from this study suggests that preschool teachers taking an online course experienced emotional exhaustion and decreased self-efficacy when not provided rich opportunities to express emotions and/or receive supportive feedback. PD designers should be thoughtful about the types of supports teachers receive and how assignments are framed in online environments to ensure teachers learn while also feeling empowered and successful.

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Table 1

Demographic Information for Participants by Intervention Group

	Course-Only (*n* = 19)		Conference (*n* = 25)		Reflective Writing (*n* = 20)		All Treatment (*n* = 64)		Control Group (*n* = 23)	
Measure:	*N*	%	*N*	%	*N*	%	*N*	%	*N*	%
Female	18	95%	24	96%	20	100%	62	97%	23	100%
Ethnicity										
African American	2	11%	1	4%	2	10%	5	8%	5	22%
Caucasian	8	42%	15	60%	12	60%	35	55%	18	78%
Latino	6	32%	7	28%	6	30%	19	30%	0	0%
Other	3	16%	2	8%	0	0%	5	8%	0	0%
Education										
AA or less	4	21%	15	63%	8	40%	27	42%	7	30%
BA	12	63%	8	33%	10	50%	30	47%	11	48%
More than BA	3	16%	2	8%	2	10%	7	11%	5	22%
≥ 10 years experience	5	26%	14	56%	7	35%	26	41%	7	30%
School Type										
Head Start	4	21%	2	8%	3	15%	9	14%	7	30%
Public Pre-K	3	16%	5	21%	6	30%	14	22%	6	26%

Note: *n* = 23 control group teachers because two teachers did not return the initial survey

Table 2

Descriptive Statistics for Well-being Measures by Intervention Group

	Course- Only		Conference		Reflective Writing		Control Group	
Measure:	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Initial Self-Efficacy	7.77	.64	7.23	.91	8.04	.67	7.71	.89
Final Self-Efficacy	7.22	.74	7.47	.60	7.79	.77	7.93	.87
Initial Emotional Exhaustion	2.10	.61	2.11	.63	2.27	.86	2.06	.82
Final Emotional Exhaustion	2.73	.95	2.29	.95	2.25	.89	1.85	.59
Initial Depersonalization	1.41	.58	1.48	.70	1.47	.58	1.21	.34
Final Depersonalization	1.61	.55	1.26	.44	1.44	.60	1.21	.31
Initial Personal Accomplishment	6.27	.55	6.15	.55	6.44	.72	6.52	.52
Final Personal Accomplishment	5.96	.70	6.06	.74	6.20	1.05	6.38	.55
Initial Stress	1.24	.22	1.55	.38	1.37	.48	1.37	.23
Final Stress	1.38	.42	1.36	.36	1.26	.26	1.29	.24

Note: n = 87 (64 treatment; 23 control) for initial measures; n = 71 (50 treatment; 21 control) for final measures; rates of missing data were 2% for pre and 20% for post, respectively

Table 3

Bivariate correlations among Well-being Variables

	1	2	3	4	5	6	7	8
1. Initial Self-Efficacy	1							
2. Final Self-Efficacy	.44*	1						
3. Initial Emotional Exhaustion	-.34*	-.10	1					
4. Final Emotional Exhaustion	-.13	-.33*	.45*	1				
5. Initial Personal Accomplishment	.40*	.25*	-.21*	-.11	1			
6. Final Personal Accomplishment	.06	.29*	-.06	-.19	.69*	1		
7. Initial Stress	-.28*	.02	.33*	.10	-.05	.14	1	
8. Final Stress	-.16	-.20	.19	.41*	.08	.04	.44*	1

Note: * = $p < .05$

Table 4

Unstandardized Regression Coefficients from Models Predicting Well-being Outcomes

	β (SE)			
Predictor	Self-Efficacy	Emotional Exhaustion	Personal Accomplishment	Stress
(Constant)	4.38 (.849)	.558 (.399)	1.104 (.796)	.677 (.164)
Pre-Score	.419 (.110)***	.597 (.141)***	.760 (.128)***	.413 (.105)***
Race (White)	.158 (.176)	.173 (.226)	.352 (.153)*	.098 (.076)
Less than B.A.	.224 (.202)	.044 (.224)	.097 (.151)	-.037 (.084)
More than B.A.	.285 (.238)	.131 (.283)	.067 (.185)	-.094 (.102)
Treatment Groups				
Course-Only	-.582 (.235)*	.776 (.280)**	-.062 (.184)	.146 (.098)
Conference	-.138 (.215)	.315 (.270)	.034 (.182)	.009 (.096)
Reflective Writing	-.231 (.247)	.356 (.288)	-.097 (.178)	.048 (.101)

Note: * = $p \leq .05$, ** = $p < .01$, *** = $p < .001$; control is the reference group

Table 5

Effect Size Estimates for Well-being Outcomes

	Cohen's *d*			
Treatment Group	Self-Efficacy	Emotional Exhaustion	Personal Accomplishment	Stress
Course-only	-.92*	.87*	-.25	.68
Conference	.09	.33	.14	-.28
Reflective Writing	-.58	.38	-.32	.12

Note: Effect sizes are estimated using the control group as comparison. Asterisks signify the contrasts that were statistically significant in the regression analyses.

Table 6

Average Teacher and Instructor/Peer Expression in Homework, Discussion Boards, Conferences, and Reflections

	Homework		Discussion Board		Conferences		Reflections	
Teacher:	M (SD)	%	M (SD)	%	M (SD)	%	M (SD)	%
Desire for Personal Change	2.31 (.87)	33%	.67 (.33)	24%	.38 (.46)	1%	.62 (.58)	9%
Desire to Change Child	.47 (.51)	7%	.08 (.16)	3%	.26 (.70)	1%	1.02 (.53)	14%
Personal Effort	.39 (.53)	6%	.15 (.22)	5%	1.67 (1.64)	6%	.23 (.28)	3%
Strength/Confidence	.48 (.56)	7%	.14 (.24)	5%	1.94 (1.35)	7%	.34 (.55)	5%
Weakness/Challenge	.73 (.87)	11%	.84 (.36)	31%	5.74 (2.65)	19%	.66 (.43)	9%
Aware: Effect of Behavior	.71 (.65)	10%	.12 (.18)	4%	1.11 (1.18)	4%	.76 (.65)	11%
Personal Accomplishment	.85 (.56)	12%	.04 (.14)	1%	2.71 (1.95)	9%	.54 (.39)	8%
Child's Positive Attributes	.42 (.53)	6%	.06 (.19)	2%	2.84 (2.00)	10%	.70 (.72)	10%
Child's Negative Attributes	.17 (.35)	2%	.35 (.46)	13%	2.85 (2.59)	10%	.90 (.89)	13%
Positive Emotions	.31 (.42)	4%	.12 (.26)	4%	5.25 (2.43)	18%	.91 (.60)	13%
Negative Emotions	.09 (.20)	1%	.12 (.25)	4%	2.34 (1.79)	8%	.49 (.53)	7%
Ask Question	0	0%	.05 (.17)	2%	2.41 (1.93)	8%	0	0%
Total	6.93 (3.62)	100%	2.74 (1.25)	100%	28.41 (10.48)	100%	7.17 (2.07)	100%
Instructor/Peer:	M (SD)	%	M (SD)	%	M (SD)	%	M (SD)	%
Asks about Well-being	n/a	n/a	0	0%	1.77 (.73)	8%	n/a	n/a
Provides Praise	n/a	n/a	.39 (.50)	20%	5.02 (2.66)	23%	n/a	n/a
Express Concern/Support	n/a	n/a	.09 (.23)	5%	2.62 (1.43)	12%	n/a	n/a
Relates or Empathizes	n/a	n/a	.70 (.56)	36%	3.12 (1.47)	14%	n/a	n/a
Provides Feedback	n/a	n/a	.76 (.58)	39%	9.73 (3.46)	44%	n/a	n/a
Total	n/a	n/a	1.94 (1.17)	100%	22.25 (5.90)	100%	n/a	n/a

Note: The mean and standard deviation capture how many times, on average teachers, expressed each code per assignment. The percentages represent, of all codes, how frequently each code was expressed per assignment.

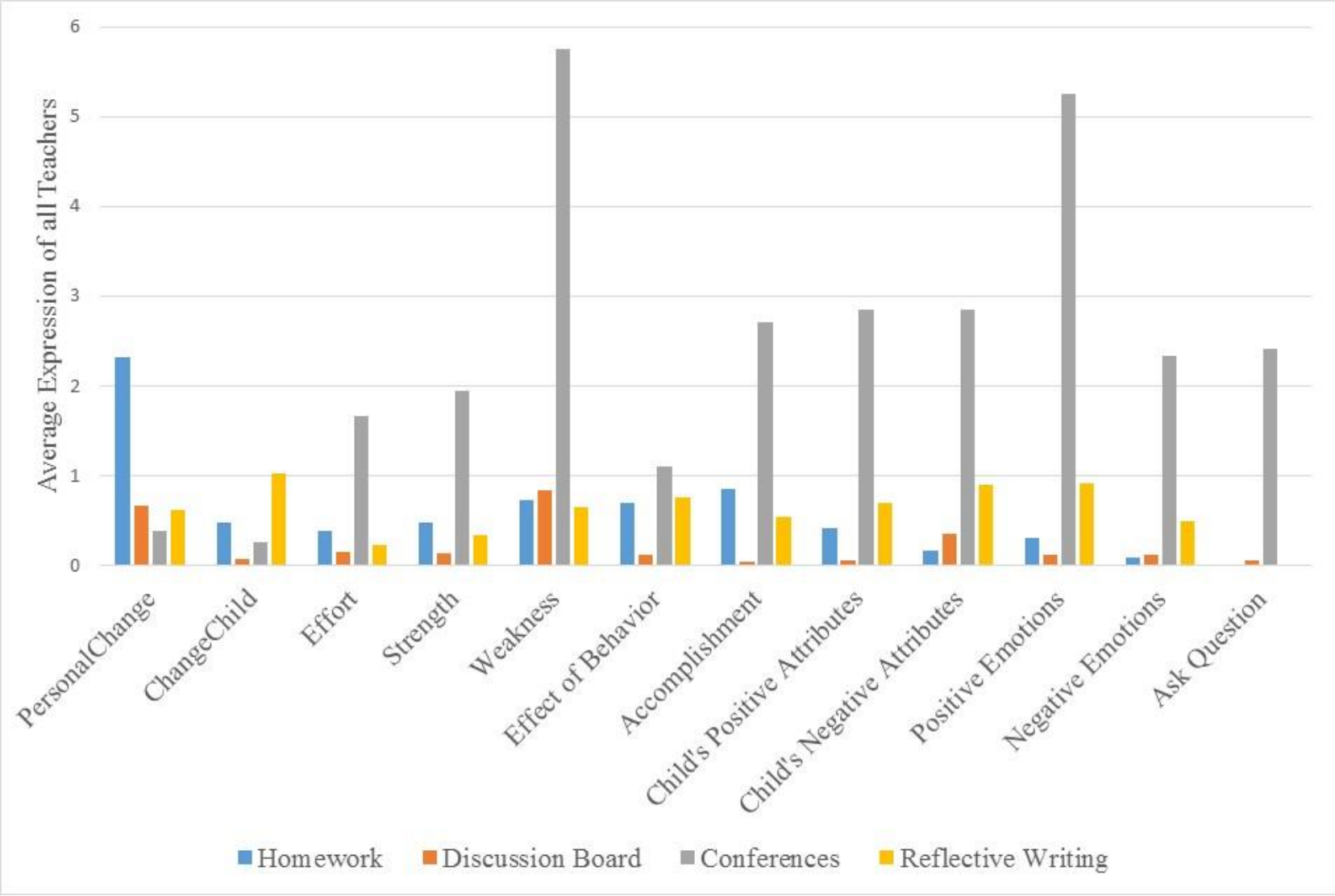

Figure 1. Average expression of each teacher code by assignment.

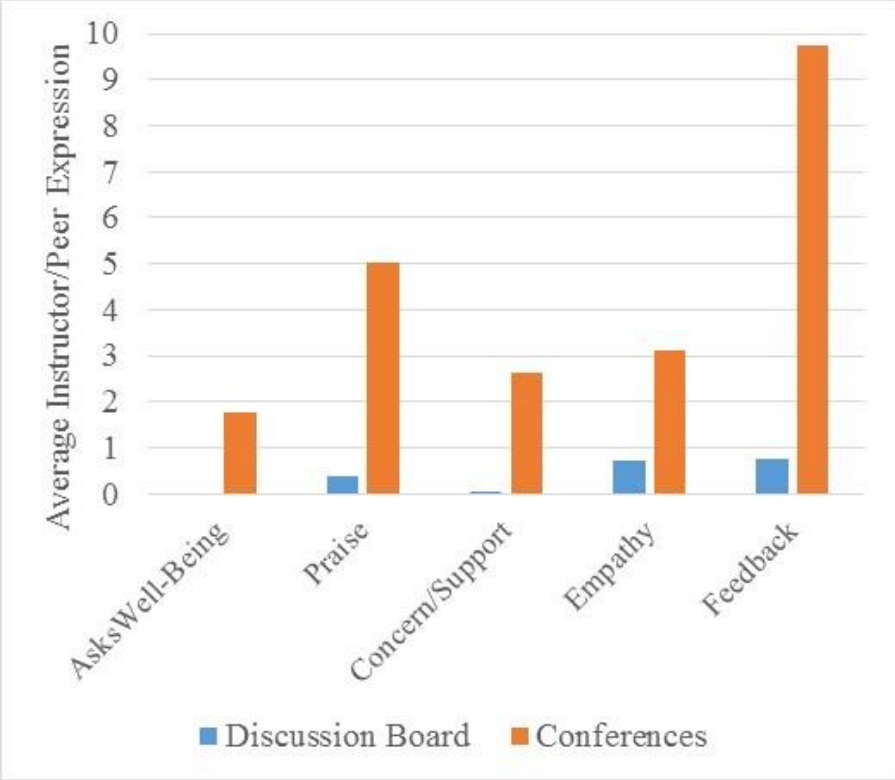

Figure 2. Average expression of each peer/instructor code for discussion boards and conferences.

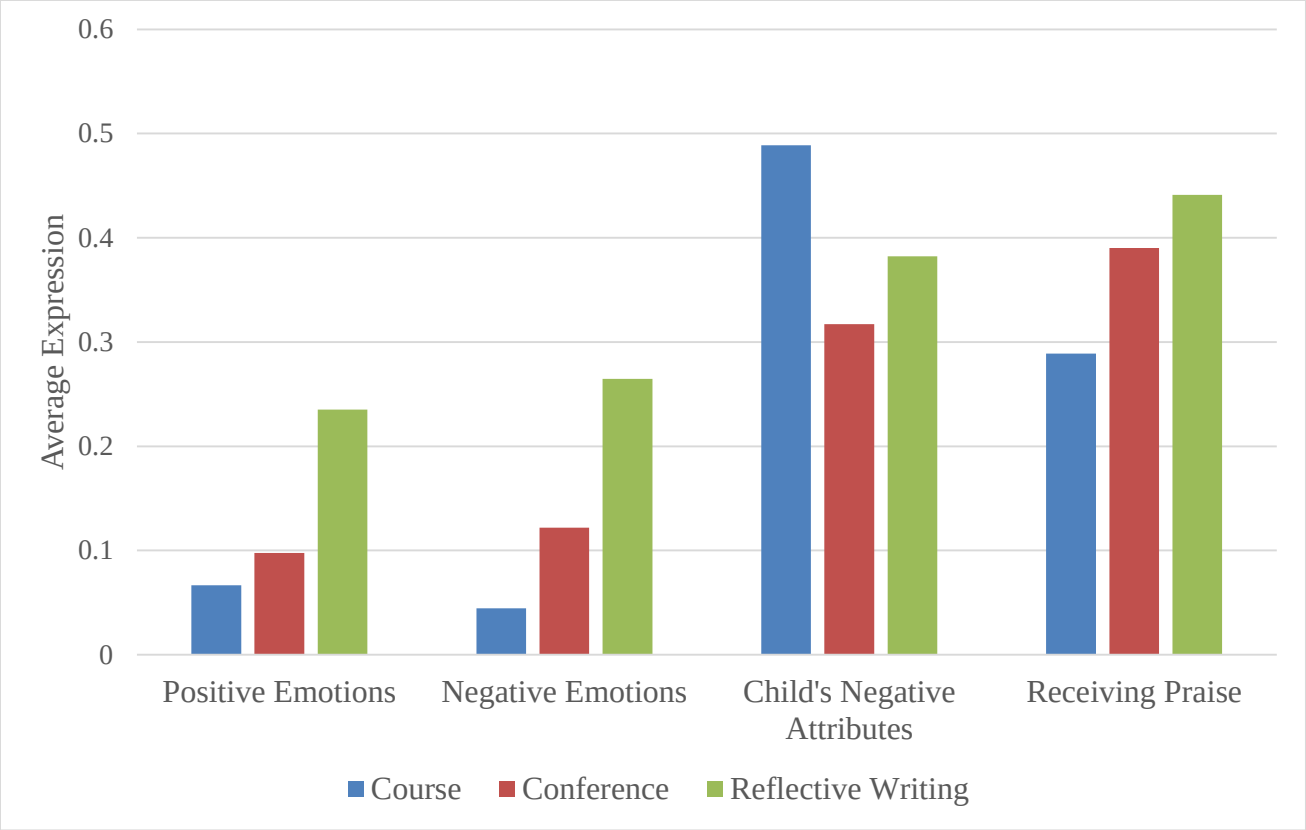

Figure 3. Average expression by treatment group within discussion boards.

Appendix A

Discussion Board Questions

1. *Pre-course*. **Introduce Yourself**. What are you most looking forward to learning about?
2. *Session 1.* **How is the Pre-K Day Spent?** What surprised you most about the research findings? How do these findings compare to what you know about early childhood classrooms?
3. *Session 2.* **Your Strengths and Weaknesses.** What strategies do you currently use to assess your strengths and weaknesses in the classroom? How do you know when you're doing well and when changes should be made?
4. *Session 3.* **Relationships and Emotional Regulation in the Classroom.** When do children in your classroom have trouble regulating their emotions? How are you supportive in these moments? Give two examples.
5. *Session 4.* **Creating a Positive Climate in your Classroom**. Share one what you plan to create more Positive Climate in your classroom this week. After you try it out, let your peers know how it went and what you learned.
6. *Session 5.* **Considering Less Sensitive Moments in your Classroom**. What are some challenges to being sensitive in your classroom? How do you work to address these challenges?
7. *Session 6.* **Considering Regard for Child Perspectives**. What are the times in the day when you find it most challenging to have Regard for Child Perspectives? Write about how you'll work on increasing Regard during one of those moments in the next week.
8. *Session 7.* **Preparing to Video Tape.** Share with your peers what you found most valuable about your experience of the first Watching Yourself homework
9. *Session 9.* **Sharing Stores about Attention and Behavior Regulation.** Think about a child you know who struggled with their attention and behavior regulation skills but over time became better able to control their behavior. Share this child's story with your peers. (Remember to be confidential in your discussion and refrain from using names of specific children.)
10. *Session 10.* **Encouraging Positive Behaviors in your Classroom**. If you were helping a new teacher, what strategies would you share with her that have worked well for you?
11. *Session 11.* **Talking about Transitions.** Talk about one transition time that happens every day in your classroom that is challenging for you, and share strategies you use to make the most of learning opportunities during that time.
12. *Session 12.* **Classroom Organization Challenges.** Which of these dimensions is the most challenging for you? Use this discussion to ask your peers for advice about how they practice this dimension in their classrooms.
13. *Session 13.* **Thinking about All the Dimensions.** As you learned about these dimensions, which had the greatest effect on your, and why? Share how your teaching has changed as a result of studying this dimension.

Appendix B

Qualitative Codes and Examples

- Desire for Change
  - The teacher expresses a ***desire for personal change***
    - "I will be more aware of the children's emotional needs."
  - The teacher expresses a ***desire for the child(ren) to change***
    - "I would like to help him learn how to act around others and make friends."
- View of Self
  - The teacher acknowledges ***personal effort***
    - "I am working hard to create a positive climate in my classroom."
  - The teacher acknowledges ***personal strengths or confidence***
    - "I honestly feel like I do a pretty good job of this."
  - The teacher acknowledges ***personal weaknesses, challenges, or areas of improvement***
    - "I think my voice is too loud, and not as warm and caring as I would like."
  - The teacher acknowledges ***awareness of how his/her behaviors affect students***
    - "When I use less effective teaching behaviors not only does that child not participate constructively, but other children follow suit."
  - The teacher acknowledges ***personal accomplishments or growth***
    - "Even though half of the children were not really interested in the book I was reading I didn't get frustrated about it."
- View of Children
  - The teacher acknowledges the *child's positive attributes or positive growth*
    - "He is very intelligent and has great leadership qualities."
  - The teacher acknowledges the *child's negative attributes, negative progress, or challenges*
    - "He is very careless."
- Personal Emotions
  - The teacher expresses *positive emotions or optimism*
    - "It was amazing to have this opportunity."
  - The teacher expresses *negative emotions or doubt*
    - "Our current relationship makes me feel very frustrated."
- Engagement with Task
  - The teacher reaches out for help/*asks questions*
    - "Any suggestions?"
- Role of Instructor or Peer (only applicable for conferences and discussion boards)
  - The instructor or peer *asks about the teachers' well-being*
    - "How are you doing?"
  - The instructor or peer *provides praise*

        - "You're doing such a great job."
    - The instructor or peer personally *relates or empathizes* with the teacher
        - "I experience the same situation in my classroom. I know how you feel."
    - The instructor or peer offers possible solutions or constructive *feedback*
        - "I recommend thinking through each thing you do, especially in whole group."
    - The instructor or peer expresses that he/she is a source of *support* for the teacher or *expresses concern* for the teacher
        - "I'm here for you."