INFLUENCES ON EARLY CHILDHOOD EDUCATORS' CLASSROOM LITERACY PRACTICES: EFFECTS OF PERCEPTIONS OF THEMSELVES AS LITERACY EDUCATORS AND CONTENT KNOWLEDGE

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ABSTRACT

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This dissertation is comprised of two manuscripts about influences on early childhood educators' classroom literacy practices, including their perceptions of themselves as literacy educators and their literacy content knowledge. With yearly increases in the numbers of children enrolled in child care outside of the home (Barnett, Hustedt, Friedman, Boyd, & Ainsworth, 2007) the need for positive experiences and well-trained educators to provide those experiences, particularly related to literacy skill development, has become evident.

The first manuscript draws on data from 28 early childhood educators and 105 children and used a structural equation model to examine the relationship among early childhood educators' a) perceptions of themselves as literacy educators, b) literacy content knowledge, c) pedagogical literacy content knowledge, d) classroom literacy practices, and e) children's literacy growth. Examination of the model suggests educators' perceptions of themselves as literacy educators influenced classroom literacy practices more than literacy content knowledge. Indirect effects were noted for literacy growth, with changes in literacy content knowledge, pedagogical literacy content knowledge, and perceptions of themselves as literacy educators (POTALE) suggesting changes in classroom literacy practices. The educator variables explained 67% of the variance in children's literacy growth in this study. This finding provides initial evidence that professional development for educators should include opportunities designed to help early childhood educators see themselves as literacy educators rather than focus solely on

literacy content knowledge as a change mechanism for educators' practice. Discussion focuses on the implications for future research and professional development in light of this finding.

The second study examined whether there was a relationship between early childhood educators' classroom literacy practices and literacy content knowledge, pedagogical literacy content knowledge, and these two constructs combined. A total of 27 educators were observed using the Early Language and Literacy Classroom Observation (ELLCO) Pre-K Tool and completed surveys to assess their literacy content and pedagogical literacy content knowledge using a slightly modified version of the recently developed Survey of Teacher Knowledge (SOTK). Spearman's rank order correlation was used to assess the relationship however, the relationship was not significant between the ELLCO and SOTK or the subscales for these measures. Regression analyses also did not show a relationship between classroom literacy practices and combined literacy content and pedagogical literacy content knowledge (CLCPLCK), nor literacy content knowledge or pedagogical literacy content knowledge separately. Aggregated results of the SOTK indicated that educators in the study demonstrated breadth of literacy content knowledge but lacked depth in knowledge related to phonological awareness and writing. Implications for future research and practice are discussed.

DEDICATIONS

For my parents Joann and David Sugar, for teaching me to not live the life of “what if.” For my husband, Scott, this is my Texas hat trick for you.

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INTRODUCTION

The future success of a child depends in part upon the opportunities and experiences provided in the first few years of life (Bowman, Donovan, & Burns, 2000; Ramey & Ramey, 2004). These experiences may happen within a variety of contexts, including homes and early childhood education settings. More importantly, they depend upon responsive and nurturing environments that support development through appropriate practices (Ramey & Ramey, 2004). Literacy development is one aspect of development that is dependent upon these types of environments.

Emergent literacy development encompasses the literacy skills developed by young children prior to formal school entry. These skills are dependent upon adult facilitation and consist of alphabetic principle, comprehension, concepts of print or print awareness, experimental writing, oral language development, phonological awareness, and vocabulary development (Snow, Burns, & Griffin, 1998; Whitehurst & Lonigan, 2002).

While homes are important in the development of literacy (Goldenberg, 2002), for many children, quality experiences in early childhood education increase the opportunity to be successful in their development of literacy. With increasing enrollments in child-care, the likelihood that learning experiences will take place outside the home also increases. This is not to say that the experiences in the home are not adequate, as there are homes in which children are receiving appropriate literacy support (DeBaryshe, Buell, & Binder, 1996; Leseman & deJong, 1998; Payne, Whitehurst & Angell, 1994). The point is that for children whose homes are not providing this support, quality experiences in early childhood education are necessary for literacy skill development. Quality learning experiences in early childhood education include recognition of developmental capabilities and appropriate scaffolding for children with materials

that allow for exploration and play in supportive environments (Bredekamp & Copple, 1997; Neuman & Roskos, 2007). More specifically for literacy development, they include shared book reading opportunities, spending time singing, rhyming, and engaging in finger games and word plays, opportunities to write throughout the classroom, and other play activities that encourage literacy skill development (NELP, 2008; Neuman & Roskos, 2007).

Literacy development has been the focus of my own research for the last five years and has included both parents' and early childhood educators' roles in facilitating literacy skills. More specifically, I have examined how parents support the development of literacy skills (Shedd, 2005; Koger & Shedd, 2005), the effect of a 10-hour professional development program for early childhood educators (Duke, Moses, Shedd, & Spybrook, 2010), and the relationship between early childhood educators' perceptions of themselves as literacy educators and literacy practices in the classroom (Shedd, 2009).

Given the growing numbers of children who enter child-care situations (Barnett, Hustedt, Friedman, Boyd, & Ainsworth, 2007; U. S. Census Bureau, 2007), my research has moved from a focus on how parents facilitate literacy to the ways in which early childhood educators can facilitate its development. Through reviews of the literature, it became clear that while studies about practices abound, studies about early childhood educators' beliefs about practices, including their literacy practices, were less abundant, but certainly not less important. Although studies of early childhood educators' beliefs about education in a broad sense (Charlesworth et al., 1991; Charlesworth, 1993; Hart et al., 1998; Kagan & Smith, 1988; McMullen, 1999; Smith & Shepard, 1988; Stipek & Byler, 1997) provided a beginning framework for this area of research, understanding early childhood educator's beliefs about practice specific to literacy seemed important based on the weight given to literacy development in the early childhood

education setting. Upon reviewing the available literature, the studies that did focus on literacy education (Burgess, Lundgren, Lloyd, & Pianta, 2001; Hindman & Wasik, 2008) did not examine the educators' own perceptions of their roles in the development of literacy skills and were based on self-reported practices. Further, these studies did not directly address how educators perceived their roles in children's literacy development. I thought this was potentially important based on Bandura's (1977) theory that beliefs would influence practice, suggesting that how an educator felt about herself as a literacy educator would subsequently influence her classroom literacy practices.

In response to a gap in the research related to how early childhood educators view themselves as literacy educators of young children and how this may influence their practices, my practicum study (which served as a precursor to the dissertation) sought to discover whether and how early childhood educators in child care centers view themselves as literacy educators of young children and whether and how that is related to their literacy practices. Overall, results of the study found that providers varied greatly in how they viewed developing children's literacy as part of a larger role in preparing children for more formal schooling. Although all of the educators identified various literacy skills that children should develop while in their care, the degree to which they articulated the skills and their role in developing these skills varied. A moderate positive correlation between beliefs and practices was found, indicating that the more the educator viewed one of her roles as an educator of young children to be facilitating literacy skills, the more likely she was to engage in appropriate literacy practices in the classroom. That is, educators who perceived themselves as literacy educators tended to engage in appropriate literacy practices in their classrooms more than literacy educators who did not believe themselves to be literacy educators.

Although this study suggested a relationship between early childhood educators' perceptions of themselves as literacy educators and their literacy practices, the direction of the relationship was unclear. In other words, it was impossible to determine if perceptions of themselves as literacy educators influenced practices or practices influenced perceptions of themselves as literacy educators, or if perhaps a third variable was influencing one or both variables (though the study did control for education as an influencing variable). Educators' content knowledge was not considered in the practicum study, nor were child literacy outcomes. In addition to examining whether content knowledge had an effect on the relationship between educators' perceptions of themselves as literacy educators and classroom literacy practices, it also seemed important to understand whether children's literacy growth was affected by the relationships among the educator variables discussed previously (educators' perceptions of themselves as literacy educators, their content knowledge, and their classroom literacy practices).

Overview of the Dissertation

An alternate format (Duke & Beck, 1999) was chosen to present this study. The dissertation includes this brief introduction followed by two manuscripts, each written and formatted to be submitted to a research journal for review. The first manuscript examines the relationship among early childhood educators' perceptions of themselves as literacy educators, their literacy content knowledge, their pedagogical literacy content knowledge, their classroom literacy practices, and children's literacy growth. The second manuscript looks more deeply at the findings regarding educators' content knowledge and the relation of this to their practices.

As explained above, the study was first conceptualized to address unresolved issues from the practicum study. Specifically, I wanted to know whether the relationship between educators' perceptions of themselves as literacy educators and classroom literacy practices existed when

literacy content knowledge and pedagogical literacy content knowledge were taken into account. I also wanted to know whether the relationship between early childhood educators' perceptions of themselves as literacy educators and their classroom literacy practices was powerful enough to predict children's literacy growth. In addition, I wanted to conduct the study with children who were enrolled in full-time, non-federally funded early childhood education settings to examine a sample that seems to be underrepresented in the literature.

The final sample included 28 teachers and 105 children. The study took place over a 6-month period, beginning with child assessments using the Phonological Awareness Literacy Screening (PALS) PreK (Invernizzi, Sullivan, Meier, & Swank, 2004) and the definitional vocabulary subtest of the Test of Preschool Early Literacy (TOPEL) (Lonigan, Wagner, & Torgesen, 2007). Approximately 2 months later, educator observations using The Early Language and Literacy Classroom Observation (ELLCO) Pre-K Tool (Smith, Brady, & Anastasopoulos, 2008) occurred, with interviews taking place immediately after, and educators were given The Survey of Teacher Knowledge (SOTK) adapted from the National Center for Research on Early Childhood Education (2006) to mail back after completion. Two months after observations, post-assessments of children's literacy achievement were conducted.

The first manuscript examines the relations among early childhood educators' a) perceptions of themselves as literacy educators, b) literacy content knowledge, c) pedagogical literacy content knowledge, d) classroom literacy practices, and e) children's literacy growth. The second manuscript focuses solely on the educators, examining the relationship between educators' classroom literacy practices and combined literacy content and pedagogical literacy content knowledge and literacy content knowledge and pedagogical knowledge when examined separately. Both articles are written for researchers and employ a traditional format for reporting

research, including the rationale for the study, the study design and methods, the results, and a discussion including implications.

Summary of Results Reported in Article One

Structural Equation Modeling (SEM) was used to test the model examining the relationships among perceptions of themselves as literacy educators, literacy content knowledge, pedagogical literacy content knowledge, classroom literacy practices, and child literacy growth in five different areas including name writing, phonological awareness, letter-sound knowledge, concepts of print, and vocabulary. The chi-square for the tested model was statistically non-significant (X^2 (24) = 20.95 $p < .64$) with other indicators of fit suggesting an appropriate fit (CFI = 1.00, TLI = 1.02, RMSEA = .00 with a 90% confidence interval of .07-.09, $p > .86$). Alternate models additional fit comparisons were examined between the original model and alternative models to determine the best fit. Two additional models were tested, including one with additional demographic variables such as parental education (see West, Denton, & Germino-Hausken, 2000), age of the child, and total time in childcare and another showing direct effects from each educators variable to literacy growth. Neither model resulted in a better fit.

Positive correlations were noted between literacy content knowledge and pedagogical literacy content knowledge (.927, $p < .001$), perceptions of themselves as literacy educators (POTALE) and pedagogical literacy content knowledge (.365, $p < .001$), and literacy content knowledge and POTALE (.253, $p < .05$). Direct relations were noted between literacy content knowledge and classroom literacy practices ($\beta = .44$, $p < .05$). The relationship between pedagogical literacy content knowledge and classroom literacy practices was not significant (β =-.328, $p < .129$). A direct relationship was also noted between educators' perceptions of themselves as literacy educators and classroom literacy practices ($\beta = .64$, $p < .001$). Educators'

perceptions of themselves as literacy educators were mixed, with half of the 28 educators confident in their perceptions about themselves as literacy educators and able to articulate what this meant. The remaining 14 of the 28 of the educators did not share the same perceptions of themselves as literacy educators. Based on the model, the educator variables literacy content knowledge, pedagogical literacy content knowledge, and POTALE explain 43% of the variance of classroom literacy practices. The path between classroom literacy practices and literacy growth was not at a level of statistical significance. The model suggests classroom literacy practices have an indirect influence on literacy growth ($\beta = .82$). Further exploration of the indirect effects of the educator variables on literacy growth indicate the largest indirect effect is from POTALE (.522), followed by literacy content knowledge (.357), with literacy pedagogical content knowledge having a negative indirect effect (-.269). In other words, when the POTALE score goes up by one standard deviation, literacy growth goes up by .522 standard deviations, or when the pedagogical literacy content knowledge score goes up by one standard deviation, the literacy growth score decreases by .269 standard deviations. When considered together, the educator predictor variables explain 67% of the variance of children's literacy growth.

Summary of Results Reported in Article Two

Results reported in article two reveal substantial range in both ELLCO scores and its subscales of classroom environment and language and literacy, and for the SOTK score and its subscores of literacy content knowledge and pedagogical literacy content knowledge. Histograms suggest normal distributions of scores with bell-shaped curves for ELLCO and SOTK totals and the subscores.

SOTK results were also examined by domain area by reviewing questions based on correct responses for the majority of educators. Correct responses (51% or more of educators),

included both questions for both literacy content knowledge questions and pedagogical literacy content knowledge and encompassed domains relative to comprehension, concepts of print, letter-sound knowledge, narrative, phonological awareness, vocabulary, and writing. Educators were noted to have areas of strength in literacy content knowledge questions requiring the identification of the domains of alphabetic knowledge and concepts of print and pedagogical literacy content knowledge questions with respect to the ways in which they would scaffold comprehension development, concepts of print, letter-sound knowledge, and development of narrative skills. Areas of challenge included phonological awareness, or particularly the identification of phonemes in specific words and writing.

Spearman's rank order correlation was run to determine the relationship between the ELLCO and the SOTK and the subscales of each of these measures, including the language and literacy and classroom environment subscale for the ELLCO and the content knowledge and pedagogical content knowledge subscales for the SOTK. No correlations were found between the ELLCO and the SOTK r (27) = .016, p = .935, or the subscales of these measures.

Pearson product-moment correlations were not significant between educators' classroom literacy practices (as measured by their ELLCO scores) and their combined literacy content knowledge and pedagogical literacy content knowledge (CLCPLCK) or classroom literacy practices and literacy content knowledge or pedagogical literacy content knowledge when entered into the model separately. The correlation between literacy content knowledge and pedagogical literacy content knowledge was significant, r (27) = .523, p = .005. Correlations with the covariates were not statistically significant, including educators' teaching experience, r (27) = .229, p = .251, degree type, r (27) = .058, p = .776, and education, r (27) = -.100, p = .627.

Conclusions

Several conclusions can be drawn from the dissertation. First, early childhood educators' perceptions of themselves as literacy educators are moderately related to their classroom practices in the first study. This replicates findings of a previous study (Shedd, 2009) with a larger sample. Second, educators' perceptions of themselves as literacy educators influence classroom literacy practices approximately one and half times more than literacy content knowledge and contrasted with the negative effect of pedagogical literacy content knowledge.

Third, in the second study, not only was content knowledge not related to classroom literacy practices in this sample, but pedagogical literacy content was not related, nor was a combination of the two related, to classroom literacy practices. Prior to engaging in the research, I viewed literacy content knowledge and pedagogical literacy content knowledge as a plausible alternate explanation for the relationship between educators' perceptions of themselves as literacy educators and classroom literacy practices (Shedd, 2009). I thought perhaps that a relationship exists because early childhood educators with greater levels of content knowledge would be more likely to perceive themselves as literacy educators. In other words, the hypothesis was that the moderate correlation found in the first study (Shedd, 2009) between early childhood educators' perceptions of themselves as literacy educators and literacy classroom practices was really a by-product of their literacy content knowledge, and the reality of the relationship was that the more they knew about literacy, the more likely they were to see themselves as literacy educators. However, this study found that the relationship between perceptions of themselves as literacy educations and classroom literacy practices persists even with literacy content knowledge and pedagogical literacy content knowledge in the model. This study adds to the conflicting evidence about the relationship between content knowledge and classroom literacy

practices, with some studies suggesting the content knowledge in literacy matters (McCutchen et al., 2002, McCutchen, Green, Abbott, & Sanders; Spear-Swerling & Brucker, 2004), and others suggesting it does not (Carlisle, Correnti, Phelps, & Zeng, 2009), although, notably, this study was conducted with educators of preschool children. The second study also examined the covariates of degree type, years of education, and years of experience on classroom literacy practice, with none of them found to predict classroom literacy practices in this study. This adds to the increasing body of literature about these demographic characteristics as indicators of classroom literacy practices.

A fourth conclusion is that there is no empirical justification for separating literacy content knowledge and pedagogical literacy content knowledge based on the correlation at levels of statistical significance. In other words, it was originally hypothesized that the SOTK measured these constructs separately, but the correlations at levels of statistical significance, and that the correlation was so close to 1, suggests that it does not.

A fifth conclusion is that classroom literacy practices appear to have an indirect influence on literacy growth. Perceptions of themselves as literacy educators (POTALE) had the largest indirect effect (.522) on literacy growth followed by literacy content knowledge (.357) with literacy pedagogical content knowledge having a negative indirect effect (-.269). This means that when the POTALE score goes up by one standard deviation, literacy growth goes up by .522 standard deviations. When considering the educator predictor variables together, they explain 67% of the variance of children's literacy growth.

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MANUSCRIPT ONE: THE IMPORTANCE OF THE EARLY CHILDHOOD EDUCATORS' PERCEPTIONS OF THEMSELVES AS LITERACY EDUCATORS

Abstract

As each year the number of children enrolled in some form of child-care increases (Barnett, Hustedt, Friedman, Boyd, & Ainsworth, 2007), there is a critical need for positive learning experiences and well-trained educators to provide those experiences, particularly related to literacy skill development. Drawing on data from 28 early childhood educators and 105 children, a structural equation model was used to examine the relationship among early childhood educators' a) perceptions of themselves as literacy educators, b) literacy content knowledge, c) pedagogical literacy content knowledge, d) classroom literacy practices, and e) children's literacy growth. Examination of the model suggests educators' perceptions of themselves as literacy educators influenced classroom literacy practices one and a half times more than literacy content knowledge and contrasts with the negative effect of pedagogical literacy content knowledge. Indirect effects were noted for literacy growth, with changes in literacy content knowledge, pedagogical literacy content knowledge, and perceptions of themselves as literacy educators (POTALE) triggering changes in classroom literacy practices. The educator variables explained 67% of the variance in children's literacy growth in this study. This finding provides initial evidence that professional development for educators should include opportunities designed to help early childhood educators see themselves as literacy educators rather than focus solely on literacy content knowledge as a change mechanism for educators' practice. Discussion focuses on the relationships among the variables and implications for future research and professional development.

The importance of the early childhood educators' perceptions of themselves as literacy educators

Researchers have identified children's earliest experiences as critical for subsequent development (Ramey & Ramey, 2004). These experiences are increasingly taking place outside of the home, as each year the number of children enrolled in some form of child care increases. In 2006-2007, 22% of 4-year-olds were enrolled in state-funded preschool programming, which was up from 20% the previous year (Barnett, Hustedt, Friedman, Boyd, & Ainsworth, 2007). Similarly, early childhood education classrooms tied to public schools have also shown increases in enrollment (U.S. Department of Education, 2006). The most recent data available indicates a total of 61% of children not yet enrolled in kindergarten were enrolled in some form of child care outside of the home (Federal Interagency Forum on Child and Family Statistics, 2010). These trends in public program enrollment data coupled with the number of children needing private care underscore the need for quality experiences, such as engaging children in developmentally appropriate activities and allowing opportunities to explore materials in supportive learning environments in the early childhood education environment. Regardless of whether children's early experiences take place in a public or private forum, there is increased emphasis on achievement during these early years (Camilli, Vargas, Ryan, & Barnett, 2010; Gilliam & Ziegler, 2000), with increased pressure being placed on early childhood education settings to prepare children for school entry (Early et al., 2007).

One important aspect of early childhood development is literacy, as literacy development has implications for knowledge acquisition across numerous domains (Cunningham & Stanovich, 1997). However, despite the need for quality experiences with respect to literacy, research suggests that many early childhood educators or care providers may not be providing either the rich literacy environments or the experiences necessary for literacy skill development

(Christie & Enz, 1992; Duke, Moses, Subedi, Billman, & Zhang, 2005; Neuman, 1996, 1999; Vukelich, 1991). This may be due to a host of factors, including inadequate educator education, slim resources, and varying levels of competence (Whitebook & Sakai, 2004). Whatever the reason, with turnover rates estimated conservatively at 30% and the emerging workforce of early childhood educators younger and less educated than those before them (Whitebook & Sakai, 2004), the research underscores the need to consider what educators need to know and be able to do to successfully support children's literacy skills.

The present study fills an important gap in the research by examining the importance of the early childhood educators' perceptions of themselves as literacy educators and, as is discussed in greater detail, how perceptions of themselves as literacy educators may influence classroom literacy practices, in turn influencing children's literacy growth. It also addresses a gap in the research in full-time, privately funded early childhood education settings for children who have not yet entered school. The role of early childhood educators in preparing children for formal school entry is based on the provision of opportunities—both to explore materials and to engage in developmentally appropriate activities (Bredekamp & Copple, 1997). For most early childhood education settings, this exploration utilizes a play-based approach that involves adult support to scaffold the children's learning. Research indicates that well-prepared, skilled teachers can have a significant impact on children's literacy (Lamb, 1998; NICHD-Early Child Care Research Network, 2002; Sanders & Rivers, 1996). However, before examining the impact that teachers might have on children's literacy learning, it is important to review the literature identifying the literacy skills recognized as important for literacy success.

Children Need Early Literacy Skill Development

Emergent literacy development is a constellation of skills that are facilitated in young children by their own explorations and the adults around them. However, this skill development does not happen naturally for some children, and many children are at risk for entering formal schooling with delays in literacy skill development. These skills include the development of oral language, vocabulary, comprehension, concepts of print or print awareness, alphabetic principle, phonological awareness, and experimental writing (Snow, Burns, & Griffin, 1998; Whitehurst & Lonigan, 2002). The National Early Literacy Panel (Lonigan, Schatschneider, & Westberg, 2008) identified several emergent literacy skills to be predictive of subsequent literacy growth based on at least three studies for each particular construct. This document identified alphabetic knowledge, phonological awareness, a child's ability to write his or her name, rapid naming of letters and digits, and rapid naming of objects or colors as the strongest predictors of reading and writing skills including decoding, spelling and comprehension (Lonigan et al., 2008). The NELP (Lonigan et al., 2008) also suggest that vocabulary provides a foundation for subsequent literacy learning as oral language is dependent upon vocabulary learning, and Storch and Whitehurst (2002) found that preschoolers' oral language skills were a predictor of reading comprehension in the early primary grades. Based on the meta-analysis, it is suggested that a range of early literacy skills is important to children's future literacy development.

However, one-third of children in the United States are entering school at "low levels" of skills, which increases the chance for learning difficulties in the early grades (West, Denton, & Germino-Hausken, 2000). This includes skills such as exhibiting basic print familiarity, which 18% of children were unable to demonstrate, or naming letters of the alphabet, which 34% were unable to name at kindergarten entry (Zill & West, 2001). These effects may persist, as research

has shown correlations between reading levels in first grade and fourth grade (Juel, 1988), with correlations also reported between reading achievement in first grade and high school (Cunningham & Stanovich, 1997). In other words, what happens in the early years is important, not just in those early years, but beyond. Children considered at risk for entering school at low levels include children in poverty, those with parents with less than a high school education, children in a single-parent household, and those in a household where the primary language spoken is not English (West et al., 2000: Zill, Collins, West & Germino-Hausken, 1995). Multiple risk factors may place a child at greater risk, but it is also important to note that a risk factor does not mean a child will necessarily have difficulties. One of the factors important in ameliorating the risks is an early childhood educator who engages in appropriate practices to support the development of the key skills identified above.

Early Childhood Educator Practices Matter

Just as there is a clear understanding of the literacy skills that children need, it is also understood that early childhood educator practices in developing these skills matter. Early childhood educators who are preparing children for formal school entry make a difference when they engage children in developmentally appropriate activities and allow opportunities to explore materials in supportive learning environments (Bredekamp & Copple, 1997). More specific to literacy development, they include opportunities for shared book reading to develop alphabetic knowledge, phonological awareness, and vocabulary in large group, small groups, and individually, engaging children in singing, rhyming and word play to develop phonological awareness, spending time developing writing skills, and encouraging other play activities that develop literacy skills (Neuman & Roskos, 2007). Literacy learning opportunities in the early childhood education environment have been linked to literacy growth (Burchinal et al., 2000;

Maclean, Bryant, & Bradley, 1987; Morrow, 2005) and research has found strong relationships between characteristics of the early childhood educational environment and developing literacy skills (e.g., Christie & Enz, 1992; Neuman & Roskos, 1990; Vukelich, 1991; Wasik & Bond, 2001).

Additional evidence that early childhood educator practices are important comes from studies in which early childhood educator practices are changed. Interventions targeted at improving the literacy practices of early childhood educators have been implemented across literacy domains, with professional development opportunities such as improvements to the literacy environment and literacy practices (Dickinson & Caswell, 2007; Powell, Diamond, Burchinal, & Koehler, 2010), dialogic reading practices of teachers (Valdez-Menchaca & Whitehurst, 1992;Wasik & Bond, 2001; Whitehurst et al., 1994; Whitehurst et al., 1999), teaching of concepts of print and alphabetic knowledge (Justice, Kaderavek, Fan, Sofka, & Hunt, 2009; Neuman, 1999; Powell et al., 2010), and teaching of writing (Jackson et al., 2006; Powell et al., 2010). The common denominator in these intervention studies is that by providing professional development to early childhood educators, educators changed literacy practices and improved children's literacy outcomes.

In summary, extant research demonstrates that what early childhood educators do in the classroom is important to facilitate the development of literacy skills during the preschool years as a foundation for subsequent literacy development. Thus, it is important to examine what influences early childhood educators' literacy practices.

Examining What Impacts Practices

There are many hypotheses about what influences the practices of early childhood educators, including education (Early et al., 2006, 2007; Justice et al., 2008; Mashburn et al.,

2008; McMullen, 1999), degree type (Early et al., 2006, 2007, Justice et al., 2008; Mashburn et al., 2008; Kontos & Wilcox-Herzog, 2001: McMullen & Alat, 2002; Morgan et al., 1994, experience (McMullen, 1999), knowledge (Shulman, 1986), and attitudes about teaching (Hindman & Wasik, 2008). Two theories are tested as part of this study. The first, based on a previous study by Shedd (2009), stipulates that early childhood educators' perceptions of themselves as literacy educators influence classroom literacy practices. That is, whether and to what extent they think of themselves as literacy educators will influence the types of literacy practices in which they engage, if any, in their classrooms. The second hypothesis is that early childhood educators' literacy content knowledge and pedagogical literacy content knowledge – that is, what they know about literacy and how to teach it – influence classroom literacy practices. Each of these hypotheses is discussed in turn.

Early Childhood Educators' Perceptions of Themselves as Literacy Educators

Studies examining early childhood educators' perceptions of themselves as literacy educators of young children and how this might influence their practices and the literacy outcomes of children in their care are sparse. Despite this paucity of research, one study examining the degree to which early childhood educators perceive themselves as literacy educators suggests it appears to be important, as providers who see the facilitation of literacy skills as an important part of their role place a greater emphasis on literacy in the classroom environment and in instruction (Shedd, 2009).

Prior to this study, most studies of the beliefs of educators of children under five have focused on their beliefs about education (Charlesworth et al., 1991; Charlesworth, 1993; Hart et al., 1998; Kagan & Smith, 1988; McMullen, 1999; Smith & Shepard, 1988; Stipek & Byler, 1997) or literacy education (Burgess, Lundgren, Lloyd, & Pianta, 2001; Hindman & Wasik,

2008; Powell, Diamond, Bojczyk, & Gerde, 2008), but not about their own role in literacy education. In one study (Burgess et al., 2001), preschool teachers generally exhibited consistent beliefs and self-reported practices (within educator) about the importance of facilitating literacy skill development. Most teachers included literacy instruction as part of their goals, indicating their beliefs about the importance of skill development centered around three areas including alphabet knowledge, verbal language, and word and story knowledge. Teachers with more course hours in literacy reported placing a stronger emphasis during their teaching on verbal language and phonics and supporting instructional emphasis in these areas. Internal consistencies were noted between beliefs and practices among teachers in the study as well (Burgess et al., 2001). Hindman and Wasik (2008) found Head Start teachers varied in their beliefs about early literacy learning and instruction and had less agreement about effective practices (e.g., literacy acquisition and why one pedagogical approach might facilitate its development more effectively than another) and more agreement in procedural knowledge (e.g., classroom procedures). While this research is important and begins to shed light on how early childhood educators think about literacy learning in early care settings, it does not reveal whether and how early childhood educators perceive themselves as literacy educators and what relationship these perceptions might have with literacy practices in the classrooms in which they teach.

As previously noted, Shedd (2009) conducted the first known study of whether and how early childhood educators viewed themselves as literacy educators and whether and how that is related to their classroom practices. Shedd hypothesized that educators who viewed fostering literacy development as part of their role as educators would be more likely to engage children in literacy practices in their early childhood education settings. This hypothesis was based on Bandura's (1977) theory that beliefs about practices mediate behavior and supported by research

suggesting the educator's sense of what he or she is personally contributing to student achievement, or what is termed personal efficacy (Ginns, Tulip, Waters, & Lucas, 1995), influenced practices. For example, McMullen (1999) found that educators with higher levels of personal teaching efficacy were more likely to feel personal control over the educational outcomes of students, whereas teachers with lower lever levels of personal teaching efficacy did not. Shedd (2009) found that educators varied greatly in whether and to what degree they viewed developing children's literacy as part of their larger role in preparing children for more formal schooling. A moderate correlation (.519) was found between their views of themselves as literacy educators and their practices related to literacy. The more the educator viewed one of her roles as an educator of young children to be facilitating literacy skills, the more likely she was to engage in literacy-fostering classroom practices (Shedd, 2009). According to Shedd (2009), even when controlling for education, the moderate positive relationship remained the same. Thus, it appears that education is not a third factor. However, there are other factors that may influence classroom literacy practices, including the early childhood educator's knowledge of literacy development and practice.

Early Childhood Educators' Knowledge Base

An early childhood educator's knowledge may influence classroom literacy practices. Shulman (1986) identifies three kinds of educator knowledge and first proposed the idea of content knowledge and pedagogical knowledge with a third overlapping construct of pedagogical content knowledge. This can be further broken down into the early childhood educator's knowledge of literacy, hereafter *content knowledge* (Shulman, 1986), an understanding of teaching practices, hereafter *pedagogical knowledge* (Shulman, 1986), and knowledge of how to teach the content to children which influence the practices in which the educator engages,

hereafter *pedagogical content knowledge* (Shulman, 1986), The last is an intersection of both content and pedagogical knowledge in that it involves knowledge of not only what students understand and how to make learning meaningful for them, but which approaches to use for the content one is teaching and how to modify the content appropriately. It also requires an understanding of assessment of learning, what concepts might present challenges to the learners, strategies to use to address those challenges, and ways to make the learning meaningful to the individuals. With that must come an understanding of the knowledge that children have of the concepts and teaching strategies to enhance student learning of a particular concept to foster understanding (Shulman, 1986). This includes principles, or the aspects of teaching that one incorporates from empirical research, maxims, or the practical claims that have not been confirmed by research, and norms, or the things that one includes as part of teaching practices because they are ethically right (Shulman, 1986). Pedagogical content knowledge is not just a simple blending of content knowledge with pedagogical knowledge, but how the two concepts work together to facilitate understanding of the concepts that precipitate learning for children. In other words, educators need to understand what they are teaching and to whom in order to be able to teach it (Cunningham, Zibulski, & Callahan, 2009).

In literacy, an understanding of concepts of print is content knowledge, while knowledge of techniques to engage a group of children is pedagogical knowledge. Pedagogical content knowledge is demonstrated as the educator utilizes her knowledge of a child's current understanding of the concept to identify the next appropriate concept based on the typical course of development. By following the child's lead based on what he or she knows and is able to do, the educator can adjust her pedagogical approaches to accommodate the child's learning.

The role of content knowledge in influencing classroom literacy practices and children's literacy growth. There are conflicting results in the little extant research examining the influence of literacy content knowledge on literacy practices and student growth. Although some studies have found that teacher literacy content knowledge is positively associated with classroom instruction (McCutchen et al., 2002) or children's literacy growth (McCutchen, Green, Abbott, & Sanders, 2009; Spear-Swerling, & Brucker, 2004) another study has found that it did not have a positive association with student growth in literacy (Carlisle, Correnti, Phelps, & Zeng, 2009). Further research is needed to resolve the question of the relationship between literacy content knowledge and classroom literacy practices and children's growth in literacy skills.

The role of pedagogical content knowledge in influencing classroom literacy practices and children's literacy growth. If there is little research about literacy content knowledge among early childhood educators, there is even less research about pedagogical literacy content knowledge and its effect on classroom literacy practices and children's literacy growth. That is, studies to date have not examined the role of pedagogical content knowledge on educator practices or children's subsequent literacy growth. The studies above measured only content knowledge. As previously noted, there is certainly good reason to think that what teachers know about literacy practices affects their actual practices (Bandura, 1977; Ginns et al., 1995; McMullen, 1999). Based on this theory and previous research, additional research on the relationship among pedagogical content knowledge, classroom literacy practices, and children's literacy growth is important to pursue.

Theoretical Framework

The proposed study was guided, by the model of factors that influence educators teaching practices, as depicted in Figure 1. The central idea is that early childhood educators' classroom literacy practices are influenced by their perceptions of themselves as literacy educators. This theory is taken from research in science education suggesting a relationship between self-efficacy and practices in the classroom (Gunning & Mensah, 2011; Schooon, & Boone, 1998; Sinclair, Naizer, & Ledbetter, 2010). Across the previously mentioned studies, as educators reported increases in self-efficacy, increases in classroom practices relative to content were also noted. In other words, the more an educator believed him or herself to be a science educator, the more likely he or she was to engage in practices that supported the learning of science in the classroom. This is consistent with Bandura's (1977) theory that beliefs about practice influence behavior. It is also the theory for the present study in that those who perceive themselves to be literacy educators are more likely to engage in practices to support literacy development in young children.

As previously noted, some research suggests that literacy content knowledge also may influence classroom literacy practices (McCutchen et al., 2002) and children's literacy growth (McCutchen et al., 2009: Spear-Swerling & Brucker, 2004), thus adding an important piece to the framework. Theoretically, the role of pedagogical literacy content knowledge should also influence classroom literacy practices. Developmentally appropriate practice is based on the theory that teachers actively help to facilitate the development of children's particular learning domains by constructing the environment for the children by and deliberately choosing items for children to explore and manipulate (Smith, 2001). This illustrates pedagogical content

knowledge, as it requires an understanding of content knowledge, pedagogical knowledge, and how the two intersect as pedagogical content knowledge to influence classroom literacy practices.

Certainly there is a possible relationship among the educator variables, but the nature and directions of the relationships is unknown, meaning either variable could influence the other. In this study positive paths would be expected between literacy content knowledge and pedagogical literacy content knowledge and perceptions of themselves as literacy educators. Shulman (1998) suggests there is a reciprocal relationship between how one perceives oneself as an educator with one's content knowledge and pedagogical content knowledge. Shulman and Shulman (2004) also discussed the relationship between content knowledge and pedagogical content knowledge as a mechanism to enable educators to gain a greater sense of themselves as educators. Seeing oneself as a literacy educator may make one more receptive to professional development and other occasions for learning, which may influence literacy content knowledge and, knowing more about literacy development and practices may lead the educator to perceive him or herself more as a literacy educator.

Within this model, the practices in which the teacher engages have an impact on the literacy growth of the children for whom the educator cares. A key aspect of the theory is the idea that teacher beliefs influence teacher practice, in turn influencing child outcomes (Smith, 2001). This suggests then, that the children may demonstrate greater gains depending upon the beliefs of the teacher and the subsequent practices in which the teacher engages. Based on the literature suggesting that classroom environments and literacy practices affect children's literacy growth (Christie & Enz, 1992; Neuman & Roskos, 1990; Vukelich, 1991; Wasik & Bond, 2001), a positive relationship is expected between classroom literacy practices and literacy growth.

Overview of the Study and Hypotheses

Given the literature suggesting that perceptions of themselves as literacy educators, literacy content knowledge, and pedagogical literacy content knowledge may influence early childhood educators' classroom practice, in turn influencing child outcomes, the study presented here had three purposes. First, the study was intended to build on previous research conducted by the author (Shedd, 2009) to examine whether and how early childhood educators view themselves as literacy educators and the degree to which, if at all, that is related to provider practices by replicating the study with a new and larger sample. Second, the study sought to add to the literature by examining the hypothesis that perceptions of themselves as literacy educators were related not only to provider practices but also to child growth in emergent literacy skills. Third, the study examined the alternate hypothesis that literacy content knowledge and pedagogical content knowledge were related to classroom literacy practices and subsequently, examined whether there was a relationship with child growth in emergent literacy skills. The research question that guided this study was: What are the relations among early childhood educators' a) perceptions of themselves as literacy educators, b) literacy content knowledge, c) pedagogical literacy content knowledge, d) classroom literacy practices, and e) children's literacy growth?

The following paths were hypothesized relative to the research question:

First, a positive path was expected between early childhood educators' perceptions of themselves as literacy educators and classroom literacy practices.

Second, positive associations were expected between literacy content knowledge and pedagogical literacy content knowledge, and these variables and classroom literacy practices.

Third, positive associations were expected between literacy content knowledge and pedagogical literacy content knowledge and perceptions of themselves as literacy educators.

Fourth, a positive path was expected between educators' classroom literacy practices and literacy growth in children.

Method

Participants

The sample for this study included 28 early childhood educators working in licensed early childhood education centers and 105 children from the classrooms of these educators. The participants were from 25 centers located in urban/suburban areas and clustered in four counties. Center size capacity ranged from 28 to 195 children, with a mean capacity of 78.12 (*SD* = 43.63). The study was limited to lead teachers with at least one classroom of children ranging in age from 4 years (48 months) to 5 years (66 months) and educators who worked full time (30 hours or more per week) with the children. Educators were primarily responsible for planning and implementing lesson plans and classroom activities and the supervision of the children and other staff within the classroom. Participation was constrained to these parameters to address a gap in the research in full-time, privately funded early childhood education settings.

Educators. A total of 28 educators from four counties in a Midwestern state participated in the study. Of the sample, 27 of the educators were female, and one was male. The educators ranged in age from 19 to over 60. One educator had a high school diploma, four had obtained associate's degrees, and four had earned their CDA (child development credential). Half of the sample (14 of 28) had a bachelor's degree, and one had obtained a Master's degree. Of those with college degrees, three had teaching certificates with an additional ZA endorsement (indicating special preparation for teaching children birth through third grade).

Educators ranged in teaching experience, both in years of total teaching experience and in years in their current positions. Educators' experience ranged from novice teachers with only one year of experience, to experienced teachers with over 30 years of early childhood education experience. Five teachers had less than 5 years of experience, 11 had 5 to 10 years of experience, four had 11 to 15 years of experience, and seven had been teaching in early childhood education settings for more than 15 years. In their current positions, 22 of the 28 educators had 5 or less years experience in their current classrooms. The remaining five educators had been teaching in their classrooms between 9 and 12 years, with one educator at her position for 18 years.

Children. A total of 105 children, 51 boys and 54 girls, within the 28 classrooms participated in the study. Ages of the children ranged from 48 months to 65 months. The majority of the children were Caucasian (87), with the remaining children Asian/Pacific Islanders (4), African American (4), Native American (2), Chicano/Mexican American (2), Hispanic (2), or "Other" (4). Most children were living in two-parent households (93), with the remainder (12) living in single parent households. Mothers' education ranged from high school (16), completion of GED (2), associate's degree (10), bachelor's degree (31), master's degree (34), doctoral degree (9), or other (3). Fathers' education ranged from high school (19), completion of GED (3), associate's degree (8), bachelor's degree (38), master's degree (18), doctoral degree (6), other (2). Educational backgrounds for 11 fathers were not indicated.

The length of time in which children had been enrolled in early childhood education ranged from less than 1 year to 3 to 4 years. The length of time in which children had been in their current classrooms also varied, with eight children in their current classrooms just under 1 month, 35 children in their current classrooms between 1 and 3 months, 14 children enrolled in

their current classrooms between 3 and 6 months, five children enrolled between 6 and 12 months, and 43 children enrolled in their current classrooms for over 1 year.

Measures

Educators' classroom literacy practices. The study used the Early Language and Literacy Classroom Observation (ELLCO) PreK Tool, which is a validated tool used to assess both teaching practices and the classroom environment in early childhood education settings with respect to literacy (Smith, Brady, & Anastasopoulos, 2008). For the purposes of this study, only the observation components (Classroom Structure, Curriculum, the Language Environment, Books and Book Reading, and Print and Early Writing) were utilized (Smith, Brady, Anastasopoulos, 2008). Educators were observed by the author and scored on a scale of 1 to 5 (1 indicating a deficient level of support and 5 indicating an exemplary level of support) for each item in the instrument. Subtotals for the classroom environment subscale and the language and literacy subscale were then added together for the total ELLCO score. With a maximum score of 95 for the total ELLCO, the subscale of Classroom Environment (Classroom Structure and Curriculum combined) had a maximum score of 35 and the subscale of Language and Literacy (The Language Environment, Books and Book Reading, and Print and Early Writing) had a maximum of 60. Actual scores ranged from 27 to 79 for the total ELLCO, with a mean of 59.04 and a standard deviation of 11.79. For the Classroom Environment subscale, scores ranged from 11 to 32 with a mean of 24.50 and a standard deviation of 4.44 and for the Language and Literacy subscale, scores ranges from 16 to 48 with a mean of 34.53 and a standard deviation of 7.92. Smith et al. (2008) indicate good internal consistency with Cronbach's alpha for the classroom environment (.83) and the language and literacy curriculum (.86) subscales and Cronbach's alpha of .90 for overall classroom observation. The measure has been used in

conjunction with another classroom measure (Abbott-Shims & Sibley, 1998) to assess overall classroom quality and was found to have moderate correlations for the Learning Environment subscale from that measure which was deemed appropriate for comparison to assess validity (Smith et al., 2008).

Educators' perceptions of themselves as literacy educators. Interview questions were modified from a previous study (Shedd, 2009) and designed to examine early childhood educators' perceptions of themselves as literacy educators and their role in facilitating literacy skill development. Questions were set up in three broad sections, including how the educator viewed his or her responsibilities as an educator, how the educator thought literacy skills are learned by young children, and how the educator thought he or she impacted the learning of the children who are in his or her care.

From the transcribed interviews, a matrix (see Appendix B) was developed to score each educator's interview transcript based on the degree to which it reflected how the educator saw herself as a literacy educator. Educators were scored in seven areas including: (1) educates or prepares children for education as primary role as an early childhood educator; (2) includes literacy activities among high priority daily activities; (3) indicates specific and developmentally appropriate literacy skills children should know or be able to do upon leaving educator's care; (4) indicates role in developing literacy skills; (5) indicates clear goals for supporting children's literacy development; (6) indicates role in developing specific literacy constructs; and (7) identifies self as a literacy educator. Interview questions that addressed the specific areas are included in the matrix, but scoring for a particular area was not limited to responses to a specific question. For example, if an educator responded to question 1 by indicating that reading books with children every day is something that is a responsibility, this was considered in scoring

matrix concept “[i]ndicate education in discussion of most important role as ECE” but also matrix concept “[i]ndicates developmentally appropriate literacy activities as part of daily activities." As seen in the matrix (Appendix B), each of the areas was scored on a scale of 1 to 4 by the author, who was blind to the ELLCO scores while scoring with the matrix. Possible scores had a maximum score of 28; actual scores ranged from 13 to 25, with a mean of 18.75 and a standard deviation of 3.396. A second coder was trained and then independently coded 25% (7) of the 28 transcripts to assess interrater agreement in scoring. Using Cohen’s kappa, interrater reliability was calculated at .719, suggesting substantial agreement (Landis & Koch, 1977). Any differences were resolved and I coded the remaining transcripts, with all scores entered for analysis. The matrix was reviewed by experts in the field for content validity to ensure the elements of the matrix were relevant to the construct (Nunnally & Bernstein, 1994). Internal consistency was run using Cronbach’s alpha and found to be within acceptable limits (George & Mallery, 2003) at .732.

Educators’ content knowledge. The Survey of Teacher Knowledge was adapted from the National Center for Research on Early Childhood Education (2006) and was used to assess the literacy content knowledge of early literacy educators. Survey developers divided the survey into six parts which include five sections in which providers are asked to identify various constructs including: specific literacy domains, number of phonemes, number of syllables, and sounds in a word. Another section asks educators to rate the development of specific literacy skills in preschoolers in terms of importance. The final section consists of 16 scenarios in which educators are asked to indicate what response best answers the question.

The original survey included six domains, but I adapted the survey to include writing based on the NELP’s (Lonigan et al., 2008) study indicating writing as an indicator of future

literacy success, which added an additional domain. Two questions to assess literacy content knowledge were included in the section for identification of literacy constructs. An example of a writing question of this type was "use letters or letter-like forms to represent words." Two questions to assess pedagogical literacy content knowledge were included in the section with scenarios. An example of a question of this type was:

> During circle time, the teacher reads a book to the children about picking apples. The teacher and children link the story to their recent field trip to the apple orchard and then the teacher tells them they are going to write their own stories about picking apples. A child tells the teacher she can't write. What could the teacher do to scaffold this skill?

Judging items. For the purpose of this study, questions in all sections were identified by this author and reviewed by a panel of three experts for classification into either literacy content knowledge or pedagogical literacy content knowledge. Questions were considered to address literacy content knowledge if they focused on an educator's knowledge of a literacy construct (e.g., identification of number of syllables in a word) and considered to address pedagogical literacy content knowledge if they related to pedagogical practices in facilitating skill development and also requiring literacy content knowledge to do so (e.g., identify the best strategy to use based on a particular skill). An example of a question assessing pedagogical literacy content knowledge included questions in which educators were expected to identify the best response to a scenario, as in the question quoted above. Four responses are then provided from which the educator is asked to choose the best one. These questions were found in Section VI, with the exception of one scenario that was identified as literacy content knowledge.

An example of questions included in the literacy content knowledge category included the section asking educators to match skills to particular domains, such as "identify all of the

letters of the alphabet." Sections II, III and IV were also considered to assess literacy content knowledge, as they asked educators to identify the number of sounds in a word, to identify the number of syllables in a word, and to identify a word containing a similar sound to the underlined part of the target word.

Psychometric data for this measure is currently in process of analysis, with preliminary results not available for distribution (B. Hamre, personal communication, September 10, 2010). It should be noted that the data for the psychometric results may not apply exactly to what was done in the present study based on the modifications to the survey noted above.

Literacy growth. The Phonological Awareness Literacy Screening (PALS) PreK (Invernizzi, Sullivan, Meier, & Swank, 2004) was used to measure letter-sound knowledge, phonological awareness, name writing, and concepts of print. Specifically, the PALS PreK consists of assessing name writing, alphabet knowledge of uppercase letters, beginning sound awareness, word awareness (including print identification, concepts of print, and concept of word), rhyme awareness, and nursery rhyme awareness. The PALS PreK has been compared with three independent measures for construct validity. The PALS PreK was significantly correlated with the Test of Awareness Language Segments (TALS) (Sawyer, 1987) for phonological awareness at .41 (although medium low), with High/Scope's Child Observation Record (COR) (1992) for writing and alphabetic knowledge at .71 (medium high), and with the Test of Early Reading Ability (TERA-3) (Reid, Hresko, & Hammill, 2001) for alphabetic knowledge and concepts of print at .67. The authors of the PALS PreK also found a significant predictive validity for the three different pilot groups (Invernizzi, Sullivan, Meier, & Swank, 2004). During pilot study, PALS PreK was assessed for task reliability for grade, gender, socioeconomic status, and ethnicity. Consistencies in alpha coefficients between the entire

sample and within various demographic categories were noted, suggesting reliability of the tool for use across demographic characteristics (Invernizzi, Sullivan, Meier, & Swank, 2004). The Test of Preschool Early Literacy (TOPEL) definitional vocabulary subtest was used to measure vocabulary as a proxy for oral language (Lonigan, Wagner, & Torgesen, 2007). The TOPEL was compared with the Expressive One-Word Picture Vocabulary Test-2000 Edition (Brownell, 2000) for construct validity and was significantly correlated at .71 (Lonigan et al., 2007). Testing of the internal consistency of the reliability of the items on the TOPEL using Cronbach's alpha resulted in a coefficient alpha of .94 for definitional vocabulary (Lonigan et al., 2007).

Raw subscale scores for each of the PALS measures and the TOPEL measure were entered into the database. Subscales measuring similar constructs were combined to create one category for a particular construct, resulting in five child outcomes including alphabetic knowledge, concepts of print, phonological awareness, writing, and vocabulary. Subscales collapsed within the alphabetic knowledge category included identification of lower and upper-case letters and identification of letter-sounds. Subscales collapsed within the phonological awareness category included identification of beginning sound, nursery rhyme awareness, and rhyme awareness. The other outcomes, including concepts of print, vocabulary, and writing, were comprised of single scores. For each construct representing a combination of subscales, subscales included in the combined categories had both the same scale (1 to 10) and the same weight (one point each) within the category. In order to ensure accuracy of interpretation of the PALS writing scores, a second coder independently coded 60 of 208 possible PALS PreK writing subtests. Using Cohen's kappa, interrater reliability was calculated at .759, reflecting substantial agreement between the raters at an acceptable level (Landis & Koch, 1977). Again,

any differences were resolved and the remainder of the writing subtests were scored and entered into the database for analysis.

Data Collection Procedures

A list of possible participants was obtained through a list of licensed centers on the state department of education website. Letters were initially mailed to providers, with a follow up phone call placed approximately two weeks after mailings to determine an interest in participation. Once director and educator consents were obtained, parental consent forms were distributed by educators to all eligible children in the classroom. The number of consents distributed varied by classroom based on the size of classrooms (8 to 30 children) and number of children who were in the classroom full-time (at least 60% of the children had to attend full-time for the classroom to be eligible for the study). Based on the returned consents, children were included in the study if they met the criteria based on age (at least 48 months, but not yet in Kindergarten) and hours of enrollment at the center (30 or more hours a week).

Observations took place during the morning by the lead researcher (author), typically beginning just prior to "circle time" or whole class instruction and lasting for approximately 2 hours. An audio-recorded interview with the provider was conducted (also by the author), using the interview protocol, after the observation. In instances in which it was convenient for the educator and scheduling or ratios were not disrupted, the interview took place immediately following the observation (23 interviews). When the interview would disrupt the ratio or scheduling of the educator, it was scheduled for later in the day by phone (four interviews) or the following day (one interview). All interviews were recorded for transcribing.

Child measures were conducted in the fall and in the spring approximately five months apart, with assessments taking place in the morning by a trained researcher. Researchers included

graduate students or teacher candidates in the College of Education with research experience. Child assessments were scripted, with each researcher trained to administer the PALS PreK and the TOPEL definitional vocabulary subtest using the script provided by the publisher. A practice administration of each assessment was observed to ensure consistent administration among researchers, and then researchers independently scored a sample child using video to estimate interrater reliability for both assessments based on the single administration. Fleiss' kappa (Gwet, 2008) was used to calculate reliability among the six researchers, with a value of .93 for the PALS PreK and .85 for the TOPEL vocabulary and a .88 for the two measures combined.

Data Analysis Procedures

Data analyses were conducted using structural equation modeling using AMOS (SPSS, 2007). A path model (Kline, 2005) was developed based upon a review of the literature and the previously described conceptual model. Four exogenous variables were used in the initial model: the educators' perceptions of themselves as literacy educators (POTALE), pedagogical literacy content knowledge (which included the intersection of pedagogical knowledge and literacy content knowledge), literacy content knowledge scores, and classroom literacy practices. The latent variable called *literacy growth* was created to represent a holistic representation of growth in literacy skills (including growth in alphabetic knowledge, concepts of print, phonological awareness, writing, and vocabulary). In the initial model (Figure 2) non-directed arcs were used between the exogenous variables of pedagogical literacy content knowledge, literacy content knowledge and perceptions of themselves as literacy educators based on the hypothesis that there is an association between the variables in each pair. Meaning, either variable in the pair could influence the other and/or the direction of the relationship is unknown. Pedagogical knowledge is not included in the model, as it was not directly assessed in the study to avoid participant fatigue.

Directed arcs were used between pedagogical literacy content knowledge, literacy content knowledge and perceptions of themselves as literacy educators and classroom literacy practices based on the hypothesis that each of these variables would influence classroom literacy practices. Similarly, a direct arc was used between classroom literacy practices and literacy growth, based on the literature suggesting that classroom environments and literacy practices affect children's literacy growth (Christie & Enz, 1992; Neuman & Roskos, 1990; Vukelich, 1991; Wasik & Bond, 2001).

Results

Descriptive analyses were conducted for each of the educator and child assessments. The ranges, means, standard deviations, and correlations of the predictor variables are shown in Table 1. As previously noted, Structural Equation Modeling was used to examine the relationship between the educators' a) perceptions of themselves as literacy educators, b) literacy content knowledge, c) pedagogical literacy content knowledge, d) classroom literacy practices, and e) children's literacy growth. AMOS (SPSS, 2007) was chosen for its ability to handle missing data in the analysis with minimal implications to the final results. Missing data was noted, but considered missing at random (McDonald & Ho, 2002) as it was not consistent across questions or across participants and not believed to have an effect on the final analysis.

The initial model met indices for goodness of fit with the chi-square value for the model statistically non-significant (X^2 (24) = 20.95 $p < .64$). The comparative fit index was chosen because of the smaller sample size, and its value (CFI = 1.00) suggesting a reasonable fit for the model (Smith & McMillan, 2001), as does the Tucker Lewis Index (TLI = 1.02). The root mean square error of approximation (RMSEA) indicated a close approximate fit at .00 with a 90% confidence interval of .07-.09, $p > .86$. The chi-square as well as the fit indices indicate a

reasonable fit of the model to the data (Hu & Bentler, 1999; Kline, 2005). Although this model met indices for goodness of fit, additional fit comparisons were examined between the original model and alternative models to determine the best fit. Two additional models were tested, including one with additional demographic variables such as parental education (see West, Denton, & Germino-Hausken, 2000), age of the child, and total time in childcare. This model did not yield a better fit, nor did an alternate model showing direct effects from each of the individual educator variables to literacy growth. An alternate model with an additional constraint between classroom literacy practices and literacy growth was tested to compare goodness of fit while examining the relationship between classroom literacy practices and children's literacy growth. The goodness of fit criteria for this model did not warrant rejection of the original model (Kline, 2005). The analysis ignored clustering because the sample size did not allow for it.

Relations among Literacy Content Knowledge, Pedagogical Literacy Content Knowledge, and POTALE

As expected, positive correlations were noted between literacy content knowledge and pedagogical literacy content knowledge (.927, $p < .001$), POTALE and pedagogical literacy content knowledge (.365, $p < .001$), and literacy content knowledge and POTALE (.253, $p < .05$). The high (.927) correlation between literacy content knowledge and pedagogical literacy content knowledge offers the possibility for collapsing these two variables into a single variable. However, as these were theorized to be separate constructs and one of the research aims was to examine the effect of each of these constructs on other variables, they were kept separate in the analyses.

Relations among Literacy Content Knowledge, Pedagogical Literacy Content Knowledge and Classroom Literacy Practices

Direct relations (Table 2) were noted between literacy content knowledge and classroom literacy practices ($\beta = .44$, $p < .05$). The relationship between pedagogical literacy content knowledge and classroom literacy practices was not significant ($\beta = -.328$, $p < .129$). When the direct effect of pedagogical literacy content knowledge is combined with the indirect effect through the other highly correlated predictor of literacy content knowledge, the total effect is close to 0.

Interview data provides further evidence of the ways in which educators expressed either their knowledge of a construct or ways to support its development. For example, when asked the ways in which s/he supported the development of phonological awareness in his or her classroom, one educator indicated that s/he liked to have children:

> …[P]laying with the sounds of language and a lot of that is done during finger plays and when you're singing. So a lot of the songs will be the same sound at the beginning of the letter. So they'll hear the sound over and over. Some of the rhyming words, so they can hear the beginning and ending sounds of the language with those playful tunes. (Participant 2026)

The educator went on to describe differences in her expectations based on age and how she might work with an individual child to hear the sounds in spoken language and scaffold development. Another educator responded to the same question, "Okay that's a hard question, I suppose just by talking to them a lot. I don't really know the answer to that" (Participant 3786). One educator was able to clearly articulate her pedagogical literacy content knowledge while the other could not. However, both of these educators responded incorrectly to the phonological

awareness question on the pedagogical literacy content knowledge section of the SOTK. The interview data provides examples of the ways in which providers are able or unable to share their literacy content knowledge or pedagogical content knowledge and how they perceive that knowledge as influencing classroom literacy practices.

Relationship between POTALE and Classroom Literacy Practices

A direct relationship was also noted between educators' perceptions of themselves as literacy educators and classroom literacy practices ($\beta = .64$, $p < .001$). Educators' perceptions of themselves as literacy educators were mixed, with half of the 28 educators confident in their perceptions about themselves as literacy educators and able to articulate what this meant. For example, the following educator with the highest ELLCO score indicated that while she felt there was always "room for improvement" for any educator, she felt confident in her role as a literacy educator. She then went on to list five specific ways in which she facilitated literacy skills with the children in her class, noting those skills she thought she facilitated particularly well:

> …using print all around the room to write the names of their friend. They see their friends' names during small group. That has been a focus this year and I think I do that well. I think other parts I do well would be reading…would definitely be one of them. I think building motivation would be one of them. Finding pleasure in reading. (Participant 2026)

The conversation with the educator scoring second highest on the ELLCO also elicited a strong sense of being a literacy educator and how this perception could influence the classroom literacy practices:

> You can tell they're learning because they are really engaging…I feel confident. I think if anything I love to keep building off my experience. Every year I learn it's a whole new

group of kids, so it's figuring out what their needs are and building off of that. So, I think I'm still young and there's a lot of things I can learn. But I'm confident I can give them what they need [about literacy] and if I don't, I ask questions. (Participant 6590)

The remaining 14 of the 28 of the educators did not share the same perceptions of themselves as literacy educators. For example, the educator with the lowest ELLCO score was not able to explain what s/he thought s/he did particularly well, noting that the educator "felt pretty good about myself" but was effective in "just I mean the basics. Just the reviewing everything everyday. Making sure that they know it" (Participant 2072). Additional questioning to identify what the "basics" and "everything" were did not provide further information about this educator's sense of his or her role.

The educator with the second lowest ELLCO score also felt that she was "good" as a literacy educator, but spoke in terms of the program rather than herself, "I think we're doing okay with it." As with the educator with the lowest score, she was unable to articulate any specific things she did well in her role as literacy educator, citing "reading or math" as the two things "we really focus on here" (Participant 7234). The interview data provides examples of the ways in which providers who are supporting literacy practices in different ways as evidenced by ELLCO scores are also articulating their perceptions of themselves as literacy educators. Based on the model, the educator variables literacy content knowledge, pedagogical literacy content knowledge, and POTALE explain 43% of the variance of classroom literacy practices.

Relationship between Classroom Literacy Practices and Children's Literacy Growth

It was hypothesized that a direct relationship would exist between classroom literacy practices and children's literacy growth. Although the path between classroom literacy practices

and literacy growth was not at a level of statistical significance (Table 3), classroom literacy practices appear to have an indirect influence on literacy growth ($\beta = .82$).

Some educators were able to provide clear examples of the ways in which their classroom literacy practices had influenced literacy development for the children in their classroom, such as in this example:

> The other day a little girl brought in snack and she had all of the same…and I said, " you have a 'buh nana' and a 'buh ny' cracker." And I picked up her water and I said, "Oh, it's such a shame this doesn't have a buh in it, or you'd have a whole 'buh lunch' and she though about it and said, "Oh, it's a bottle." So she was able to come with that sound of the language to connect all three. It's giving them opportunities to hear and emphasize those sounds and connecting them over time to a written letter. (Participant 2026)

Of the 28 educators in the study, 27 thought their literacy practices were influencing the literacy learning of the children in their care, when prompted. However, nearly half, or 13 of the 28 educators, were unable to provide a specific example either indicating they had no examples to provide, "An example. I don't know" (Participant 4452), or providing vague references to an event, such as, "It's more little things. Like they'll come up to me a few weeks later, like remember when we did this. Or they'll do it when I wasn't here. I don't know of anything specific" (Participant 5603).

When examining the standardized regression weights, this regression weight was large, suggesting an indirect influence from classroom literacy practice to literacy growth. In other words, changes in literacy content knowledge, pedagogical literacy content knowledge, and POTALE trigger changes in classroom literacy practices, which in turn cause changes in literacy growth. Examination of the standardized indirect effects for literacy growth indicate that

POTALE has the largest indirect effect (.522), followed by literacy content knowledge (.357) with literacy pedagogical content knowledge having a negative indirect effect (-.269). This means that when the POTALE score goes up by one standard deviation, literacy growth goes up by .522 standard deviations. When the pedagogical literacy content knowledge score goes up by one standard deviation, the literacy growth score decreases by .269 standard deviations. The current study suggests that educators' perceptions of themselves as literacy educators will influence classroom literacy practices more than literacy content knowledge. When considered together however, the educator predictor variables explain 67% of the variance of children's literacy growth

Discussion

Examining the Relationship Among Early Childhood Educators' Perceptions of Themselves as Literacy Educators, Literacy Content Knowledge, and Pedagogical Literacy Content Knowledge

Based on the theoretical framework for the study, positive relationships were expected among the educator variables of perceptions of themselves as literacy educators, literacy content knowledge, and pedagogical literacy content knowledge. The high (.927) correlation between literacy content knowledge and pedagogical literacy content knowledge was noted for its collinearity and subsequent effect on the other variables as predictors. The content knowledge variables were not collapsed into a single variable as one aim of this study was to examine the relationship of literacy content knowledge and pedagogical literacy content knowledge independently with the other variables in the study drawing on Shulman's (1998) work based on the theory that each of these variables are separate constructs.

It is recognized that collapsing the two content knowledge variables will remove the collinearity, but for the purposes of this paper, the examination of the variables as independent predictors was pursued to address the research questions and corresponding hypotheses. Recall that pedagogical literacy content knowledge is the intersection of pedagogical knowledge and content knowledge, requiring an educator to understand how to engage learners, to have knowledge of the content itself, to assess the learner, and to scaffold development based on the individual learner's stage of development. Shulman (1998) suggested in his earlier work the reciprocal relationship between how one perceives oneself as an educator with one's content knowledge and pedagogical content knowledge. In 2004, Shulman and Shulman expanded this work to include the relationship between content knowledge and pedagogical content knowledge as a means for educators to gain a greater sense of themselves as educators. Seeing oneself as a literacy educator may make one more receptive to professional development and other occasions for learning, which may influence literacy content knowledge and, knowing more about literacy development and practices may lead the educator to perceive him or herself more as a literacy educator. The positive correlations between these variables provide further support for this theoretical framework.

Examining the Relationship among Early Childhood Educators' Perceptions of Themselves as Literacy Educators, Literacy Content Knowledge, Pedagogical Literacy Content Knowledge, and Classroom Literacy Practices

Relationship between perceptions of themselves as literacy educators and classroom literacy practices. A positive path was expected between perceptions of themselves as literacy educators and classroom literacy practices. This path was positive at the .001 level. Examination of the model suggests when the standard deviation of the ELLCO increases by 1, the standard

deviation of content knowledge increases by .436, while it increases by .637 for POTALE. The current study suggests educators' perceptions of themselves as literacy educators influenced classroom literacy practices approximately one and half times more than literacy content knowledge and contrasts with the negative effect of pedagogical literacy content knowledge. This suggests that perceptions of themselves as literacy educators are not a byproduct of the relationship between literacy content knowledge and classroom literacy practices. In other words, perceptions of themselves as literacy educators is a legitimate predictor of classroom literacy practices just as literacy content knowledge is, rather than a variable that occurs in partnership with or parallel to literacy content knowledge. The replication of the finding of the previous study (Shedd, 2009) with the addition of literacy content knowledge in the model (recall that the previous study controlled for education) adds to the knowledge base as it supports the hypothesis that perceptions of oneself as a literacy educator do influence literacy practices.

Comparison of the interview responses of educators with higher ELLCO scores with those with lower ELLCO scores on the question of how the educator feels about him or herself as a literacy educator underscores the importance of the relationship between these two variables. The interview data supports the model in that when an educator perceives him or herself as a literacy educator, he or she is engaging in the practices necessary to facilitate the development of literacy skills, and is also able to articulate perceptions of him or herself as a literacy educator and what that means with respect to classroom literacy practices

Relationship between literacy content knowledge and classroom literacy practices. A positive path was expected between literacy content knowledge and classroom literacy practices and a positive path was found at the .05 level. This supports previous work by McCutchen et al. (2002) finding a positive relationship between content knowledge and instruction among

kindergarten through second grade classroom and special education teachers. The present study not only adds to the body of literature addressing the question of the relationship between literacy content knowledge and classroom literacy practices, it expands the body of knowledge in its use of educators working with preschool-aged children.

Relationship between pedagogical literacy content knowledge and classroom literacy practices. A positive path was expected between pedagogical literacy content knowledge and classroom literacy practices. As previously noted, this path was not significant. Based on the present study, pedagogical literacy content knowledge, or the intersection of literacy content knowledge and pedagogical literacy content knowledge does not predict classroom literacy practices. As previously discussed, pedagogical literacy content knowledge is an intersection between literacy content knowledge and pedagogical knowledge. While educators may have been able to reveal their content knowledge, revealing their pedagogical content knowledge may have been more of a challenge. In other words, demonstrating the "what" may have been an easier task than demonstrating the "how," particularly as it is captured on the Survey of Teacher Knowledge. The items relative to pedagogical literacy content knowledge require educators to think about the blending of what they know relative to content, how they would assess a child's knowledge of the construct, how they might engage a child in an activity relative to the construct, and how they might scaffold the child's development of a particular skill in that construct based on all of those factors. To answer a question in this section correctly, an educator would have had to be aware of the aspects of pedagogical literacy content knowledge and be able to answer the question correctly in a multiple choice format.

Once more, the interview data illustrates differences in the ways educators are able to articulate their knowledge in these constructs. One educator was able to clearly articulate her

pedagogical literacy content knowledge while the other could not. However, as previously noted, both of these educators responded incorrectly to the phonological awareness question on the pedagogical literacy content knowledge section of the SOTK. Educators may be challenged by a question for any number of reasons. But for educators who are able to articulate their knowledge of pedagogical literacy content knowledge, the multiple choice responses may have been limiting and not have adequately reflected what they know about the particular construct and developmentally appropriate ways to assess, engage, and scaffold development for children.

In addition to the issues with the multiple-choice format, the items emphasized in each of the instruments may explain the lack of positive path. While each instrument assesses the same approximate literacy constructs, the degree to which these constructs are measured on the SOTK may not be comparable with the degree to which the demonstration of the facilitation of the practices are measured using the ELLCO. Meaning, the assessments may be measuring roughly the same constructs, but the depth with which they are assessing knowledge may not be in alignment with the assessment designed to assess support for the same construct.

Influence of Educator Variables on Children's Literacy Growth

A positive path was expected between educators' classroom literacy practices and literacy growth in children. The direct path was not significant between classroom literacy practices and the literacy growth factor representing a holistic change in literacy development across the five literacy constructs measured. This is in contrast to studies suggesting that educator practices influence child growth (e.g., Maclean et al., 1987; Morrow, 2005; Neuman & Dickinson, 2001; Snow, Burns, & Griffin, 1998).

However, growth certainly occurred, so why did classroom literacy practices not have a direct effect on literacy growth? To address this question, a closer examination of the measures is

warranted. The ELLCO was deliberately chosen because of its holistic assessment of classroom literacy practices and the literacy environment. Similarly, as previously discussed, the child measures were deliberately chosen to assess the specific constructs of concepts of print, phonological awareness, letter-sound knowledge, name writing (PALS Pre-K) and vocabulary (TOPEL) identified as being important for future literacy success. When comparing the constructs assessed by the child measures, although these constructs are assessed by the measure, the degree to which they are assessed may not be at levels of statistical significance. For example, the ELLCO consists of 19 observation questions or prompts, one of which is an observation of the ways in which the educator supports the development of phonological awareness. One observation prompt relates to concepts of print, one to letter-sound knowledge, two are related to writing, and one is related to vocabulary. This represents 32% of the total measure. The ELLCO has demonstrated sound psychometrics and shown correlations with another classroom environment measure (Abbott-Shim, & Sibley, 1998). However, perhaps there is incongruence between the particular child measures used in this study to assess literacy growth and the way in which the ELLCO assesses educator practices to facilitate literacy growth.

Interestingly, these results contrast with what the educators said when asked about whether they thought their classroom practices influenced children's literacy growth. All but one of the educators indicated that they thought they had an influence. That said, the degree to which educators could articulate their influence varied. Based on the tested model, relationships exist between early childhood educator perceptions of themselves as literacy educators, their literacy content knowledge, and pedagogical literacy content knowledge. Literacy content knowledge, pedagogical content knowledge, and POTALE explain 43% of the variance of classroom literacy

practices, with all four of the educator variables predicting 67% of children's literacy growth, despite the lack of positive path between classroom literacy practices and literacy growth.

Limitations

Despite providing important insight into a relatively under-researched area, this study also has limitations. One set of limitations lies in the measures. As previously stated, a limitation of the SOTK is whether it allowed educators to adequately articulate their pedagogical literacy content knowledge. There may have also been a limitation in that the ELLCO may not effectively capture the specificity of the literacy constructs assessed by the child measures. Despite this, both measures represent significant contributions to literacy assessments within the field and were determined in the design of this study to be the best tools to assess the literacy content knowledge and pedagogical literacy content knowledge and classroom literacy practices.

Additionally, while the sample was generated from a larger list of possible early childhood education programs and each of those programs was contacted with an opportunity of selection for the study, it was exclusive in that participants were from full-time privately-funded child care centers. As previously noted this exclusivity was intentional, but some bias may have occurred and characteristics of the sample, for both educators and children, were not distributed across ethnic populations, educational backgrounds, and other demographic factors that represent the general population. Therefore the results of the study only generalize to educators and children from urban/suburban privately funded full time early childhood education centers. Although this presents a limitation, this is also beneficial in that it enables one to see the upper end of what is possible in a setting that included relatively few incidences of factors linked to poor teacher performance (the teachers in the sample were, on average, more highly educated than many in their field and were relatively experienced) and most of the children did not possess

risk factors linked to risk for lower levels of literacy learning (i.e., English as a second language, single parent households [West et al., 2000]).

Future Research

The limitations of the current study also present avenues for future study. This includes utilizing a measure that examines pedagogical literacy content knowledge in a way that enables educators to share their knowledge of this construct beyond a multiple-choice response. By improving the accuracy of the measurement of this construct, educators who are able to articulate their pedagogical literacy content knowledge will be able to do so without being hindered by multiple-choice constraints. For those unable to articulate their knowledge of the construct, a format other than a multiple-choice format decreases the opportunity to guess and be correct, inaccurately assessing the pedagogical literacy content knowledge of that educator. Repeating the study with different measures for classroom literacy practices and child literacy growth that are somewhat more consistent may reveal relationships not observed in this study.

Implications for Professional Development

According to the results of this study, educators' perceptions of themselves as literacy educators seem important for supporting their classroom practice and children's literacy development. This finding provides initial evidence that professional development for educators should include opportunities designed to help early childhood educators see themselves as literacy educators rather than focus solely on literacy content knowledge as a change mechanism for educators' practice. How educators perceive their role in developing literacy is important because of the implications for classroom literacy practices, which as previously noted, have demonstrated improvement through professional development (Dickinson & Caswell, 2007; Jackson et al, 2006; Justice et al., 2009; Powell et al., 2010, Valdez-Menchaca & Whitehurst,

1992; Wasik & Bond, 2001; Whitehurst et al., 1994; Whitehurst et al., 1999). For the current study, its indirect effects on children's literacy growth were important because of the increased emphasis on achievement in the early years (Camilli et al., 2010; Gilliam & Ziegler, 2000) and increased pressure for early childhood educators to prepare children for school (Early et al., 2007) and subsequent success in school.

Future intervention work should consider these findings when preparing their professional development curricula. This includes identifying educating young children as part of their role as early childhood educators and conveying that, just as with providing snack and rest time, providing developmentally appropriate literacy activities daily is an essential part of their role. Professional development would also enable educators to learn how to develop their roles in developing literacy skills and to develop clear goals for doing so, including identifying oneself as an educator and the ways in which one is effective in this capacity. This may, as the findings suggest, result in improvements to their literacy practices in the classroom, which may, in turn, directly affect children's literacy growth. While these effects were indirect in the present study, the study was naturalistic. Research linking positive literacy learning opportunities in the early childhood education environment to child growth in experimental studies (Christie & Enz, 1992; Morrow & Rand, 1991; Morrow, 1991; Neuman & Roskos, 1990; Wasik & Bond, 2001; Whitehurst et al., 1999) is abundant.

Summary

This study found a positive relationship among early childhood educators' perceptions of themselves as literacy educators, their literacy content knowledge, and their pedagogical literacy content knowledge. With increased scrutiny placed on early childhood educators to prepare children for formally school entry, this study is important in that educator's perceptions of

themselves as literacy educators influenced classroom literacy practices approximately one and half times more than literacy content knowledge and contrasted with the negative effect of pedagogical literacy content knowledge. Based on the model, indirect effects were noted for literacy growth, with changes in literacy content knowledge, pedagogical literacy content knowledge, and POTALE triggering changes in classroom literacy practices, explaining 67% of the variance in children's literacy growth in this study.

APPENDICES

Appendix A

Interview Protocol

"The first questions are designed to help me learn more about how you think about your responsibilities as an early childhood educator."

The first section includes questions 1 through 6 which can be found in the matrix (Appendix B).

"Now I'm going to ask you some specific questions to get an idea of how you think children learn literacy."

The second section includes questions 7 through 11 which can be found in the matrix (Appendix B).

"The next set of questions are related to how you think you impact the learning of the children who are in your care."

The final section includes questions 12 through 14 which can be found in the matrix (Appendix B).

Appendix B

Table 1.1

Matrix

Interview Question(s)	**Matrix Concept**	**POTALE score**			
		4	**3**	**2**	**1**
1.What are all the different responsibilities you think you have as an early childhood educator? 2.What do you think is your most important responsibility as an early childhood educator?	**Indicate education in discussion of most important role as ECE**	Education or preparation of children for education is primary role as ECE	Education or preparation of children for education is part of several equally important roles as ECE	Education or preparation of children for education is noted as less important than other roles of ECE	Education or preparation of children for education is not mentioned

Table 1.1 (cont'd)

3.What are some things that you make sure you do every morning or each day with the children in your care?	**Indicates develop-mentally appropriate literacy activities as part of daily activities**	Indicates several (3 or more) specific, developmentally appropriate literacy activities (e.g. read alouds, word games/finger plays, writing) as part of daily activities	Indicates one or two specific, developmentally appropriate literacy activities (e.g. read alouds, word games/finger plays, writing) as part of daily activities	Indicates developmentally appropriate literacy activities in a very broad sense (e.g., "literacy" or "reading" as part of daily activities)	Does not name any developmentally appropriate literacy activities or provides only developmentally inappropriate activities (e.g., flashcards, worksheets)

Table 1.1 (cont'd)

4.Are there particular things you believe a child should know or be able to do when he or she leaves your care? 5. For the things you thought a child should know or be able to do when he or she leaves your care, I'm going to ask you about whether you have a responsibility for teaching each of the things you listed. (review each item)	**Indicate literacy skills and knowledge as important upon children's departure**	Indicates several (3 or more) specific, developmentally appropriate literacy skills (e.g., concepts of print, letter knowledge, etc.) as part of skills or knowledge that a child should know or do upon leaving care	Indicates one or two specific, developmentally appropriate literacy skills (e.g., concepts of print letter knowledge, etc.) as part of skills or knowledge that a child should know or do upon leaving classroom/care	Indicates literacy skills in a very broad sense (e.g., "letters," "listening skills," "writing"), as part of a general listing of things that a child should know or be able to do upon leaving classroom/care	Does not name any literacy skills as part of skills or knowledge that a child should know or be able to do upon leaving classroom/care

Table 1.1 (cont'd)

6.There are a couple of schools of thought about whether an early childhood educator should try to develop children's academic skills, such as literacy or math. What do you think about this?

Table 1.1 (cont'd)

a.What do you view as your responsibility in developing the academic skills of young children? b.More specifically, what do you view as your responsibility in developing literacy skills of young children?	**Indicates a role in developing literacy skills**

Table 1.1 (cont'd)

	c.What are your goals in supporting children's literacy development? d.What are the three most important things you do with kids every day to reach those goals?	**Indicates clear goals for supporting literacy development in children**	Indicates 3 or more specific goals for supporting literacy development in children (e.g., modeling literacy skills, scaffolding as appropriate, providing materials)	Indicates 1 to 2 specific goal for supporting literacy development in children (e.g., modeling literacy skills, scaffolding as appropriate, providing materials)	Indicates goals for supporting literacy development, but goals are not well-defined or are vague (e.g. "help kids develop literacy)	Does not indicate goals for supporting literacy development in children

Table 1.1 (cont'd)

7. How do children learn concepts of print? a. What do you view as your responsibility in developing these concepts, if any? b.Tell me more about how you do this in your classroom.	**Indicates having a role in developing specific literacy constructs**	Indicates having a role in developing 5 specific literacy constructs (e.g,. Concepts of print, phonological awareness, alphabetic knowledge, vocabulary, and/or writing)	Indicates having a role in developing 3 to 4 specific literacy constructs (e.g,. Concepts of print, phonological awareness, alphabetic knowledge, vocabulary, and/or writing)	Indicates having a role in developing 1 to 2 specific literacy constructs (e.g,. Concepts of print, phonological awareness, alphabetic knowledge, vocabulary, and/or writing)	Does not indicates having a role in developing specific literacy constructs

Table 1.1 (cont'd)

8.How do children develop the ability to pay attention to the sounds in spoken language, or phonological awareness? a. What do you view as your responsibility in developing this skill, if any? b. Tell me more about how you do this.	**Indicates having a role in developing specific literacy constructs**

Table 1.1 (cont'd)

9.How do children learn the letters of the alphabet and the sounds those letters represent? a. What do you view as your responsibility in developing this knowledge. b.Tell me more about how you do this.	**Indicates having a role in developing specific literacy constructs**

Table 1.1 (cont'd)

10.How does children's vocabulary develop?	**Indicates having a**
a.What do you view as your responsibility in developing vocabulary?	**role in developing specific literacy constructs**
11.How do children learn to write?	**Indicates having a**
a.What do you view as your responsibility in developing this skill, if any?	**role in developing specific literacy constructs**
b.Tell me more.	

Table 1.1 (cont'd)

12.Do you think you have an impact on students' literacy learning? a.Tell me about this. b. Can you name some specific instances in which you have had an impact?	**Indication of self as a literacy educator**	Indicates positive feelings of self as a literacy educator, noting 3 or more specific examples of having an impact on children's literacy learning and/or identifies specific ways in which s/he is an effective literacy educator	Indicates positive feelings of self as a literacy educator, noting 1 to 2 specific specific examples of having an impact on children's literacy learning and/or identifies specific ways in which s/he is an effective literacy educator	Indicates neutral feelings of self as a literacy educator, noting general specific examples of having an impact on children's literacy learning and/or identifies specific ways in which s/he is an effective literacy educator	Does not indicate feelings of self as literacy educator or feels weak as a literacy educator

Table 1.1 (cont'd)

13.How do you feel about yourself as a literacy educator? a. Do you think you are good at it? Why or why not? b. What do you do as a literacy educator that you think is particularly effective?	**Indication of self as a literacy educator**

Table 1.1 (cont'd)

c. In what ways do you think you are already doing a good job?	**Indication of self as a literacy educator**
d. In what ways do you think you can improve?	

Table 1.2

Ranges, Means, Standard Deviations and Correlations of Predictor and Outcome Variables (N = 105)

Variable	Range	Mean	SD	POTALE	Literacy Content Knowledge	Pedagogical Literacy Content Knowledge
POTALE	13 - 25	18.75	3.40		.253*	.365*
Literacy content knowledge	11 - 25	19.86	3.80			.927**
Pedagogical literacy content knowledge	7 - 13	10.01	19.95			
Classroom literacy practices	27 - 79	59.04	11.76			
Growth in Name writing	-1 - 7	1.00	1.53			

Table 1.2 (cont'd)

Growth in Concepts of print	-4 - 7	1.49	2.07
Growth in Letter-sound knowledge	-9 – 22	4.66	5.65
Growth in Phonological awareness	-7 – 17	2.60	3.97
Growth in Vocabulary	-15 - 42	5.82	10.43

Table 1.3

Direct Paths for Classroom Literacy Practices

	B	SE	P	β
Literacy content knowledge	1.357	.648	.036*	.436
Pedagogical literacy content knowledge	-.800	.527	.129	-.328
Perceptions of themselves as literacy educations	2.211	.287	***	.637

*significant at the .05 level

***significant at the .001 level

Table 4.1

Direct Path for Literacy Growth

	B	SE	P	β
Classroom literacy practices	.018	.033	.574	.819

Figure 1.1
Theoretical Framework for Predictors of Literacy Growth

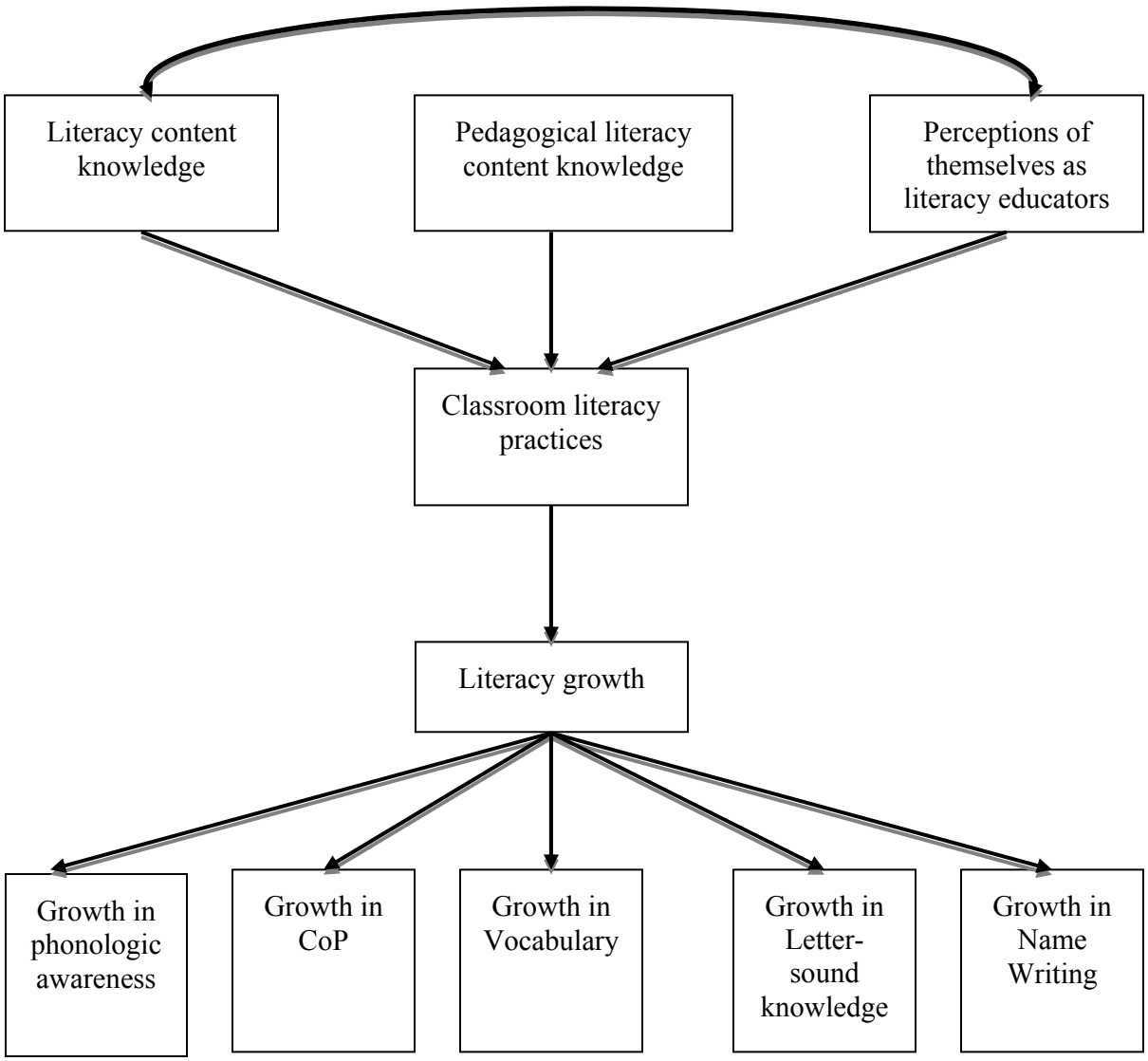
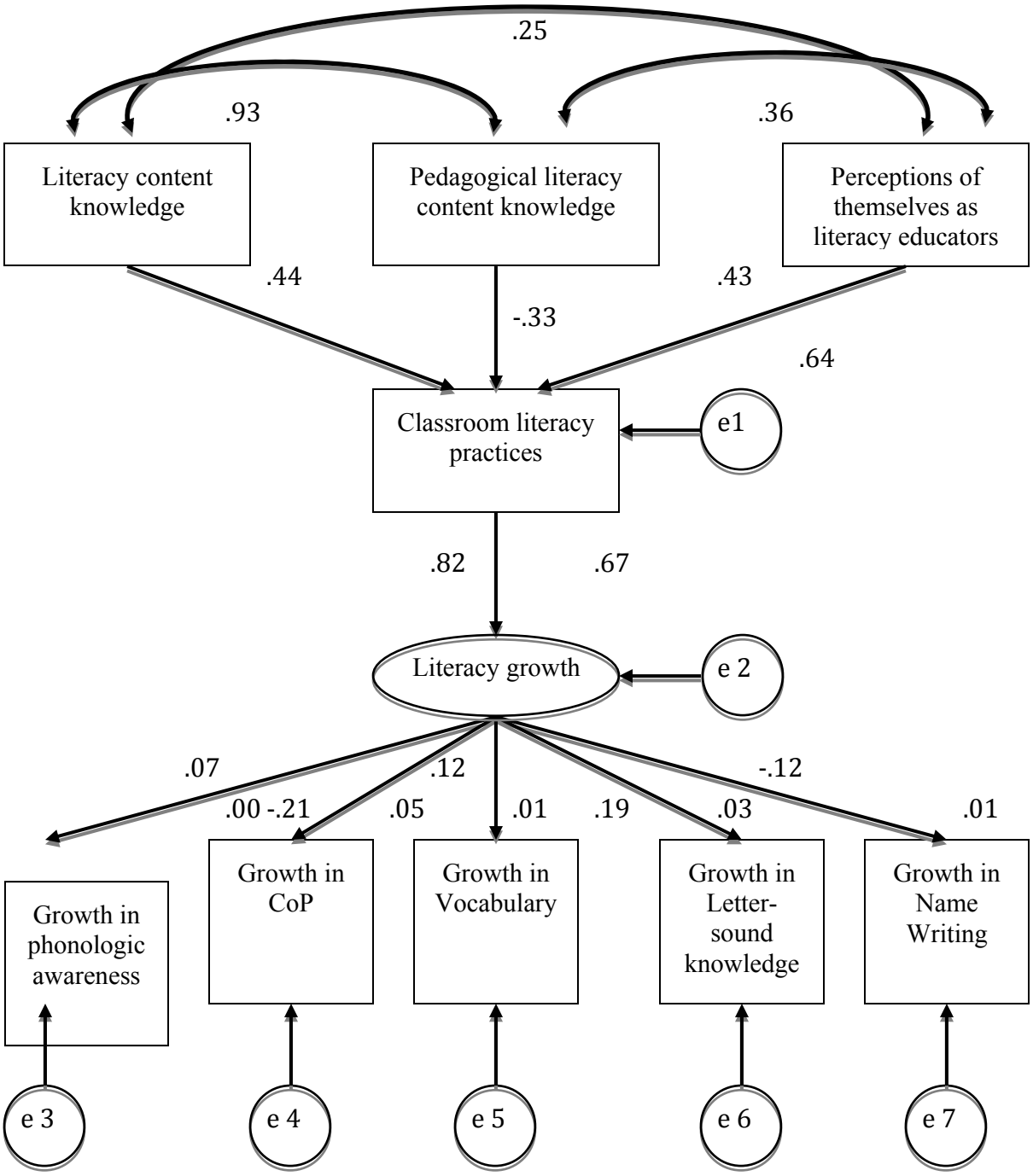


Figure 1.2. Final Model and Observed Paths Among the Measures



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MANUSCRIPT TWO: THE RELATIONSHIP OF EARLY CHILDHOOD EDUCATORS' CLASSROOM LITERACY PRACTICES TO THEIR LITERACY CONTENT AND PEDAGOGICAL CONTENT KNOWLEDGE

Abstract

This study examined whether there was a relationship between early childhood educators' classroom literacy practices and literacy content knowledge, pedagogical literacy content knowledge, and these two constructs combined. A total of 27 educators were observed using the Early Language and Literacy Classroom Observation (ELLCO) Pre-K Tool and completed surveys to assess their literacy content and pedagogical literacy content knowledge using a slightly modified version of the recently developed Survey of Teacher Knowledge (SOTK). Spearman's rank order correlation was used to assess the relationship however, was not significant between the ELLCO and SOTK or the subscales for these measures. Regression analyses also did not show a relationship between classroom literacy practices and combined literacy content and pedagogical literacy content knowledge (CLCPLCK), nor literacy content knowledge or pedagogical literacy content knowledge separately. Aggregated results of the SOTK indicated that educators in the study demonstrated breadth of literacy content knowledge but lacked depth in knowledge related to phonological awareness and writing. The lack of relationships between content knowledge and classroom practices suggests incongruence between the measures. Implications for future research and practice are discussed.

The relationship of early childhood educators' classroom literacy practices to their literacy content and pedagogical content knowledge

A question of growing interest is what educators need to know in order to provide high-quality care to young children. For example, some studies have shown that educators with teaching and educational backgrounds are more likely to use developmentally appropriate practices to support young children's development, particularly when it comes to literacy (e.g. Dickinson & Caswell, 2007; Jackson et al., 2006; Sanders & Rivers, 1996). This question is even more pressing as increasing numbers of children are cared for outside of the home each year (Barnett, Hustedt, Friedman, Boyd, & Ainsworth, 2007; U.S. Department of Education, 2006), supporting the need for quality experiences external to the home. For most early childhood education settings, this involves utilizing a play-based approach to support children's learning through scaffolding and explicit teaching (Bredekamp & Copple, 1997: Neuman & Roskos, 2007). One study suggests that 80% of children who are reading below grade level at age 9 will never catch up (National Institute of Child Health and Human Development [NICHD], 2000). Further, the necessary experiences or exposure to materials that support literacy skill development may not be provided in all, or even most, child care settings (Christie & Enz, 1992; Duke, Moses, Subedi, Billman, & Zhang, 2005; Neuman, 1996, 1999; Vukelich, 1991). As the educator is a central figure in the classroom (Smith, 2001), there is the need for increased examination of how early childhood educators prepare children for school entry and the relationship between educator knowledge and classroom practices as part of that preparation. This could provide information to shape preservice education and professional development opportunities specifically targeting those things that are most important for educators to know.

Literacy Practices in Early Childhood Education Settings

Early childhood practitioners agree that developmentally appropriate activities are a necessary component to prepare children for school entry, and these activities should engage children with materials as part of a supportive environment (Bredekamp & Copple, 1997). In a recent meta-analysis (National Early Literacy Panel [NELP], 2008), adult-led activities found to have a positive influence on children's literacy development included shared-reading experiences (Arnold, Lonigan, Whitehurst, & Epstein, 1994; Valdez-Menchaca, & Whitehurst, 1992; Wasik & Bond, 2001; Whitehurst et al., 1994), phonological awareness activities (Byrne & Fielding-Barnsley, 1991; Lonigan et al., 2003), and activities aimed at improving oral language skills (Connor-Kuntz & Dummer, 1996; Valdez-Menchaca & Whitehurst, 1988). The meta-analysis found that interventions that included work with individual or small groups of children to identify or manipulate sounds have a moderate to large effect on subsequent predictors of literacy, including comprehension, decoding, and spelling (Lonigan, Schatschneider, & Westberg, 2008). Shared-reading interventions, whether with whole groups or one on one, demonstrated moderate effects for oral language and print knowledge (Lonigan, Shanahan, & Cunningham, 2008). Additionally, interventions targeted at improving oral language skills for children with and without language impairments were found to be effective, including positively impacting expressive and receptive language (Fischel & Landry, 2008). The NELP's (2008) meta-analysis provides an understanding of effective practices children need to support their development in early childhood education settings. In sum, the ideal approach to supporting literacy development in early childhood settings encompasses explicit teaching with developmentally appropriate activities that involve appropriate scaffolding.

Several studies have examined the effects of professional development for early childhood educators on children's literacy achievement. These professional development opportunities have focused on growth in children's development via changes in early childhood educator practices (Dickinson & Caswell, 2007: Jackson et al., 2006; Neuman, 1999; Powell, Diamond, Burchinal & Koehler, 2010). These professional development opportunities have also produced significant changes in educators' teaching practices.

For example, Neuman (1999) found in the Books Aloud program study that providing both materials and professional development over a 7-month period positively influenced classroom literacy practices. For educators participating in the Books Aloud program, both the environmental print and the number of books increased in the classroom. The quality of and type of books were noted to positively change for participants in the program as well. There was also a positive increase in literacy interactions with children when compared with the control group that did not participate in the program (Neuman, 1999). An evaluation of the Literacy Environment Enrichment Program (LEEP) also found that professional development improved early childhood educators' classroom literacy practices (Dickinson & Caswell, 2007). Specifically, Head Start teachers who participated in a 4-credit course designed to provide instruction to improve the quality of language and literacy support in Head Start classrooms significantly improved their ELLCO scores from fall to spring as compared to control teachers.

Another professional development study compared two groups receiving professional development (one with a mentoring component, one without) to a control group and found improvements in practices as a result of participation in a 15-week program (Jackson et al., 1999). Participants in the group receiving only professional development (without mentoring) were noted to improve significantly on the literacy environment subscale of the ELLCO and

marginally on the language, literacy, and curriculum subscale of the ELLCO when compared with the control group. The professional development plus mentoring group improved at levels of statistical significance when compared to the control on the literacy environment subscale and on the literacy activities and writing scores (Jackson et al., 1999).

Finally, Powell et al., 2010 examined the effects of literacy professional development with expert coaching for Head Start teachers and found positive results in teacher practices regardless of coaching (on-site vs. remote coaching). At the conclusion of the one-semester professional development opportunity, scores on the ECERS showed improvements for general class environment and language and literacy supports for educators in the professional development groups compared to the control group. Greater improvements in children's literacy growth compared to those from control group classrooms was also noted for blending skills, concepts of print, letter knowledge, and writing (Powell et al., 2010).

The reviewed studies suggest that the practices of early childhood educators can be changed with professional development. Based on the previously described professional development studies, one question to ask is whether and how these opportunities changed educator's knowledge. The professional development opportunities previously discussed were focused on practices, but what, if anything, did educators know at the end of the professional development about children's literacy? Also, what aspects of this new knowledge are related to changes in classroom literacy practices? Answering these questions could help guide the design of future professional development and preservice education initiatives. The current study sought to address these questions by identifying how early childhood educators integrate what they know about literacy content with what they know about their students as literacy learners and how to make literacy learning meaningful for them. It also fills an important gap in the literature

in that it includes examining the knowledge and practices of educators of children at the younger end of the spectrum.

Role of Early Childhood Educator Content Knowledge

Shulman (1986) proposed three kinds of educator knowledge, including content knowledge, pedagogical knowledge, and the intersection of the two, called pedagogical content knowledge. Content knowledge is the understanding of the content one teaches within the classroom, and pedagogical knowledge is an understanding of teaching practices (Shulman, 1986). Pedagogical content knowledge is an overlapping of the two forming a third construct that includes an understanding of both the content itself as well as pedagogical practices that can teach that content. Additionally, this includes knowledge of children's understanding of the content as well as how to scaffold their learning using approaches that will be meaningful for children, and how to modify the content for individual learners (Shulman, 1986). Shulman (1998) discusses an approach to education in which educators must utilize both theoretical and practical knowledge. This blend of both content knowledge and pedagogical content knowledge is considered by Shulman to be an interactive relationship, as both aspects cannot be exclusive within the classroom.

Whether literacy content knowledge influences teaching practices is still under debate. Although some studies suggest the literacy content knowledge of primary grade teachers matters (McCutchen et al., 2002, McCutchen, Green, Abbott, & Sanders, 2009; Spear-Swerling & Brucker, 2004), another study (Carlisle, Correnti, Phelps, & Zeng, 2009) found that primary grade teachers' literacy content knowledge did not have a positive association with students' literacy growth.

McCutchen et al. (2002) found a positive relationship between kindergarten, first, second, and special education teachers' content knowledge and children's end-of-year reading achievement, when teachers were assessed on their own phonological awareness, knowledge of morphemes, historical aspects of spelling, and cultural aspects of literacy. Another study looked at new teachers' literacy knowledge and assessed their ability to identify the number of phonemes, match letters to phonemes, and recognize irregular words after completion of their teacher preparation program (Spear-Swerling & Brucker, 2004). The novice teachers' literacy knowledge was found to be predictive of growth in word decoding of students they tutored. An intervention study using the same measure compared teachers completing a 10-day summer institute on linguistics with a no treatment control group. The study found teachers' linguistic knowledge was related to children's literacy growth the subsequent school year, with greater levels of teachers' linguistic knowledge related to greater student literacy growth (McCutchen et al., 2009). While these studies suggest a relationship exists between teachers' content knowledge and children's literacy, another study did not find such results. For Reading First teachers, there was no relationship between whether a teacher scored at low, medium, or high levels on a test measuring language and reading concepts and growth in reading among their students (Carlisle et al., 2009). For educators in this study, educators' content knowledge may not be associated with their actual classroom practices, thus affecting the literacy growth of the students in their classrooms.

It is important to note that these studies did not use the same measures across studies, for educators or for children. For those studies that found a relationship between educator knowledge and children's literacy growth, educators were assessed in their knowledge of phonological awareness, including identification of number of phonemes. Children in these

studies were assessed in vocabulary, comprehension, spelling, and writing (McCutchen et al., 2002; McCutchen et al., 2009) or decoding and spelling (Spear-Swerling & Brucker, 2004). For the study without a relationship between educator content knowledge and children's literacy growth (Carlisle et al., 2009), educators were assessed in their knowledge across five constructs including phonological awareness, phonics, fluency, vocabulary, and reading comprehension, with children in their classrooms assessed in two areas including comprehension and word analysis. This reveals a discrepancy as the studies suggesting a positive relationship focused educator assessment on the areas central to knowledge in phonological awareness, while Carlisle et al. (2009) examined literacy content knowledge in several domains. Each of the studies noted children's growth in literacy development, however, Carlisle et al. (2009) suggest that based on the results of their study, educators' literacy content knowledge may not be related to classroom literacy practices, thus, literacy content knowledge may not be related to children's literacy growth. When considering extant research, literacy content knowledge may predict classroom practices differentially.

While there is conflicting research about literacy content knowledge and its relation to practice, there is relatively little research about pedagogical literacy content knowledge and its relation to practice. Among the literacy studies reviewed, none examine pedagogical literacy content knowledge, or how educators integrate what they know about literacy content with what they know about their students as literacy learners and how to make literacy learning meaningful for them. The most likely explanation for this is that examining pedagogical literacy content knowledge was not the intent of the studies reviewed. Another possibility is that there are measures specifically to examine literacy content knowledge, but a lack of measures to examine pedagogical literacy content knowledge. Recent work to develop a measure to examine early

childhood educators' pedagogical content knowledge by the National Center for Research on Early Childhood Education [NCRECE] (2006) presents an exciting development in the field, as it is the first known measure of pedagogical literacy content knowledge for early childhood educators. The present study takes advantage of this development by examining the relationship between early childhood educators' literacy practices and their combined literacy content and pedagogical literacy content knowledge (CLCPLCK) as measured by the NCRECE instrument.

Also important to note is the body of literature suggesting the importance of formal education and training relative to children's development. Some research has found positive associations between years of experience (McMullen, 1999), education level (McMullen, 1999), and degree type (Kontos & Wilcox-Herzog, 2001; McMullen & Alat, 2002; Morgan et al., 1994) and classroom practices, while others have not found the same relationships for degree type and years of education (Early et al., 2006, 2007; Justice et al., 2008; Mashburn et al., 2008).

Theoretical Framework

This study is based on the perspective that there are many kinds of knowledge that early childhood educators possess. The three types of educator knowledge defined by Shulman (1986), as previously discussed, provide a useful framework. In this study, literacy content knowledge and pedagogical knowledge as well as their intersection, pedagogical literacy content knowledge, were hypothesized to influence the literacy practices in which educators engage in the classroom (Figure 1). Shulman (1998) supports this hypothesis in that the classroom is where the work of teaching takes place, with knowledge tested in the classroom through practice. Both literacy content knowledge and pedagogical literacy content knowledge are hypothesized to influence classroom literacy practices, because "unless the teacher has learned a subject deeply and

flexibly, it will be near impossible to lead students to learn it deeply themselves" (Shulman, 1998, p. 314).

Given the paucity of research about pedagogical literacy content knowledge alone and combined with literacy content knowledge (CLCPLCK) of early childhood educators, the proposed study sought to address the question: What is the relationship, if any, between early childhood educators' classroom literacy practices and literacy content knowledge, pedagogical literacy content knowledge, and these two constructs combined?

Materials and Methods

Recruitment Procedures

To recruit the educators for participation in the study, a list of potential participants was drafted based on a list of licensed centers from the state department of education website. This list was drafted based on geographic considerations and limited to centers within a 40-mile radius encompassing four counties. Letters were initially mailed to providers, and a follow up phone call was made approximately two weeks after the mailing to determine whether early childhood educators were interested in participating. Once interested participants were identified, consent forms were distributed, signed by participants and collected, and observation dates scheduled.

Participants

The sample for this study included 27 early childhood educators working in early childhood education centers. This study was limited to early childhood educators within licensed early childhood education settings teaching in a classroom with children ranging in age from 4 years (48 months) to 5 years (60 months). To be included in the study, all educators had to be working in full day programs (30 hours or more per week) with the children, primarily

responsible for planning and implementation of lesson plans and classroom activities, and also tasked with the supervision of the children and other staff within the classroom ($M = 2.88$).

Of the sample, 26 of the educators were female, and one was male. The educators ranged in age from 19 to over 60. More than half of the sample had a bachelor's degree ($n = 14$), and one had obtained a Master's degree (Table 1). Three of the educators with bachelor's degrees also held a teaching certificate with an additional ZA endorsement (see Table 1 for educational backgrounds of sample). Educators varied in their experience in teaching (Table 2), ranging from 1 to 30 years of teaching overall, ($M = 11.22$ years, $SD = 7.45$) and ranging from 1 to 11 years in their current position ($M = 4.29$, $SD. = 3.42$) In terms of overall experience, teachers ranged from novice teachers, having only taught 1 year, to experienced teachers with over 30 years of early childhood education experience.

Instruments

In order to address the research question, structured observations were made and teachers were asked to complete a survey. The purpose of the observation was to assess both teaching practices and the classroom environment in early childhood education settings with respect to literacy (Smith, Brady, & Anastasopoulos, 2008). The purpose of the survey was to determine the combined literacy content and pedagogical literacy content knowledge (CLCPLCK) of the early childhood educators.

Observation Measure. The study used the Early Language and Literacy Classroom Observation (ELLCO) Pre-K Tool, a measure used to assess both teaching practices and the classroom environment in early childhood education settings with respect to literacy (Smith et al., 2008). For the purposes of this study, only the observation components (Classroom Structure, Curriculum, the Language Environment, Books and Book Reading, and Print and Early Reading)

were utilized (Smith et al., 2008). The ELLCO also includes an interview component which was not included in this study as it is intended to supplement the observation and is not included as direct evidence in the scoring (Smith et al., 2008). Observations lasted for approximately 2 hours in the morning, typically beginning just prior to "circle time" or whole class instruction and concluding just prior to lunch. Educators were scored on a scale of 1 to 5 for the 19 questions of the observation form, with 1 indicating a deficient level of support and 5 indicating an exemplary level of support. Scores were subtotaled for the classroom environment subscale and the language and literacy subscale, which were added together for the total ELLCO score. The maximum score for the ELLCO was 95 with a maximum score of 35 for the classroom environment subscale and a maximum score of 60 for the language and literacy subscale. In previous analyses of the ELLCO, Cronbach's alpha for the classroom environment (.83) and the language and literacy curriculum (.86) subscales indicated good internal consistency, with Cronbach's alpha of .90 for overall classroom observation (Smith et al., 2008). In the current study, Cronbach's alpha also indicated good internal consistency, with an alpha of .87 for the subscales of classroom environment and .94 for language and literacy curriculum and an alpha of .85 for overall classroom observation. The authors indicate in the technical guide that the measure was created to meet a need for a tool that observed language and literacy classroom literacy practices and supports, making it a unique tool but also creating challenges with respect to assessing validity (Smith et al., 2008). However, the measure has been used in conjunction with another classroom measure (Abbott-Shims & Sibley, 1998) used to assess overall classroom quality and was found to have moderate correlations for the Learning Environment subscale (which also examines availability and accessibility of literacy learning materials and classroom

environment in support of literacy learning), and deemed appropriate for comparison (Smith et al., 2008).

Survey of Teacher Knowledge. The Survey of Teacher Knowledge (SOTK) was adapted from the National Center for Research on Early Childhood Education (2006) and was used to assess the literacy content knowledge, pedagogical literacy content knowledge, and CLCPLCK of early literacy educators. The instrument was chosen because of its capacity to assess literacy content knowledge as well as pedagogical literacy content knowledge including, an educator's knowledge of the construct, assessment of a child's development in the construct, and how to scaffold its development. Divided into six parts by the creators of the survey, the survey includes five sections in which providers are asked to identify various constructs. This included identification of specific literacy domains, number of phonemes of words, number of syllables of words, and number of sounds in a word. Another section asks educators to rate the development of specific literacy skills in preschoolers in terms of importance. The final section measures pedagogical literacy content knowledge, with the exception of one scenario that was identified as literacy content knowledge, and consists of 16 scenarios in which educators select the best response to the question.

The original survey included six domains of literacy (alphabet knowledge, concepts of print, narrative skills, phonological awareness, vocabulary and linguistic concepts, and social language) in the first section asking educators to identify skills with specific literacy constructs. Based on the NELP's (2008) inclusion of name writing as one of its predictors of subsequent literacy success, I added writing to this section, which resulted in an additional, or seventh, domain. In keeping with the original survey design of two identification questions per domain, two writing questions were added to assess literacy content knowledge. An example of a writing

question of this type was “use letters or letter-like forms to represent words.” Two writing questions were also added to assess pedagogical literacy content knowledge, which were included in the section with scenarios. An example of a question of this type is:

> During circle time, the teacher reads a book to the children about picking apples. The teacher and children link the story to their recent field trip to the apple orchard and then the teacher tells them they are going to write their own stories about picking apples. A child tells the teacher she can’t write. What could the teacher do to scaffold this skill?

For the purpose of this study, questions in all sections were identified by this author and reviewed by a panel of three experts for classification into either literacy content knowledge or pedagogical literacy content knowledge. Questions were considered to address literacy content knowledge if they focused on an educator’s knowledge of a literacy construct (e.g., identification of number of syllables in a word) and addressed pedagogical literacy content knowledge if they related to pedagogical practices in facilitating skill development and also requiring literacy content knowledge to do so (e.g., identify the best strategy to use for a particular skill). An example of a type of question assessing pedagogical literacy content knowledge included questions in which educators were expected to identify the best response to a scenario, as in the question quoted above. Four responses are then provided from which the educator is asked to choose the best one. These questions were found primarily in Section VI. Educators’ responses were scored as either correct or incorrect, with one point assigned to correct responses and points totaled for subscores in literacy content knowledge and pedagogical literacy content knowledge, which were added together for a total SOTK score.

Educators were scored based on their provision of correct responses to each of the items on the survey and each item was weighted equally. The literacy content knowledge scale of the

SOTK had a maximum score of 30 and the pedagogical literacy content knowledge scale of the SOTK has a maximum score of 15 with the total SOTK score or combined literacy content and pedagogical literacy content knowledge (CLCPLCK) score of 45 points.

Psychometric data for this measure are currently in process, with preliminary results not available for distribution (B. Hamre, personal communication, September 10, 2010). As I made modifications to the original survey with the addition of the writing questions, the psychometric results in process will not be exactly the same as those from the original instrument.

Analysis. To answer the research question of what relationship, if any, exists between early childhood educators' classroom literacy practices and literacy content knowledge, pedagogical literacy content knowledge, and these two constructs combined, Spearman's rank order correlations and two separate regression analyses were conducted to analyze the data. Spearman's rank order correlation was used to determine the relationship between the ELLCO and the SOTK and the subscales of each of these measures. For Spearman's rank order correlations, raw scores for the ELLCO and the SOTK were transformed to ranked scores to see what relationship, if any, might exist between the ranked scores of these two measures. The first regression analysis included the total SOTK scores (CLCPLCK) as an independent variable to predict ELLCO scores. The second used the SOTK subscale scores (literacy content knowledge and pedagogical literacy content knowledge) separately to predict ELLCO scores. Predictor variables on literacy practices in both models were tested at the .05 level (one-tailed). Analysis included verification of assumptions of regression. Based on previous studies indicating years of experience (McMullen, 1999), education level (McMullen, 1999), and degree type (McMullen & Alat, 2002; Kontos & Wilcox-Herzog, 2001; Morgan et al., 1994) as influencing variables on

classroom literacy practices, these variables were analyzed as covariates in the regression analyses.

Results

Descriptive Statistics

Two measures were used in the study. The first measure, the ELLCO, was used to examine classroom literacy practices and the literacy environment. Scores on the ELLCO ranged from 27 to 79 with a mean of 57.14 (*SD* = 11.59). Subscales of classroom environment ranged from 11 to 32 with a mean of 24.07 (*SD* = 4.84) and the subscales of language and literacy ranged 16 to 48 with a mean of 33.07 (*SD* = 7.47). For the SOTK, scores ranged from 21 to 37, with a mean of 29.70 (*SD* = 4.69). Literacy content knowledge subscores ranged from 11 to 25, with a mean of 19.63 (*SD* =3.89), and pedagogical literacy content knowledge subscores ranged from 7 to 13 with a mean of 10.07 (*SD* = 1.82). Histograms suggest normal distributions of scores with bell-shaped curves for ELLCO and SOTK combined totals and the subscores.

The results of the SOTK were also examined by domain area. Questions that resulted in correct results for 51% or more of educators (representing a majority of the educators) included both literacy content knowledge questions (Table 3) and pedagogical literacy content knowledge questions (Table 4) and included questions relative to comprehension, concepts of print, letter-sound knowledge, narrative, phonological awareness, vocabulary, and writing.

Areas of strength. A majority of educators were able to correctly respond to literacy content knowledge questions requiring the identification of the domains of alphabetic knowledge and concepts of print. Specifically, 74.1% of educators were able to identify alphabetic knowledge as the domain encompassing “identify letters in name” and 88.9% were able to identify this as the domain encompassing “identification of letters.” The identification of

concepts of print for "identification of components of book" was accomplished by 81.5% of educators, while 63% were able to identify "one-to-one correspondence of words in print" within this category. Correct responses for the majority of educators included the identification of first sounds in spoken words (85.2%) and identification of blending of syllables (77.8%), while the specific identification of phonemes, isolation of phonemes, and identification of syllables was evidenced by a majority of the educators for specific examples as noted in Table 3.

For questions encompassing pedagogical literacy content knowledge, educators were able to identify the ways in which they would scaffold comprehension development, concepts of print, letter-sound knowledge, and development of narrative skills (see Table 4). For example, 63% of educators were able to correctly choose the strategy to scaffold comprehension development by linking prior knowledge with the reading of a story. For letter-sound knowledge, 93% of educators were able to determine how to use a child's individual skills to encourage development in that construct. For both concepts of print and narrative, 85% of educators were able to correctly identify how to scaffold development of skills for each construct.

Areas of challenge. Questions that resulted in incorrect results for 50% or more of educators (or a minority of educators) also included both literacy content knowledge questions (Table 5) and pedagogical literacy content knowledge questions (Table 6) and included questions relative to letter-sound knowledge, oral language development, phonological awareness (including phonemic awareness), and writing.

In literacy content knowledge, an example of a commonly missed question in phonemic awareness was the incorrect identification of the number of phonemes in the word "couch" by 82.1% of participants. In addition, nearly all of the participants (92.9%) were unable to identify writing as the correct domain for "uses sounds in words to estimate spelling."

For pedagogical literacy content knowledge questions, just over half of the educators (51.9%) were unable to correctly identify a strategy for scaffolding language development. Also, 59.3% of educators were unable to identify how to support development of alphabetic knowledge.

Relationship Between Classroom Literacy Practices and Literacy Content and Pedagogical Content Knowledge

Spearman's rank order correlation. Raw scores for the ELLCO and the SOTK were transformed to ranked scores to see what relationship, if any, might exist between the ranked scores of these two measures. Spearman's rank order correlation was run to determine the relationship between the ELLCO and the SOTK and the subscales of each of these measures, including the language and literacy and classroom environment subscale for the ELLCO and the content knowledge and pedagogical content knowledge subscales for the SOTK. No correlations were found between the ELLCO and the SOTK r (27) = .016, p = .935, or the subscales of these measures (Table 7).

Pearson product-moment correlations. Pearson product-moment correlations were not significant between educators' classroom literacy practices (as measured by their ELLCO scores) and their combined literacy content knowledge and pedagogical literacy content knowledge (CLCPLCK) or classroom literacy practices and literacy content knowledge or pedagogical literacy content knowledge when entered into the model separately (Table 8). The correlation between literacy content knowledge and pedagogical literacy content knowledge, however, was also significant, r (27) = .523, p = .005. Correlations with the covariates were not statistically significant, including educators' teaching experience, r (27) = .229, p = .251, degree type, r (27) = .058, p = .776, and education, r (27) = -.100, p = .627.

Regressions. As would be expected based on the correlations, none of the independent variables were significant predictors of classroom literacy practices. Regression analyses were reviewed to ensure assumptions were met and intercorrelations run between the predictor variables did not suggest concern for multicollinearity. The first model, with CLCPLCK predicting classroom literacy practices, was not significant, R^2 = .001, F (1, 25) = .026, p = .896. The second model, with literacy content knowledge and pedagogical literacy content knowledge analyzed separately as predictor variables was also not significant, R^2 = .000, F (2, 24) = .020, p = .995. Regression analysis was also run with the covariates which also did not predict classroom literacy practices, including years of experience, R^2= .052, F (1, 25) = .229, p = .251, education level, R^2 = .010, F (1, 24) = .100, p = .627 and degree type, R^2 = .003, F (1, 25) = .058, p = .776 as well as these variables in combination, R^2 = .060, F (3, 22) = .246, p = .706.

Discussion

This study examined whether a relationship exists between early childhood educators' classroom literacy practices and literacy content knowledge, pedagogical literacy content knowledge, and these two constructs combined. This section presents a discussion of the areas of strength and areas of challenge in literacy content knowledge and pedagogical literacy content knowledge for educators on the SOTK and a discussion of the relations between classroom literacy practices and CLCPLCK, literacy content knowledge, and pedagogical literacy content knowledge. The section will conclude with a discussion of limitations, future research, and implications for practice.

Areas of Strength and Weakness in Literacy Content Knowledge and Pedagogical Literacy Content Knowledge

Educators in the study demonstrated breadth of literacy content knowledge as a majority (51% or more) correctly matched skills to domains for 12 of the 14 items in this section, covering all seven of the constructs assessed by the SOTK. A majority of educators were also able to correctly identify the number of phonemes in three of five words, to correctly isolate the number of phonemes in four of five words, and to correctly identify the number of syllables in all five words. In the portion assessing pedagogical literacy content knowledge, 51% or more of educators were able to demonstrate knowledge of scaffolding development of comprehension, concepts of print, letter-sound knowledge, narrative skills, oral language development, phonological awareness, vocabulary, and writing. This again suggests a breadth of knowledge across several emergent literacy constructs by the educators participating in the study.

However, certain constructs appeared to suggest a lack of depth of knowledge for educators in this study. Among literacy content knowledge items, educators misidentified writing (96.3%) and narrative (59.3%) in the domain identification section, meaning they were unable to correctly identify the skills identified in the prompt as part of the specific literacy domains of writing or narrative. The majority of educators were unable to identify the number of phonemes in two of five words (*exit* and *cough*). Educators might have been challenged by the lack of one-to-one correspondence with the number of phonemes and the number of letters, but a majority of educators correctly identified the number of phonemes in the words *weigh*, *though*, and *laughed*, which also do not have one-to-one correspondence between the number of phonemes and letters. Phonemic awareness presented a challenged in phonemic isolation for one word, as the majority of educators were unable to isolate the phoneme for the word *intend*.

Pedagogical literacy content knowledge also presented challenges in writing, with 77.8% of educators incorrectly responding to the scenario about which emergent literacy skills are involved in a circle time writing task (identify the literacy skills involved in making a list of items needed for a camping trip), and 55.6 % of educators unable to identify an appropriate approach to scaffolding writing for a child who indicates she "can't write." Notably, these challenges were limited to two specific constructs (phonological awareness and writing), which will be discussed in greater detail.

Phonological awareness. In particular, the aggregated results of the SOTK suggest that certain aspects of phonological awareness were challenging. Specifically, isolation of phonemes in certain words presented more of a challenge, not only because a majority of the educators incorrectly responded to the question, but also because the percentage of the educators responding incorrectly was so high (63.0% incorrect for exit and 85.2% for cough). Notable about the words educators found to be challenging is the lack of one-to-one correspondence between the numbers of phonemes with the number of letters (*exit* and *cough*). However, some of the words that a majority of educators identified correctly also do not have a one-to-one correspondence between numbers of phonemes and numbers of letters (*weigh*, *though*, and *laughed*), so it may be that certain phonemes, such as the /x/ in *exit* are particularly challenging. Phonemic awareness presented another challenge for 92.6% of educators when they were asked to identify the matching phoneme in the underlined portion of the word "intend." When the percentages of incorrect responses are considered in greater detail as previously noted (refer to Tables 6 and 7), the results of this study support other studies demonstrating challenges in content knowledge in this particular construct (Cunningham, Zibulsky, & Callahan, 2009). It should be noted that questions addressing phonological awareness comprise a large percentage of

the SOTK in comparison with other constructs. In fact, 40% of the measure assesses knowledge in this construct. Although this represents a substantial amount of the assessment, it is also consistent with previous studies assessing similar content knowledge (McCutchen et al., 2002; McCutchen et al., 2009; Spear-Swerling & Brucker, 2002). Phonological awareness scores on the ELLCO were also consistently low, with only 18.5% of educators scoring a 3, and 81.5% scoring a 2 or less, indicating inadequate or deficient support. This suggests that not only were educators challenged in this construct in terms of content knowledge, but they were also challenged in providing evidence of supporting this construct in the classroom.

Writing. Educators may have had difficulty with writing as a construct for a number of reasons. The interconnectedness of the construct with other constructs such as phonological awareness, letter-sound knowledge, and concepts of print could have created confusion for some educators. For example, the use of the word "sounds" in the prompt "uses sounds in words to estimate spelling" may have focused some educators on the aspect of phonological awareness involved in encoding rather than the aspect of writing, resulting in an incorrect response. This may also be a limitation with these items on the SOTK, as the writing items represent modifications to the instrument, despite piloting. It is also interesting to note the results of the SOTK questions contradict the ELLCO scores for writing. The majority of educators (66.6%) scored a 3 or more indicating a basic level of support (2 is inadequate, 3 is basic, 4 is strong, 5 is exemplary) for early writing environment and a majority (59.2%) scored a 3 or more for support for children's writing. This suggests that they engaged in the practices to support writing development, but were unable to articulate their literacy content knowledge or pedagogical literacy content knowledge relative to the construct. The ELLCO scores also suggest the possibility that educators may have been confused on the SOTK due to the interconnectedness of

the construct with other literacy constructs such as phonological awareness and letter-sound knowledge.

The interconnectedness of writing with other literacy constructs also points to another possible explanation that writing might have presented a challenge. Educators in the study, particularly educators without preservice education in writing, may have limited understanding of how to support children's writing. Dickinson and Caswell (2007) noted small effects in classroom literacy practices to support writing after providing educators with professional development. Educators participating in another intervention were not observed to engage in classroom literacy practices considered of high quality for fidelity of implementation of the program, with implications for children's growth in literacy, including writing (Hamre et al., 2010). Experienced teachers may rely on professional development or practitioner articles to support children's writing, but this recent research suggests educators are not engaging in the practices to support children's writing development.

Relationship of Literacy Content Knowledge to Pedagogical Literacy Content Knowledge

The relationship between literacy content knowledge and pedagogical literacy content knowledge was highly correlated at levels of statistical significance. In other words, these results suggest that educators with higher scores in literacy content knowledge had higher scores in pedagogical literacy content knowledge, and educators with lower scores in literacy content knowledge had lower scores in pedagogical literacy content knowledge. Recall that pedagogical literacy content knowledge is an intersection between literacy content knowledge and pedagogical knowledge. Shulman and Shulman (2004) suggest that an educator's pedagogical content knowledge involves the ability to understand the curriculum in a deep, flexible, and generative way while also comprehending pedagogical principles to enable the educator to

implement instruction and utilize both the principles of instruction and assessment. In order to answer questions on the pedagogical literacy content knowledge section, educators would also have to have an understanding of a number of variables that influence pedagogical literacy content knowledge, including the literacy content, the ways in which to engage the learner, the developmental stage of the learner, how one assesses the learner and with what tools, and the ways in which one compiles all of this information to facilitate literacy learning. These results also suggest that separating these variables may not be empirically justified given the high correlation between them.

Relationship Between Classroom Literacy Practices and Content Knowledge

It was hypothesized that a relationship between combined literacy content knowledge pedagogical literacy content knowledge (CLCPLCK) and classroom literacy practices would exist and that CLCPLCK would predict classroom literacy practices. However, analyses found that it did not predict classroom literacy practices, nor did literacy content knowledge or pedagogical literacy content knowledge individually predict classroom literacy practices. Neither years of teaching experience, education, or degree type, nor these variables in combination influenced the relationships as control variables.

Three possible explanations for the results are presented. The first is that educator knowledge is not as influential on classroom literacy practices as previously believed. Others have suggested that content knowledge may not be strong enough to influence literacy practices in and of itself (Justice, Mashburn, Hamre, & Pianta, 2008), which is consistent with Neuman and Cunningham's (2009) recent study: for early childhood educators who received professional development, positive gains in the language and literacy environments of early childhood education classrooms in an intervention group were demonstrated, but no significant difference

in teacher literacy content knowledge was noted between the intervention and control groups. These results are also consistent with the Carlisle et al., (2009) study which also failed to find a relationship between teachers' literacy content knowledge and students' literacy growth. The findings of the present study are consistent with these two studies with respect to literacy content knowledge, but neither of these studies addressed pedagogical literacy content knowledge, which is an important gap in the literature. However, other studies have found content knowledge to influence classroom practices in the primary grades (McCutchen et al., 2002, McCutchen et al., 2009; Spear-Swerling & Brucker, 2004) and when returning to the theory guiding the study, Shulman (1998) suggests that content knowledge is necessary for the work of the professional with educators engaging in their practice within the classroom, thus content knowledge should theoretically influence practice. Another way to look at this is whether educators can "walk the walk and talk the talk." For example, an educator may get an idea about creating a literacy environment to support literacy development from another educator or from reading a book, but not have the content knowledge to back up what she is doing in her classroom and how children develop particular literacy skills. Based on the conflicting studies in this area and the theoretical perspective (Shulman, 1998), this first explanation is viable, but limitations in the measures call for further exploration of alternative explanations for the results.

Another explanation is that the measures used to assess classroom practices and content knowledge are poor measures. Both instruments were created to fill a void for such measures, with the ELLCO created to meet a need in observational measures for language and literacy supports in early childhood education classrooms and the SOTK created to fill a void in measures of knowledge for early childhood educators. Due to the multi-faceted nature of pedagogical literacy content knowledge, a multiple-choice survey may not be the best way to

capture educators' pedagogical literacy content knowledge. Instead, an interview or survey with open-ended questions may enable educators to share their knowledge, or lack of knowledge, of the construct more accurately, which could then be coded to not only assess an educator's knowledge of pedagogical content knowledge, but the particular aspects that make up pedagogical content knowledge. Although it may be helpful to examine pedagogical literacy content knowledge in a different manner, in this study, literacy content knowledge and pedagogical literacy content knowledge were separated to see if they predicted classroom literacy practices independently or in combination. The finding that these two content knowledge variables are so highly correlated at levels of statistical significance provides no empirical justification for separating them in future research. The SOTK is currently undergoing initial psychometric analysis, with this data unavailable for widespread release. As previously discussed, psychometrics for the ELLCO suggest validity and reliability thresholds appropriate for use. Based on the available information, it is unlikely that both measures are poor measures, and certainly these measures are the best of what is available to examine literacy classroom practices and the literacy content knowledge and pedagogical literacy content knowledge of early childhood educators. As a result, this explanation for the lack of relationship between the variables seems unlikely, suggesting the need to explore a third possibility.

A third explanation is that the SOTK and the ELLCO are misaligned – that the SOTK does not measure the particular knowledge that is enacted in the practices measured by the ELLCO. In other words, the constructs assessed by the SOTK are not assessed or not assessed to the same degree in the ELLCO. This is perhaps the most plausible explanation, for a number of reasons. First, although the ELLCO assesses classroom literacy practices to support literacy development and includes items to assess constructs such as writing and phonological awareness,

among others, the SOTK may be weighted more heavily toward specific constructs not weighted as heavily on the ELLCO, such as letter-sound knowledge and phonemic awareness as a specific component of phonological awareness. This is evident when comparing the instruments closely.

For example, questions addressing phonological awareness (including phonemic awareness) comprise 40% of the questions on the SOTK, while they represent only 5% of the ELLCO. Letter-sound knowledge is represented in 8.9% of the SOTK questions, but is not addressed at all on the ELLCO. If oral language is combined with narrative on the SOTK it represents 15.6% of the assessment, compared with 10.5% of the ELLCO. Comprehension and concepts of print are weighted more heavily on the ELLCO, with 4.4% of the questions on the SOTK addressing comprehension but 5% of the ELLCO addressing this construct, and 6.7% of the SOTK covering concepts of print, but 10.5% of the ELLCO assessing this construct. The ELLCO addresses classroom structure and organization in 21% of the instrument, while the SOTK does not assess it at all. Motivation and curricular decisions make up 6.7% of the questions addressed in the SOTK, but 16.5% of the ELLCO. Recall that the subscales of the measures were fit to the regression models, which enabled the analysis of the language and literacy subscale with the subscales of content knowledge. Despite the use of the subscales in the analysis, a relationship was not found. The side-by-side comparisons of the instruments themselves, coupled with the lack of relationship, suggest the SOTK does not measure the knowledge measured by the ELLCO to the same degree. In other words, even though both measures contain the same approximate literacy constructs as one another, the depth with which they are assessing educators' knowledge or demonstration of supporting the development of those constructs may not be in alignment with one another.

This present study moved the field forward by examining pedagogical literacy content knowledge as well as literacy content knowledge. Surprisingly, not only was content knowledge not related to classroom literacy practices in this sample, but also pedagogical literacy content was not related, nor was a combination of the two related, to classroom literacy practices.

While some research has found positive associations between years of experience (McMullen, 1999), education level (McMullen, 1999), or degree type (McMullen & Alat, 2002; Kontos & Wilcox-Herzog, 2001: Morgan et al., 1994) and classroom practices, other research has not found presents conflicting results for degree type and years of education (Early et al., 2006 2007; Justice et al., 2008; Mashburn et al., 2008. Degree type, years of education, and years of experience were not found to predict classroom literacy practices in this study, which adds to the body of literature about these demographic characteristics as indicators of classroom practices, but also presents implications for professional development which are discussed later.

As explained at the outset of the paper, there are also studies, although none with early childhood educators, that identify content knowledge in literacy to relate to teaching practices as measured by children's literacy growth (McCutchen et al., 2002, McCutchen et al., 2009; Spear-Swerling & Brucker, 2004). The findings of the present study were not consistent with previous work. The present study also measured educator practices directly by observing educators within their classrooms using the ELLCO, rather than using children's literacy growth as a proxy for teacher practices. It could also be that the level of education necessary for certain constructs at the younger end of the spectrum in early childhood education is different than the level of education needed at the older end of the spectrum to create an effective, high quality environment. For example, an educator might need to identify the number of syllables in words before identifying the number of phonemes, or identify the number of phonemes in the word

"mom" rather than "exit." An important task for the field is to try and understand the circumstances, if any, in which literacy content knowledge and pedagogical literacy content knowledge are related to classroom literacy practices.

Limitations

There are some limitations with the study that merit discussion. As previously discussed, the measures may present some limitations. First, the measure's assessment of pedagogical literacy content knowledge may not enable educators to effectively articulate their pedagogical literacy content knowledge. In other words, a scenario offering multiple-choice responses may not be sufficient for educators to reveal what they know. An interview or survey with open-ended questions might be a more effective way for educators to share their knowledge of pedagogical literacy content knowledge. Coding of these data, either through discourse analysis or text analysis of the survey responses, could look for trends in educator knowledge relative to the construct to parcel out what specific aspects of pedagogical literacy content knowledge educators understand and can articulate which can subsequently influence professional development based on areas of strength and challenge. Second, as previously noted, the writing questions for the SOTK were modifications to the original measure. The questions were piloted and found to be valid in assessing the construct with a small sample of educators who were believed to be representative of the final sample, but it is possible that differences existed between the pilot and the final sample.

The design of the study introduced selection bias in two ways: educators from a range of settings were invited to participate, but did not self-select to participate in equal numbers (e.g., teachers from larger or multiple-classroom settings were more likely to participate); and, as is always the case when self-selection is utilized, there may be intervening variables that affected

the likelihood of participation. The sample is nearly all female, fairly well-educated, with similar teaching backgrounds. The homogeneity of the sample affects the generalizability of the data and limits the claims that can be made about the relationship between content knowledge and classroom literacy practices for early childhood educators. Observations took place for approximately 2 hours in each classroom and while this is more than the recommended time period for the ELLCO, it is possible that some typical aspects of educator practices may have been missed during the observation period and thus are not reflected in the ELLCO score. Finally, despite these limitations, the study addresses a gap in the current literature and provides important insight with implications for future research and for practice.

Implications for Future Research

The lack of relationship between classroom literacy practices and CLCPLCK or literacy content knowledge or pedagogical literacy content knowledge individually presents implications for future research. As other studies have found content knowledge related to teachers' practices, although with primary grade teachers (McCutchen et al., 2002, McCutchen et al., 2009, Spear-Swerling & Brucker, 2004), further exploration of the relationship of these constructs for educators of young children is warranted. However, as previously discussed, because the SOTK may be weighted more heavily toward specific constructs not weighted as heavily on the ELLCO, assessing literacy content knowledge and pedagogical content knowledge in a different manner is suggested. Due to the multi-faceted nature of pedagogical literacy content knowledge, using interviews with specific questions to examine in greater depth what educators know and understand with respect to both literacy content knowledge and pedagogical literacy content knowledge may provide insights to inform future development of measures of teacher knowledge. This type of interview should include questions about what an educator knows about

specific constructs in literacy, but also questions relative to what an educator knows about pedagogy and assessment in the construct.

Implications for Practice

This study fills a gap in the literature, as it is the first study to investigate the relationship between literacy content knowledge and classroom literacy practices with early childhood educators, and additionally, the first study to address early childhood educators' pedagogical literacy content knowledge. One might conclude that writing and phonological awareness are areas in which preservice and professional development opportunities are warranted based on the results of the study. However, this conclusion must be made with great caution, as the overall findings of the study do not provide support for the conclusion that content knowledge influences classroom literacy practices. Another conclusion might be that content knowledge is not needed for good practice. Perhaps other types of supports noted to create elements of high quality environments including instructional support and classroom organization, as well as the social and emotional support shown to aid children's learning (Girolametto & Weitzman, 2002; Mashburn et al., 2008; Peisner-Feinberg et al., 2001) are necessary for practice instead. This is also a cautionary conclusion as this study did not examine the role of social support in children's learning, thus it becomes an empirical question.

When considering that educator characteristics such as degree type, years of education, and years of experience were not predictive of classroom practices, it suggests professional development may be an appropriate method to continue to offer ongoing support to educators. However, the relation of literacy content knowledge and pedagogical literacy content knowledge to classroom literacy practices is unclear, and there are limited studies indicating the positive impacts of professional development to build practices. This suggests that professional

development should continue to focus on supporting educators in the development of classroom literacy practices that facilitate literacy skill development (Neuman & Roskos, 2007; Whitehurst & Lonigan, 2002), both in preservice programs and as part of ongoing professional development.

Summary

This study did not find a relationship between classroom literacy practices and educators' combined literacy content knowledge and pedagogical literacy content knowledge nor between classroom literacy practices and literacy content knowledge or pedagogical literacy content knowledge separately. While examination of the specific content knowledge of educators suggests a breadth of literacy content knowledge and pedagogical literacy content knowledge, specific constructs including phonological awareness and writing presented challenges, suggested a lack of depth in these two areas. The lack of relationships between content knowledge and classroom practices may be due to several reasons. One is that content knowledge does not influence classroom literacy practices for early childhood educators in this sample, another is that the measures do not assess content knowledge and classroom literacy practices as was expected, and the third is that there was incongruence between the measures, or that the SOTK does not measure the particular knowledge to the same degree that it is enacted in the practices also measured by the ELLCO.

APPENDICES

Table 2.1

Educational Experience of Participants

Degree type	Number (non-Early Childhood)	Number (Early Childhood)
High school diploma or equivalent	1	0
CDA	0	4
Associate's degree	1	3
Bachelor's degree	8	6
Bachelor's degree with ZA (early childhood endorsement)	0	2
Master's degree with ZA (early childhood endorsement)	0	1
Total	10	17

Table 2.2

Teaching Experience of Educators

	0-5 years experience	6-10 years experience	11-15 years experience	16-20 years experience	20 or more years experience	Total
Number of Educators with Total Years of Experience	5	11	5	4	2	27
Number of Educators with Years in Current Position	22	3	2	0	0	27

Table 2.3

Correct Responses for Literacy Content Knowledge Items on SOTK

Literacy Construct	Literacy Item on Survey	Percentage of Providers Correctly Responding
Alphabetic Knowledge (letter-sound knowledge)	Literacy content knowledge: identify letters in name	74.1%
Alphabetic Knowledge (letter-sound knowledge)	Literacy content knowledge: identification of letters	88.9%
Concepts of Print	Literacy content knowledge: identification of components of book	81.5%
Concepts of Print	Literacy content knowledge: one-to-one correspondence of words in print	63.0%
Narrative	Literacy content knowledge: organize telling of events using proper sequence	85.2%

Table 2.3 (cont'd)

Oral Language	Literacy content knowledge: respond appropriately to questions/requests	81.5%
Oral Language	Literacy content knowledge: initiate conversation	96.3%
Phonological Awareness	Literacy content knowledge: identification of first sound in spoken word	85.2%
Phonological Awareness	Literacy content knowledge: identification of blending of syllables	77.8%
Phonological Awareness	Literacy content knowledge: identification of phonemes (weight)	85.2%
Phonological Awareness	Literacy content knowledge: identification of phonemes (though)	77.8%
Phonological Awareness	Literacy content knowledge: identification of phonemes (laughed)	66.7%

Table 2.3 (cont'd)

Phonological Awareness	Literacy content knowledge: isolation of phonemes (push)	81.5%
Phonological Awareness	Literacy content knowledge: isolation of phonemes (weigh)	70.4%
Phonological Awareness	Literacy content knowledge: isolation of phonemes (was)	63%
Phonological Awareness	Literacy content knowledge: isolation of phonemes (knew)	92.6%
Phonological Awareness	Literacy content knowledge: identification of syllables (capital)	100%
Phonological Awareness	Literacy content knowledge: identification of syllables (recreational)	85.2%
Phonological Awareness	Literacy content knowledge: identification of syllables (spoil)	51.9%

Table 2.3 (cont'd)

Phonological Awareness	Literacy content knowledge: identification of syllables (walked)	51.9%
Phonological Awareness	Literacy content knowledge: identification of syllables (lawyer)	100%
Vocabulary	Literacy content knowledge: identification of use of adjectives in conversation	63.0%
Vocabulary	Literacy content knowledge: identification of use of motion verbs to represent actions	77.8%
Writing	Literacy content knowledge: identification of use of letters or letter-like forms to represent words	55.6%

Table 2.4

Correct Responses for Pedagogical Literacy Content Knowledge Items on SOTK

Literacy Construct	Literacy Item on Survey	Percentage of Providers Correctly Responding
Comprehension	Pedagogical literacy content knowledge: identifying how to scaffold comprehension development	63.0%
Comprehension	Pedagogical literacy content knowledge: identifying how to scaffold comprehension development	96.3%
Concepts of Print	Pedagogical literacy content knowledge identifying how to scaffold concepts of print development	85.2%
Letter-sound knowledge	Pedagogical literacy content knowledge identifying how to scaffold letter-sound development	92.6%
Motivation	Pedagogical literacy content knowledge: maximizing children's engagement	55.6%

Table 4 (cont'd)

Motivation	Pedagogical literacy content knowledge: maximizing children's engagement	77.8%
Narrative	Pedagogical literacy content knowledge identifying how to scaffold development of narrative skills	85.2%
Oral Language	Pedagogical literacy content knowledge identifying how to scaffold oral language development	81.5%
Phonological Awareness	Pedagogical literacy content knowledge identifying how to scaffold development of phonological awareness	85.2%
Vocabulary	Pedagogical literacy content knowledge identifying how to scaffold vocabulary knowledge	66.7%

Table 2.5

Incorrect Responses for Literacy Content Knowledge Items on SOTK

Literacy Construct	Literacy Item on Survey	Percentage of Providers Incorrectly Responding
Narrative	Literacy content knowledge: retell a fictional story using newly-learned vocabulary	59.3%
Phonemic Awareness (Phonological Awareness)	Literacy content knowledge: identification of phonemes (exit)	63.0%
Phonemic Awareness (Phonological Awareness)	Literacy content knowledge: identification of phonemes (cough)	85.2%
Phonemic Awareness (Phonological Awareness)	Literacy content knowledge: isolation of phonemes (intend)	92.6%
Writing	Literacy content knowledge: use sounds in words to estimate spelling	96.3%

Table 2.6

Incorrect Responses for Pedagogical Literacy Content Knowledge Items on SOTK

Literacy Construct	Literacy Item on Survey	Percentage of Providers Incorrectly Responding
Alphabetic Knowledge (Letter-Sound Knowledge)	Pedagogical literacy content knowledge: supporting development of alphabetic knowledge	59.3%
Motivation	Pedagogical literacy content knowledge: maximizing children's engagement	85.2%
Oral Language Development	Pedagogical literacy content knowledge: scaffolding development of oral language	51.9%
Writing	Pedagogical literacy content knowledge: scaffolding development of writing	77.8%

Table 2.7

Spearman Rank Order Correlations

	CLCPLCK	Literacy Content Knowledge	Pedagogical Literacy Content Knowledge	Language and Literacy Subscale	Classroom Environment Subscale
ELLCO Total	.016	-.002	-.003		
CLCPLCK				.056	-.120

*significance < .05

Table 2.8

Correlations Between Early Childhood Educators' Classroom Literacy Practices and Predictor Variables

	CLCPLCK	Literacy Content Knowledge	Pedagogical Literacy Content Knowledge	Teaching Experience	Education	Degree Type
Classroom Literacy Practices	.026	.004	-.019	.229	-.100	.058

*significance < .05

Table 2.9

Regression Analysis with Combined Literacy Content and Pedagogical Literacy Content Knowledge

Predictors	Beta[a]	t-value
CLCPLCK	.029	.142
Years of Teaching Experience	.238	1.092
Education Level	-.058	-.260
Degree Type	.097	.432
Years of Teaching Experience, Education Level, and Degree Type	.102	.449

[a] standardized

*significance < .05

Table 2.10

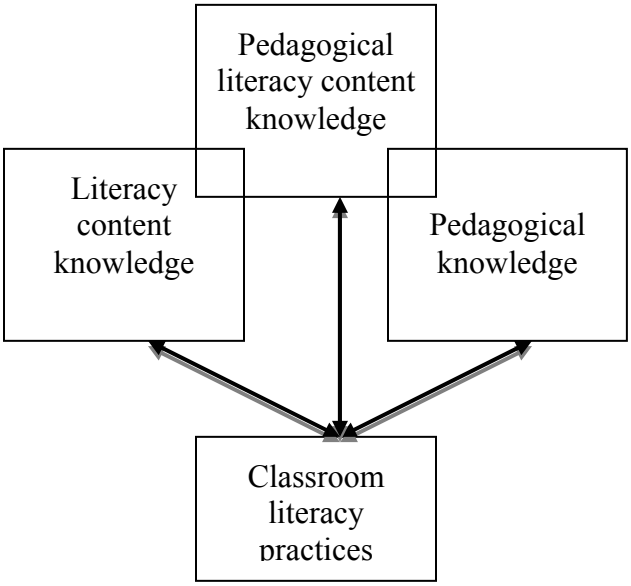
Regression Analysis with Literacy Content Knowledge and Pedagogical Literacy Content Knowledge Separately

Predictors	Beta**	t-value
Literacy Content Knowledge	.008	.038
Pedagogical Literacy Content Knowledge	-.019	-.092
Years of Teaching Experience	.229	1.016
Education Level	-.036	-.153
Degree Type	.083	.349
Years of Teaching Experience, Education Level, and Degree type on Literacy Content Knowledge	.043	-.188
Years of Teaching Experience, Education Level, and Degree Type on Pedagogical Literacy Content Knowledge	.018	.076

**standardized

*significance < .05

Figure 2.1. Theoretical Framework



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