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Parenting stress and home-based literacy interactions in low-income preschool families



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ABSTRACT

This study examined relations among parent education, parenting stress, and parental home-based educational activities to better understand the home literacy environment and parent-child interactions among low-income preschool families. Primary caregivers of 78 preschoolers (ages 3–5) participated. Separate hierarchical regression models indicated that after controlling for parental education, total parenting stress significantly predicted general home-based involvement, parent-child interactive reading, and parent-child modeling/monitoring in reading. Neither parental education nor parenting stress significantly predicted parent-child literacy skill building activities, which appeared to be universal among families regardless of education or stress levels. Among all stress factors, parenting stress due to parent-child dysfunctional interaction (PCDI) appeared as the best predictor of general home-based involvement as well as modeling and monitoring in literacy by caregivers, explaining 9% and 6% of additional variance in these behaviors, after parental education was controlled. The implications of these results for research and practice with diverse low-income families are discussed.

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1. Introduction: home-based family involvement in early literacy

Family involvement has been linked to positive outcomes for young children, including school readiness, academic performance, cognitive development, and behavioral and social-emotional functioning (Britto, Brooks-Gunn, & Griffin, 2006; Dearing, McCartney, Weiss, Kreider, & Simpkins, 2004; McLoyd, 1998; Parker, Boak, Griffin, Ripple, & Peavy, 1999). It has become a mandate of educational legislation and a cornerstone of many early intervention programs, such as Head Start. Participation of parents has been shown to increase the effectiveness of early childhood development initiatives (Anderson et al., 2003). Family contributions appear to be particularly important for young children whose environments include multiple stressors, such as poverty and its correlates (Federal Interagency Forum on Child and Family Statistics, 2013; McLoyd, 1998).

One purpose of the current study was to examine factors that specifically influence family activities that occur in the home, such as checking homework, providing age-appropriate literacy materials, and reading storybooks with children (Fantuzzo, Tighe, & Childs, 2000; Ginsburg-Block, Manz, & McWayne, 2010b). Home-based involvement may be more feasible among low-income families than school-based

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activities which require more flexible routines and access to transportation (Van Velsor & Orozco, 2007). Some research studies have even linked home-based activities more closely to outcomes for lowincome students than other forms of family involvement (Fantuzzo, McWayne, Perry, & Childs, 2004; Payne, Whitehurst, & Angell, 1994).

A second purpose of the study was to better understand factors that influence families' use of specific home-based literacy behaviors that have been associated with increased academic outcomes among lowincome children (Head Start Bureau, United States Department of Health and Human Services, Administration on Children and Families, 2006; Miedel & Reynolds, 1999; Sonnenschein & Munsterman, 2002). Research on family early literacy practices has identified strategies related to positive outcomes for young children as well as a better understanding of the mechanisms underlying the effectiveness of these strategies. For example, shared storybook reading increases young children's motivation for reading and explains significant variance in early literacy skills such as phonological awareness, decoding, and receptive and expressive vocabulary (Bennett, Weigel, & Martin, 2002; Bus, Van Ijzendoorn, & Pelligrini, 1995; Burgess, 1997), as well as predicting literacy outcomes over time (De Jong & Leseman, 2001). Parent-child shared reading that fosters high quality language interactions such as extended discussions surrounding a book, offers lexical richness (Jordan, Snow, & Porche, 2000) and contributes to the affective quality of the reading environment (Baker et al., 2003), both of which influence children's motivation to read, engagement in literacy

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activities and early literacy skills. When parents and their children experience positive interactions around literacy, children become more engaged in those activities, which in turn enhance children's oral vocabulary and emergent literacy skills (Bennett et al., 2002).

Many effective forms of family literacy involvement capitalize on the social nature of learning through direct adult-child interactions like storybook reading or teaching letter sounds (Evans, Shaw, & Bell, 2000; Senechal, LeFevre, Thomas, & Daley, 1998). Yet, other effective family literacy practices linked to children's learning take place outside of adult-child interactions, such as having children's books in the home or adult modeling of reading (Britto & Brooks-Gunn, 2001; Burgess, Hecht, & Lonigan, 2002; Deniz Can, Ginsburg-Block, & Golinkoff, 2007; De Jong & Leseman, 2001; Evans et al., 2000; Saracho, 2000; Stainthorp & Hughes, 2000). Research limited to either strategy that involves direct adult-child interaction or more distal contributions fails to capture the myriad ways low-income families support early literacy in the home or the complexity involved in providing this support (Scarborough & Dobrich, 1994). In the current study, we are interested in exploring factors that influence a comprehensive set of home-based literacy strategies among low-income families, including interactive strategies such as shared reading and skill instruction, as well as indirect strategies such as modeling and monitoring of literacy activities.

2. Status variables related to variability in family literacy involvement: income and education

There is much variation among low-income families in the level and quality of the home learning and literacy environment that they create (Jiang, Ekono, & Skinner, 2014). For example, while research shows that low-income parents may spend fewer hours at home reviewing and helping with homework than higher income families, there are within group differences (Fantuzzo et al., 2004). How are meaningful family literacy interactions abundant in some preschool families while other families report less frequent or positive interactions? Protective factors such as formal education, income, availability of learning materials, social support, English proficiency, flexible work schedules, as well as feelings of efficacy in parenting and management of parenting stress all may play a role in shaping the home learning environment (Foster, Lambert, Abbott-Shim, McCarty, & Franze, 2005; Gershoff, Aber, Raver, & Lennon, 2007; Mantzicopoulos, 1997; Ming & Powell, 2010).

Family resources and parent education appear among the most studied variables that contribute to or hinder home-based learning and literacy activities. Controlling for income, higher parent education levels alone have been associated with better pre-literacy, language and cognitive skills in young children (Curenton & Justice, 2008; Lugo-Gil & Tamis-LeMonda, 2008; Perry & Fantuzzo, 2010), while lower parent educational levels may place children at-risk for academic failure (Ceballos & Bratton, 2010). Indicators of family education such as caregiver literacy level may influence how adult family members interact with their children (Curenton, Craig, & Flanigan, 2008) and how much time they spend reading together (Duursma & Pan, 2011). Waanders, Mendez, and Downer (2007) found that African American mothers in Head Start with more years of education and a greater sense of competence regarding how to help their children's schooling reported more homebased educational involvement. Advanced maternal literacy skills were associated with diverse use of maternal language skills during storytelling and shared reading (Curenton et al., 2008). Iruka, LaForett, and Odom (2012) found that parent-child activities mediated the influence of maternal education on children's receptive language in a sample of Spanish-speaking families. While the relations between maternal education and child outcomes have been solidly established, the nature of the home literacy environment plays a uniquely important role in the literacy development of young children. Further, it is crucial to recognize that other factors beyond family income and education promote or hinder family contributions to learning and literacy.

3. Potential mechanisms underlying family early literacy practices among at-risk families: parent, child and relationship factors

Underlying the income and education status variables, mechanisms including parenting self-efficacy and parenting stress may help to explain variation in the frequency and quality of family educational and literacy strategies (Wasik & Hindman, 2010). According to self-efficacy theory and research, parent and child characteristics influence parent educational involvement and the parent-child relationship (Deater-Deckard, 2005; Grolnick, Benjet, Kurowski, & Apostoleris, 1997). Parental self-efficacy, defined as the expectation caregivers hold about their ability to parent successfully, is a critical factor in understanding resiliency, coping mechanisms, parental mental health, parent-child interactions and other parenting behaviors (Ardelt & Eccles, 2001; Bandura, 1982). Grolnick et al. (1997) found that mothers who felt more efficacious in child-rearing activities such as regulating their child's behaviors and helping their children meet expectations, reported more engagement in cognitively stimulating activities with their children.

Inversely related to parental self-efficacy, parenting stress (Raikes & Thompson, 2005) is an indicator of the affective quality of the home learning and literacy environment (Farver, Xu, Eppe, & Lonigan, 2006). Variation in how low-income families respond to parenting stress likely influences family functioning and parent-child interactions. Abidin (1995) conceptualized parenting stress as a composite of three distinct yet related sub-domains; parental perceptions of parenting distress, stress due to child difficulty, and parent-child dysfunctional interaction. Parental distress is defined as distress resulting from unhappiness with the parenting role, feeling trapped as a parent, and feeling depressed in general. Child difficulty involves a child's behavior and self-regulatory abilities, including child moodiness, tearfulness, sleeping and eating habits. Parent-child dysfunctional interaction consists of the emotional quality of the parent-child relationship, taking into account children's affect towards their parents, their appreciation of parents' efforts, and parental satisfaction with their children's rate of learning (Abidin, 1995).

Research has shown that parenting stress is indeed related to both parent and child behaviors, as well as the quality of parentchild interactions. Increased levels of parenting stress have been linked to maternal unresponsiveness, inconsistency, strictness, emotional avoidance, too little or overly excessive stimulation, harsh discipline and less warmth during interactions with young children. These parental behaviors were in turn related to children's behavioral and conduct problems (LeCuyer-Maus, 2003; Linver, Brooks-Gunn, & Kohen, 2002; Mistry, Biesanz, Taylor, Burchinal, & Cox, 2004; Webster-Stratton, 1990). In one study, parenting stress explained 74% of the variance in maternal sensitive-responsiveness to their 12 month old toddlers (LeCuyer-Maus, 2003). Similarly, Pianta and Egeland (1990) found that high levels of maternal interpersonal stress were related to low levels of maternal cooperation with their children at 6 months old and maladaptive parent-child interactions when children were 42 months old. These findings demonstrate the interdependence of parent and child behaviors and the contributions of these behaviors to parent-child relationships and subsequent child outcomes. It appears that families fall on a continuum of perceived parental self-efficacy and parenting stress, which plays a role in shaping the home learning environment. The amount of parenting stress experienced by families and the ability of families to cope with stress may be a key to better understand the variability observed in the home learning environment among low-income families. Based on the self-efficacy and parenting stress literature, we predict in the current study that perceived amounts of total parenting stress will be negatively associated with general and literacyspecific parent educational involvement activities at home within a low-income preschool sample.

5. Method

5.1. Participants

4. Parenting stress subtypes and their relations with family literacy involvement among at-risk families: critique of the parenting stress literature

Few studies over the last decade have examined parenting stress as it relates to preschool and kindergarten family educational practices (Farver et al., 2006; Karrass, VanDeventer, & Braungart-Rieker, 2003; Semke, Garbacz, Kwon, Sheridan, & Woods, 2010), while there is a more extensive evidence base demonstrating that parenting stress is related to ineffective parenting practices including inconsistency, reduced responsiveness, and harsh discipline during interactions with infants and toddlers (e.g. LeCuyer-Maus, 2003; Linver et al., 2002; Mistry et al., 2004; Pianta & Egeland, 1990). In a study of low-income Latino mothers with children attending Head Start, Farver et al. (2006) found that perceived overall parenting stress levels had a direct negative influence on a global indicator of parental literacy involvement at home. Thus, it appears that stress may be particularly undermining for some parents as opposed to others, and home-based educational involvement may differ depending on the level of parenting stress families experience (Grolnick et al., 1997).

Although Abidin's (1995) work revealed several unique dimensions of parenting stress including perceived stress due to child difficulty, parental distress, and parent-child dysfunctional interaction, no study to date has examined parenting stress subtypes in relation to homebased family educational and literacy involvement practices among low-income preschool families. Existing research has treated parenting stress as a uni-dimensional rather than a multi-dimensional concept (Farver et al., 2006). Understanding the relations between parenting stress levels across a variety of sources of parenting stress and family educational practices will provide a more comprehensive understanding of the underlying mechanisms that support or hinder the development of resilient home learning environments among low-income families. Further, the study of these relations will provide a clearer picture of the most predictive sources of parenting stress in relation to a comprehensive set of effective home-based learning and literacy practices, which will aid in determining foci for family programming.

In sum, while parenting stress sub-categories have not yet been studied in relation to different types of home-based learning and literacy practices, based on self-efficacy theory we would expect adult and child characteristics, as well as adult-child interactions to contribute to the quantity and quality of educational practices that occur in the home. Further, based on the existing research literature, we might expect the quality of parent-child relationships to have the greatest effect on home-based strategies that require parent-child interaction around educational activities, rather than non-interactive activities adults perform such as independent reading and obtaining literacy materials (Farver et al., 2006; Foster et al., 2005; Grolnick et al., 1997; Parker et al., 1999). Thus, we ask whether parenting stress sub-categories differentially relate to general involvement and specific types of literacy involvement. We expect that parenting stress due to perceived parent-child relationship-based stress (e.g., feelings that parents are not good at parenting, they lack enough warmth and affection) will significantly predict a) general home-based educational involvement, and b) specific involvement in literacy, above and beyond the influence of parental education. We hypothesize that this prediction will be stronger than the influence of other parenting stress factors on parent behaviors (i.e., stress due to parental distress and child difficulty), which concentrate on individual concerns related to either the parent (e.g., lack of general interest in people, feeling alone), or the child (e.g., very moody, easily upset) and therefore, less specifically capture the interactive processes by which parents and children relate to each other, and the quality of their interactions.

In total, participants included primary caregivers of 78 preschool children (ages 3-5) from low-income families in this multi-site study. Fourteen preschoolers and their parents, 18% of the whole sample, were recruited from an Early Learning Center (ELC) located on a college campus in the mid-Atlantic region of the United States which served 120 children in the age range of the current study, ages 3 to 5 years. Sixty-four families, 82% of the whole sample, were recruited from seven different urban Wilmington Head Start Centers (WHS), comprising 13% of a much larger preschool population (n = 500). Policies of both the ELC and WHS indicate that a strong emphasis is given to parent involvement. At the ELC parents are actively encouraged to participate in their children's education, either at home, or at school, or via homeschool conferencing. Along with full day early-care and schooling to children aged 6 weeks to 5 years, ELC provides services and support for its own families as well as families in the community. At the ELC, parents are frequently updated on their children's progress, they are encouraged to observe classrooms, or participate in class activities, and improve their own educational and parenting skills (The Early Learning Center, 2013). Wilmington Head Start centers actively offer opportunities for parents to become involved in their children's educational program, through volunteering, participating in the center, policy council meetings, parent committee meetings, and family events planned throughout the year (Wilmington Head Start, 2013). In addition, WHS has a very strong father/male involvement component (i.e., fatherhood initiative) (Wilmington Head Start, 2013).

All parents/guardians whose preschool children attended these centers were eligible to be research participants, and all caregivers reported residing with the children. Mostly mothers and their children participated in the study. Sixty-seven percent of all participants were mothers, 19% were fathers, and 12% were other caregivers (e.g., grandparents). Eighty percent of all surveys were completed in English; and 20% were completed in Spanish. Twenty-nine percent of all mothers reported receiving less than a high school education; 37% completed high school or obtained a general equivalency diploma, GED, and 27% were educated beyond high school, having completed some college classes, an associate degree, or a college degree. Forty-two percent of the whole sample reported being married; 27% reported being single; 6% were either separated or divorced; and 18% reported living with a significant other. Fifty-six percent of all participants reported receiving public assistance, while 30% reported not receiving any. Fifty-four percent of the whole sample participants were African American; 23% were Hispanic/Latino; 10% were biracial or multi-racial; 4% were Caucasian; 4% were Native American/Alaskan; and 2% were Asian American. All participants in the current study were considered low-income. Head Start exclusively serves low-income families, while only low-income families from the ELC were included in these analyses. Reported annual income from ELC respondents was compared to the 2009 federal poverty guidelines based on family size (U.S. Department of Health and Human Services, 2009). All these families reported incomes near or below two times the poverty level with the majority reporting incomes below the poverty line (U.S. Department of Health and Human Services, 2009).

5.2. Procedures and measures

5.2.1. Data collection procedures at the Wilmington Head Start Centers (WHS) and the Early Learning Center (ELC)

At several Wilmington Head Start Centers (WHS), parents of children ages 3–5 were simultaneously administered the demographic form, parenting stress index, and two family involvement questionnaires; the Family Involvement Questionnaire, (FIQ), and the Family Early Literacy Practices Questionnaire, (FELP). All questionnaires, except for the FIQ, were translated into Spanish by a qualified translator who had extensive work experience in our study sites (i.e., Wilmington Head Start centers), and was responsible from the translation of various instruments into Spanish to use within these centers. The same translator was kept to provide consistency in the choice of the correct Spanish dialect, so that these particular families read the questionnaires in a language format familiar to them. The FIQ already had three Spanish translations available that had been used at previous research sites; New York City Spanish version, Lehigh Valley Spanish version, and Southwest Spanish version (McWayne, Manz & Ginsburg-Block, 2009). The translator determined the Southwest Spanish version to be the most appropriate version for the Latino population in the local Head Start Centers, mainly due to dialectical reasons and the geographical location (i.e., country of origin, such as Mexico); however, she slightly revised it by changing simple wording (e.g., replacing "high school" teacher with "elementary" teacher).

Data were collected at the centers in spring 2007 and fall 2008 semesters during collective activities such as fall festivals, spring festivals, parent conferences, father-daughter days, and/or individually during convenient times for families (e.g., after drop-off times within the centers). Concentration of families was of utmost importance, and thus, a quiet location was found for parents who agreed to participation to complete the questionnaires at the centers, including those collected during festival events or following parent-teacher conferences. At least one research assistant was present while parents completed the measures at all times to answer parents' questions regarding the questionnaires. Parents were given the option to choose to complete either the English or the Spanish version of the questionnaires depending on their comfort level with the language. Parents were also provided with the opportunity to have all the questions read out-loud to them by a research assistant proficient in English/Spanish, in case it was hard for them to read the terminology used in either language. All the protocols were checked by the research assistants on-site as soon as they were completed, and parents were instructed to revisit and mark the incomplete/mistakenly missed sections after this prompt. These check-in sessions happened either individually with parents, or, in a group setting. For example, there were occasions in which a small group of parents sat around a table and completed the surveys at the same time, while a research assistant went around the table answering parents' questions. Parents were given a children's book to bring home as an appreciation of their participation in the study. During data collection, children were engaged in activities (e.g., arts and crafts) by research assistants, mostly on a separate desk next to the parents' desk.

Data from selected parent measures were accessed from the Universal Data Set of the Early Learning Center (ELC). ELC provided the most recent demographic information as well as results from the Parenting Stress Index-Short Form "PSI-SF," universally administered to all parents in the beginning of every school year. The remaining data that came from the ELC (mostly in the fall of 2007/2008) was collected by graduate research assistants concurrently (e.g., the FIQ and the FELP), during one-on-one parent interviews conducted at the ELC following the school day. These questionnaire data were then entered into the Universal Database of the ELC, as part of a data package in the beginning of the fall semester. There were no Spanish participants in the ELC group, so, only the English translations of the questionnaires were used. Even though the measures from the ELC were gathered by different researchers (i.e., demographic form and the PSI-SF by the ELC staff; the FIQ, and the FELP by graduate research assistants from the university), all of these measures were mostly collected in the fall semester. The language format used in all these measures is at grade level 6 or below.

5.2.2. Parent measures

5.2.2.1. Demographic questionnaire. Parents completed a 27 item demographic questionnaire composed of multiple-choice and some short answer questions (e.g., the reported family income, previous educational background of the children, existence of any developmental delays, education levels and language skills of the parents/caregivers, children's primary language and ethnicity, who the primary caregiver is, whether any public assistance is received).

5.2.2.2. Parenting stress measure. Parenting stress was measured by the "Parenting Stress Index-Short Form" (PSI-SF) (Abidin, 1995), a 36 item multiple choice questionnaire that uses a 5 point Likert scale (1 - strong-ly agree to 5 - strongly disagree), that takes approximately 10 min to complete. The PSI-SF has been shown to be highly reliable and valid for ethnically diverse and middle income as well as low income (e.g. Head Start) populations (Haskett, Ahern, Ward, & Allaire, 2006; Reitman, Currier, & Stickle, 2002; Roggman, Moe, Hart, & Forthun, 1994). The scales on the short form consist of items directly derived from the full length PSI. The correlations between the full length PSI and the PSI-SF ranged between 0.87 and 0.94 (Abidin, 1995).

The PSI-SF yields three factors: stress caused by parental distress (PD; items 1–12), parent-child dysfunctional interaction (P-CDI; items 13–24), and parental perceptions of their child's level of difficulty (DC; items 25–36), and a total score (SF; items 1–36). The PSI-SF is originally scored on a 5-point Likert Scale where 1 represents "strongly agree" and 5 represents "strongly disagree." For the purposes of this study, the PSI-SF was reverse-coded, so that larger scores on the PSI-SF represented more parenting stress in the data collected from the ELC as well as WHS centers. "Parental distress" is associated with stressors such as lack of social support, presence of depression and conflict with the child's other parent (Abidin, 1995). Example items are "I feel alone and without friends," "I don't enjoy things as I used to," and "Since having this child I have been unable to do new and different things" (Abidin, 1995). "Parent-child dysfunctional interaction" is associated with an impaired sense of parenting competence, parents' perception that his or her child does not meet the parents' expectations, and parental feelings that the interactions with the child are not reinforcing (e.g., parental rejection by and alienation from the child) (Abidin, 1995). Example items are "When I do things for my child, I get the feeling that my efforts are not appreciated very much," "Sometimes I feel my child does not like me and does not want to be close to me," and "I expected to have closer and warmer feelings for my child than I do and this bothers me" (Abidin, 1995). "The difficult child" subscale focuses on some basic characteristics of the child that make them either easy or difficult to manage (e.g., defiance, noncompliance, demanding behavior) (Abidin, 1995). Example items are "I feel that my child is very moody and easily upset," and "my child makes more demands on me than most children" (Abidin, 1995).

With a 96% Caucasian middle income population, alpha reliabilities for the PSI-SF ranged between 0.80 and 0.91 for the total stress score, and the 3 subscales, and test-retest reliability ranged between 0.68 and 0.85 (Abidin, 1995). Roggman et al. (1994) reported similar alpha reliabilities for the PSI-SF scales (0.90 for Total Stress, 0.79 for PD, 0.80 for P-CDI, and 0.78 for DC) with a Head Start population. With a sample of low-income primarily African American Head Start mothers, Reitman et al. (2002)supported the generalizability of a 3-factor model of parenting stress. Haskett et al. (2006), among a diverse mostly low income sample found that PSI-SF scales were internally consistent; they correlated with measures of parent psychopathology, parental perceptions of child adjustment and observed parent-child behavior. In the current sample alpha reliabilities ranged from 0.84 to 0.96, yielding adequate internal consistency for respondents in both English and Spanish. See Table 1.

5.2.2.3. Parental involvement measures. Parent involvement was measured by four factors taken from two well-researched parent involvement questionnaires. Since the purpose of the current study was to examine home-based family involvement activities, the Family Involvement Questionnaire-Early Childhood version (FIQ-EC) Home-Based Involvement factor was used. The FIQ-EC is a psychometrically sound measure that uses a 4-point Likert scale format. Participants marked

Table 1	
Cronbach's alpha reliabilities f	or parent measures.

	Full sample		Englis	English only		sh only
Measure/factor	n	a	n	a	n	a
FIQ						
FIQ-HB	78	0.91	62	0.91	16	0.84
PSI-SF						
PSI-PD	78	0.91	62	0.89	16	0.88
PSI-PCDI	78	0.91	62	0.84	16	0.92
PSI-DC	78	0.90	62	0.87	16	0.92
PSI-SF Total	78	0.96	62	0.94	16	0.96
FELP						
Skill Building	78	0.94	62	0.94	16	0.93
Interactive Reading	78	0.94	62	0.94	16	0.92
Modeling	78	0.90	62	0.89	16	0.93

Note. FIQ-HB = FIQ-Home Based Involvement; PSI-SF = Total Parenting Stress on the Short Form; PSI-PCDI = parenting stress due to parent-child dysfunctional interaction; PSI-DC = parenting stress due to child difficulty; PSI-PD = parenting stress due to parental distress; FELP-SB = FELP-Skill Building; FELP-INT = FELP-Interactive Reading/Enjoyment; FELP-MM = FELP-Modeling/Monitoring.

the frequency of their involvement at home (i.e. Rarely, Sometimes, Often, Always) across 13 items representing general activities that are both interactive and non-interactive, such as maintaining rules, keeping a regular morning and bedtime schedule, reviewing schoolwork, and working on academic skills.

The FIQ-EC was developed by Fantuzzo et al. (2000) to study a range of family involvement practices within a low-income urban African-American sample of pre K-1st grade children. The original published alpha reliability coefficients for the Home-Based Involvement factor ranged between 0.81 and 0.85. Concurrent validity was established for the FIQ-EC by correlating the factors with archival records of volunteer experiences in Head Start (Fantuzzo, Tighe, & Perry, 1999). The FIQ-EC was also externally validated with a large sample of low and middle income Caucasian and Latino families of young children (Ginsburg-Block, Fantuzzo, Roberts, & Barghaus, 2013). For the current sample Cronbach's alpha reliabilities for the FIQ-EC home-based factor ranged from 0.84 for the Spanish version to 0.92 for the English version, yielding acceptable internal consistency reliability. See Table 1.

The Family Early Literacy Practices Questionnaire (FELP) was designed to measure the frequency of activities parents engage in to help their young children (ages 3–6) with early literacy skills (Deniz Can et al., 2007). Three factors measuring family behaviors, i.e. Skill Building, Interactive Reading and Modeling/Monitoring were used in the current study. The FELP's factor structure and satisfactory internal consistency reliability have been replicated with three samples, including two- English-speaking (Deniz Can et al., 2007; Ginsburg-Block, Lewis, & Pizzini, 2010a) and one Spanish-speaking group (Lewis, Ginsburg-Block, & Zettler-Greeley, 2012). FELP factors have also been shown to relate to important child skills (Ginsburg-Block & Zettler-Greeley, 2012).

The alpha reliabilities of the FELP factors used in the current study were re-calculated to determine whether the FELP factor structure was reliable to use with the current sample. Cronbach's alpha reliability coefficients were calculated for this low-income sample (n = 78) and separately for the English (n = 62) and Spanish (n = 16) language versions of the FELP (see Table 1). Alpha reliabilities of FELP in the current economically restricted sample were robust. Specifically, the alpha reliabilities of interest were 0.94 for the Skill Building factor (11 items), 0.94 for the Interactive Reading/Enjoyment factor (10 items), and 0.90 for the Modeling/Monitoring factor (8 items) (see Table 1). A more detailed break-down of reliability scores by language of administration can be found in Table 1. In sum, alpha reliabilities were robust across all three FELP factors and language versions used in the current study, ranging from 0.89 to 0.94.

5.3. Data analysis

Hierarchical multiple regressions were conducted to answer the research questions. Demographic predictor variables including marital status, respondent, number of children living in the home, employment status and parental education, were evaluated for their relations with the parent involvement measures. Only parental education yielded significant correlations (see Table 4) and was retained in the regression equations. In order to further determine the appropriateness of combining results across all types of respondents, MANOVA was performed to investigate whether parent involvement behaviors differed significantly across these groups (see Section 6.1).

Power analysis was conducted using Statistical Calculators 3.0 software to determine the study's ability to detect the true effects of each regression model. Using Cohen's f^2 statistic (Cohen, 1988), post-hoc power analysis showed that our study had ample power (i.e. exceeding 0.80) to detect moderate (0.15) and large effects (0.35), but was under powered in the case of small effects (0.02).

Hypothesis 1 a) was that total parenting stress (PSI-SF Total) negatively predicts general parent involvement at home after parental education is controlled. To test this hypothesis, a two-step hierarchical regression model was employed; in which parental education was entered in the first step of the regression model, total parenting stress was entered in the second step, and the HB (home-based involvement) factor of the Family Involvement Questionnaire (FIQ) was the dependent variable (see Table 5a). Hypothesis 1 b) was that total parenting stress (PSI-SF Total) negatively predicts all aspects of parent literacy involvement after parental education is controlled. A series of two-step hierarchical regression models were tested, in which parental skill building in literacy, parent-child interactive reading practices, and parental modeling in reading/literacy were the outcome variables in separate models. Parent education was entered in the first step of each model (see Table 5b). Hypothesis 2 a) was that stress due to perceived parent-child dysfunctional interaction (PSI-PCDI), in comparison to other parenting stress factors, will be the strongest predictor of parental home-based involvement (FIQ-HB) after parental education is controlled. To test this hypothesis, a stepwise (four-step) hierarchical multiple regression model was conducted, in which parental education was entered as the first step, parenting stress caused by parent-child dysfunctional interaction, PSI-PCDI, was entered as the second step, followed by PSI-PD and PSI-DC in third and fourth steps, respectively. General family involvement at home was the outcome variable. See Table 6. Hypothesis 2 b) was that stress due to perceived parent-child dysfunctional interaction (PSI-PCDI), in comparison to other parenting stress factors, will be the strongest predictor of all parent literacy involvement dimensions after parental education is controlled. To test this hypothesis, a series of stepwise (four-step) hierarchical multiple regressions were conducted, in which parental education was entered as the first step, parenting stress caused by parent-child dysfunctional interaction, PSI-PCDI, was entered as the second step, followed by PSI-PD and PSI-DC in third and fourth steps, respectively, and FELP factors were the outcome variables.

6. Results

6.1. Descriptive statistics and correlations

Cronbach's alpha reliabilities for parent measures are seen in Table 1. Sample characteristics for Wilmington Head Start (WHS) and Early Learning Center (ELC) are seen in Table 2. Means (i.e., overall mean and Likert scale mean) and standard deviations for the parent measures are seen in Table 3. Pearson correlations among variables are seen in Table 4. As parental education decreased from parents having more than high school education to less than high school education, total parenting stress increased ($r = 0.22^*$, p < 0.05). Parental education negatively and significantly correlated with parental home-based

Table 2

Sample characteristics for Wilmington Head Start (WHS) and Early Learning Center	(ELC	2)).
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Characteristic	WHS		ELC		
	n	%	n	%	
Relationship to student					
Mother	44	69	8	57	
Father	14	22	1	7	
Grandmother	2	3	2	14	
Grandfather	3	5	1	7	
Other	1	1	1	7	
Total	64	100	13	92	
Child primary language	01	100	15	02	
English	46	72	11	78	
Snanish	15	23	0	0	
Both	3	5	1	7	
Other	0	0	1	7	
Total	64	100	13	92	
Child ethnicity	01	100	15	52	
African American	38	60	4	28	
Caucasian	0	0	3	20	
Hispanic/Latino	18	28	0	0	
African American and Latino	4	6	0	0	
Multiracial (not specified)	2	3	2	14	
Native American/Alaskan	1	2	2	14	
Asian American	0	2	2	14	
Total	63	99	13	01	
Public assistance	05	55	15	51	
Voc	38	60	6	12	
No	21	32	2	21	
Total	50	92	9	64	
Eather education	55	52	5	04	
Less than high school	10	20	2	14	
Less than high school	22	29 50	2	14	
More than high school	10	15	5	35	
Total	62	96	13	02	
Father language	02	50	15	52	
Limited understanding/speaking	0	14	0	0	
Not pativo but fairly skilled	5	14	2	14	
Skilled English speaker	12	65	2 11	79	
Total	42 50	00	12	02	
Nother education	50	50	15	92	
Loss than high school	22	24	1	7	
Less than high school	22	40	2	7 21	
More than high school	20	40	0	62	
Total	62	22	5 12	01	
I Oldi Mother language	02	90	15	91	
Mother language	11	17	1	7	
Not pativo but fairly skilled	5	1/	1	/	
Skilled English speaker	5	0 70	2 10	14	
Total	45	70	10	/1	
I ULdI	01	90	15	92	

involvement and interactive reading as measured by the FIQ-HB ($r = -0.36^{**}$, p < 0.01) and FELP-INT ($r = -0.30^{**}$, p < 0.01) factors, respectively. PSI-SF Total was moderately and negatively correlated with FIQ-HB, (r = -0.40, p < 0.01), FELP-MM, Modeling/Monitoring (r = -0.27, p < 0.05), and FELP-INT, Interactive Reading/Enjoyment (r = -0.27, p < 0.01) factors, while not significantly correlating with FELP Skill Building factor (r = -0.22, p > 0.05).

While the majority of respondents were mothers (i.e. 67%), 19% of respondents were fathers, 13% were grandparents or other relatives or caregivers, and 1.3% did not provide any caregiver information.

MANOVA was conducted on all outcome variables comparing the responses of mothers to fathers and other respondents in order to determine whether results should be considered separately for each group or whether all responses could be analyzed and reported together. The assumption of equality of variances was met for all outcome variables examined. No significant differences were found between mothers, fathers and other respondents in any family early literacy practices measured on the FELP questionnaire. Consistent with this finding, no differences were found between mothers, fathers and other respondents for family involvement on the FIQ. However, univariate tests revealed a significant effect for respondent on parental distress, F(73) = 3.537, p < 0.05. Post-hoc analyses revealed that mothers and fathers reported similar levels of parental distress (mothers' M =29.54, *SD* = 11.32; fathers' *M* = 25.13, *SD* = 10.98), while mothers reported significantly more parental distress than other respondents (M = 20.30, SD = 6.18). Mothers, fathers and other caregivers reported similarly on the total parenting stress index, the parent-child dysfunctional interaction and difficult child scales of the PSI-SF. Based on the overwhelming continuity of the responses for mothers, fathers and other respondents, all responses were analyzed and reported together.

In addition, to examine whether study setting makes a difference in parent home-based and specific literacy involvement, or parenting stress levels, and determine whether it was necessary to accommodate for school-level differences, we calculated One-Way Analysis of Variance (One-Way ANOVA) (Van Ryzin, 2011). One-way Anovas were conducted to see whether outcome means significantly differed across the two type of settings, Wilmington Head Start (WHS) versus Early Learning Center (ELC). No differences were found on any study measures. FELP Skill Building scores did not significantly differ between WHS and ELC, F(1, 76) = 0.81, p = 0.37. FELP Interactive Reading scores did not significantly differ between WHS and ELC, F(1, 76) = 0.02, p = 0.88. FELP Modeling and Monitoring did not significantly differ between WHS and ELC, F(1, 76) = 0.22, p = 0.63. Similarly, none of the stress factors significantly differed from each other, based on the type of setting the data were collected from. Total Stress as measured by PSI-SF (Total) did not significantly differ between WHS and ELC, F (1, (73) = 1.55, p = 0.21. Parental distress as measured by PSI-PD did not significantly differ between WHS and ELC, F(1, 73) = 2.19, p = 0.14. Stress due to parent-child dysfunctional interaction did not significantly differ between WHS and ELC, F(1, 74) = 1.06, p = 0.30. Stress due to child difficulty, PSI-DC, did not significantly differ between WHS and ELC, F(1, 74) = 1.43, p = 0.23. General home-based involvement as measured by the FIO-HB factor did not significantly differ between WHS and ELC, F(1, 75) = 0.00, p = 0.98. Next, stepwise regressions were conducted to test the study hypotheses.

6.2. Stepwise regression analyses

6.2.1. Hypothesis 1 a): total parenting stress (PSI-SF Total) negatively predicts general parent involvement at home after parental education is controlled

In the first model, parental education explained 13% of the variance in home-based educational involvement, which was significant (n =78; *F* (2, 77) = 11.8, p < 0.01) (see Table 5a). Parental home-based

Table 3

	Overall mean	SD	(Likert scale mean)		Overall mean	SD	(Likert scale mean)
FIQ-HB	40.42	8.60	(3.10)	PSI-SF Total	74.34	27.37	(2.06)
FELP-SB	37.74	11.24	(3.43)	PSI-PCDI	21.00	9.21	(1.75)
FELP-INT	36.43	9.83	(3.64)	PSI-PD	27.39	11.06	(2.28)
FELP-MM	25.56	7.97	(3.19)	PSI-DC	25.93	10.12	(2.16)

Note. N = 78; Likert scale anchors for FIQ. 1 = rarely; 2 = sometimes, 3 = often; 4 = always; for FELP, 1 = almost never; 2 = every so often; 3 = 1–3 times a week; 4 = 4–6 times a week; 5 = daily; Likert scale anchors for PSI-SF, 1 = strongly disagree; 2 = disagree; 3 = not sure; 4 = agree; 5 = strongly agree. FIQ-HB = FIQ-Home Based Involvement. FELP-SB = FELP-Skill Building; FELP-INT = FELP-Interactive Reading/Enjoyment; FELP-MM = FELP-Modeling/Monitoring. PSI-SF = total parenting stress on the short form; PSI-PCDI = parenting stress due to parent-child dysfunctional interaction; PSI-DC = parenting stress due to child difficulty; PSI-PD = parenting stress due to parental distress.

Table 4

Pearson correlations among variables.

	Parental education	PSI-PD	PSI-PCDI	PSI-DC	PSI-SF Total	FIQ-HB	FELP-MM	FELP-INT	FELP-SB
Parental edu. PSI-PD PSI-PCDI PSI-DC PSI-SF FIQ-HB FELP-MM FELP-INT		0.20	0.17 0.70**	0.22 [*] 0.72 ^{**} 0.71 ^{**}	0.22* 0.90** 0.88** 0.90**	-0.36^{**} -0.34^{**} -0.36^{**} -0.37^{**} -0.40^{**}	-0.13 -0.25^* -0.24^* -0.24^* -0.27^* 0.72^{**}	-0.30^{**} -0.24^{*} -0.24^{*} -0.23^{*} -0.27^{**} 0.79^{**} 0.86^{**}	-0.19 -0.23^* -0.17 -0.22 0.72^{**} 0.83^{**} 0.82^{**}

Note. N = 78. Parental education refers to the comparison between parents having >HS versus <HS. FIQ-HB = FIQ-Home Based Involvement; FELP-Skill Building; FELP-INT = FELP-Interactive Reading/Enjoyment; FELP-MM = FELP-Modeling/Monitoring. PSI-SF = total parenting stress on the short form; PSI-PCDI = parenting stress due to parent-child dysfunctional interaction; PSI-DC = parenting stress due to child difficulty; PSI-PD = parenting stress due to parental distress.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

involvement significantly decreased in parents with less than high school education, in comparison to parents with more than high school education ($\beta = -6.89$; p < 0.01). In the second step, confirming our hypothesis, the total parenting stress score (PSI-SF Total) provided 11% additional significant variance in FIQ-HB, increasing the total variance explained by the model to 24% (Model R² = 0.24, *F* (2, 77) = 11.9, p < 0.01). Refer to Table 5a.

6.2.2. Hypothesis 1 b): total parenting stress (PSI-SF Total) negatively predicts all aspects of parent literacy involvement after parental education is controlled

Parent education explained 7% of the variance in FELP interactive reading (FELP-INT), which was significant (n = 78, *F* (2, 77) = 6.41, p < 0.01; Table 5b). Total parenting stress, entered in the second step, increased the variance explained in the model to 12%, and this 5% increase was a significant increase in the overall variance (p = 0.05). See Table 5b. Parent education explained only 1% of the variance in FELP modeling and monitoring in literacy (FELP-MM), which was not significant (p > 0.05). Total parenting stress, entered in the second step, provided 7% additional significant variance, increasing the total variance explained in FELP-MM to 8% (n = 78, *F* (2, 77) = 3.35, p < 0.05). See Table 5b.

The regression model for FELP Skill Building did not result in significance, and thus, is not reported in the paper. Parental education was not significant in predicting skill building behaviors, and total stress did not provide extra variance that explained parent skill building in literacy.

6.2.3. Hypothesis 2 a): stress due to perceived parent-child dysfunctional interaction (PSI-PCDI), in comparison to other parenting stress factors, will be the strongest predictor of parental home-based involvement (FIQ-HB) after parental education is controlled

Parent education was a significant predictor, explaining 13% significant variance in home based involvement. In the second step of the model, confirming our hypothesis, PSI-PCDI provided an additional 9%

Table 5a

Hierarchical multiple regression analyses predicting general home based involvement.

Variable FIQ-HB	R ²	F	β	t	р
Step 1 EDU Model 1	0.13	11.8	- 6.89	-3.44	0.00 ^{**} 0.00 ^{**}
Step 2 PSI-SF Total Model 2	0.24	11.9	-0.10^{*}	- 3.25	0.00 ^{**} 0.00 ^{**}

Note. N = 78 for Home-Based Involvement, FIQ-HB; β = unstandardized beta coefficients. EDU refers to the comparison between more than high school education to less than high school education.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

variance in FIQ home-based involvement which was significant, increasing the total variance explained by the model from 13% to 22% (n = 78, F(4, 77) = 11.02, p < 0.01). See Table 6. In the third and fourth steps of the model for home-based involvement, parenting stress caused by parent perceptions of parental distress and of child difficulty, PSI-PD, and PSI-DC, respectively, provided only 1% additional variance each, which were not unique additions to the overall model (p > 0.01). See Table 6.

6.2.4. Hypothesis 2 b): stress due to perceived parent-child dysfunctional interaction (PSI-PCDI), in comparison to other parenting stress factors, will be the strongest predictor of all parent literacy involvement dimensions after parental education is controlled

Parent education was a significant predictor for interactive reading/ enjoyment, while not predicting modeling/monitoring behaviors and skill building in literacy. In the model for modeling/monitoring in literacy, PSI-PCDI added 6% significant variance in the second step, increasing the overall variance explained in modeling/monitoring to 7% (n =78, F(4, 77) = 2.85, p < 0.05). In the third and fourth steps, respectively, PSI-PD provided 1% additional variance that was not significant, and PSI-DC did not provide any additional variance to the overall model in modeling/monitoring. Refer to Table 6. In the second step of the hierarchical regression model for interactive reading/enjoyment, PSI-PCDI added 4% additional variance that was not significant (p = 0.06). In the third and fourth steps, respectively, PSI-PD provided 1% additional variance that was not significant, and PSI-DC did not provide any additional variance to the overall model in interactive reading/enjoyment.

Table	5b
Tuble	

Hierarchical multiple regression analyses predicting literacy specific parent involvement.

Variable FELP-MM	R ²	F	β	t	р
Step 1 EDU Model 1	0.01	1.48	-2.40	-1.21	0.22 0.22
Step 2 PSI–SF Total Model 2	0.08	3.35	-0.07	-2.26	0.02* 0.04*
Variable FELP-INT	\mathbb{R}^2	F	β	t	р
EDU Model 1	0.07	6.41	- 5.98	-2.53	0.01 ^{**} 0.01 ^{**}
Step 2 PSI-SF Total Model 2	0.12	5.24	-0.07	- 1.95	0.05 [*] 0.00 ^{**}

Note. N = 78 for FELP Modeling/Monitoring, FELP-MM; and FELP Interactive Reading/ Reading for Enjoyment, FELP-INT; β = unstandardized beta coefficients. EDU refers to the comparison between more than high school education to less than high school education.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

Table 6

Four-step hierarchical multiple regressions to predict general home based involvement (FIQ-HB) as well as specific parent involvement in literacy (FELP Skill Building, Interactive Reading/Enjoyment & FELP Modeling/Monitoring).

	R ²	F	β	t	р
Dependent variable: FIQ I	Home-Based				
1. Parental education	0.13 (13%)	11.89	-6.89	-3.44	0.00^{**}
2. PSI-PCDI	0.22 (22%)	11.02	-0.28	-2.98	0.00^{**}
3. PSI-PD	0.23 (23%)	7.62	-0.10	-0.92	0.35
4. PSI-DC	0.24 (24%)	5.89	-0.12	-0.88	0.37
Dependent variable: FELP	Modeling/Monito	ring			
1. Parental education	0.01 (1%)	1.48	-2.40	-1.21	0.22
2. PSI-PCDI	0.07 (7%)	2.85	-0.20	-2.04	0.04^{*}
3. PSI-PD	0.08 (8%)	2.15	-0.09	-0.86	0.38
4. PSI-DC	0.08 (8%)	1.63	-0.05	-0.41	0.68
Dependent variable: FELP	Interactive Readin	ng/Enjoyme	ent		
1. Parental education	0.07 (7%)	6.41	-5.98	-2.53	0.01**
2. PSI-PCDI	0.11 (11%)	5.05	-0.21	-1.86	0.06
3. PSI-PD	0.12 (12%)	3.47	-0.08	-0.63	0.52
4. PSI-DC	0.12 (12%)	2.58	-0.03	-0.20	0.84
Dependent variable: FIQ S	Skill Building				
1. Parental education	0.03 (3%)	3.05	-4.81	-1.74	0.08
2. PSI-PCDI	0.08 (8%)	3.25	-0.25	-1.83	0.07
3. PSI-PD	0.08 (8%)	2.16	-0.03	-0.23	0.81
4. PSI-DC	0.08 (8%)	1.61	0.05	0.26	0.79

Note. N = 78 for Home-Based Involvement; Skill Building; Modeling/Monitoring and Interactive Reading/Enjoyment; β = unstandardized beta coefficients.

* Significant at the 0.05 level.

** Significant at the 0.01 level.

Refer to Table 6. None of the variables explained any significant variance in FELP Skill Building (refer to Table 6).

7. Discussion

7.1. Parent education and home-based involvement

Controlling for parental education, we explored the multidimensional relations between parenting stress and home-based family educational involvement with a low-income preschool sample. The primary focus of this study was to pinpoint the role of parenting stress and parent-child relationship-based stress, in particular, in the home-based educational involvement and literacy practices of low-income preschool families. Yet, we cannot attempt to study families and their educational practices with preschoolers outside of the contextual factors which shape these interactions, including parental education. Unlike much of the research literature, our preschool sample was comprised of entirely low-income families, which allowed this study to avoid potential confounds between family income and other demographic variables including education (Hill & Craft, 2003; Pungello, Iruka, Dotterer, Mills-Koonce, & Reznick, 2009). Since factors underlying childhood poverty may explain poverty's profound influence on child development, research has been called for to examine the underlying mechanisms by which poverty and more importantly its correlates, such as limited education and psychological stress, influence child outcomes (Cain & Combs-Orme, 2005; Chang et al., 2004; Perry & Fantuzzo, 2010). The findings of the current study contribute to our understanding of the distinct effects of parent education and parenting stress on parenting practices among low-income preschool families.

In our sample, variation in the precise role of educational status was observed across family educational practices. For example, parental education, explained a significant amount of the variance in general homebased educational involvement, as well as interactive reading in preschool families, but was not a significant predictor of literacy modeling and monitoring or skill building activities. This finding supports and extends research on low-income families which has found inconsistent relations between education and home-based involvement. Some studies have shown education to be a key factor in predicting levels of home-

based educational involvement among low-income families (Curenton & Justice, 2008; Manz, Fantuzzo, & Power, 2004; McGroder, 2000), while other studies have failed to demonstrate such relations (e.g. McWayne, Campos, & Owsianik, 2008). Resiliency research provides evidence that regardless of risk factors such as parental education, parents desire to make a positive change in their children's academic development (Dearing et al., 2004; Foster et al., 2005), which may partly explain the finding that parent educational level provided no explanatory power in understanding parental literacy modeling or monitoring activities or skill building in literacy. For example, Dearing et al. (2004) found no interaction effects between maternal education and family educational involvement that explained low-income children's kindergarten literacy skills. In fact, by fifth grade, more parental involvement was observed in the Dearing et al. (2004) study for children whose mothers were less educated. Cooper, Crosnoe, Suizzo, and Pituch (2010) also found that home-based parent involvement had a promotive effect, especially for children with less educated mothers, and concluded that parent practices may matter most for children whose mothers are least educated. In addition, an explanation for the finding that parental education predicted parental interactive reading behaviors, but not parent literacy modeling behaviors, may be that modeling requires limited parent-child interaction compared to other literacy activities such as joint book-reading and therefore, parents may find modeling and monitoring in reading more feasible and manageable than engaging in interactive reading sessions with their children. The construct of modeling/ monitoring in reading was captured by items such as setting aside quiet time for children to read, encouraging children to read by themselves, asking children to read aloud to parents, and taking children to the library. These behaviors may be considered "skill-independent" and not associated with parents' literacy/education levels, since they do not necessarily involve active use of specific literacy skills. Studies that emphasize the positive effect of parent engagement (Cooper et al., 2010; Dearing et al., 2004) along with our current findings demonstrate that families contribute meaningfully to their children's educational preparation, often regardless of demographic risk factors including parental education. Further, factors underlying income and education which promote or inhibit resilience must be better understood.

7.2. Parenting stress and parent educational practices

Previous research examining the effects of parenting stress has primarily concentrated on infants and toddlers, and not on children in the school readiness stage (Fox & Gelfald, 1994; Pianta & Egeland, 1990; Teti, O'Connell, & Reiner, 1996). Very few studies have studied parenting stress in relation to family educational involvement, and those that did were limited in scope, treating stress as a unidimensional construct and taking into consideration only a limited number of family behaviors (e.g., reading books, visits to the library) generally represented as one global construct (Karrass et al., 2003; Semke et al., 2010). In contrast, we know that stress is multifaceted (Abidin, 1995) and families do indeed utilize a wide range of literacy involvement practices at home that enhance child development (Burgess et al., 2002; De Jong & Leseman, 2001; Ginsburg-Block et al., 2010a). The current findings that emerged utilizing an ethnically diverse low-income sample with no-known psychological or behavioral difficulties also extend previous research conducted on populations with identified psycho-socialbehavioral problems including children with disruptive behavior problems and maltreated children (Curenton, McWey, & Bolen, 2009; Semke et al., 2010).

Confirming our predictions, parenting stress reported by our sample of low-income preschool families was significantly related to homebased educational practices. Specifically, overall parenting stress (a composite of stress derived from parental distress, challenging child behavior, and the parent-child relationship) and parent-child relationship stress alone significantly and negatively influenced general home-based educational involvement, explaining 11% and 9% of the unique variance in parent behavior, respectively.

A closer examination of sub-types of parenting stress revealed that as we had predicted, parents' perceived parent-child relationship stress appeared as the most influential type of parenting stress in explaining parental general home-based involvement practices which included both direct parent-child interaction such as working on academic skills together and more distal parent activities such as keeping a regular morning and bedtime schedule. Parents who expressed greater concerns about their parenting and level of closeness with their children also reported fewer indirect and direct educational interactions with their children at home. These findings linking parenting stress and specific relationship-based stress to the frequency of high quality home-based educational activities are in line with the research literature. Consistent with the current results, the self-efficacy and parental stress literature link self-efficacy to increases in parent-child cognitively stimulating activities (Grolnick et al., 1997) and interpersonal stress to reductions in the quality of parent-child interactions (Pianta & Egeland, 1990). Our finding that low-income families were somewhat susceptible to parent-child relationship based stress is also consistent with previous research findings in which overall high, but not clinical levels of dysfunctional interactions with children were reported in low-income Head Start households (Curenton et al., 2009).

The differential relations we explore in the current study between parent education, parenting stress, and several family literacy behaviors extend previous research findings which showed that parenting stress leads to diminished parent-to-child reading in general (Karrass et al., 2003). Outside of the influence of parental education, total parenting stress significantly predicted both interactive reading and literacy modeling and monitoring behaviors reported by families, but not skill building activities which were reported independent of education and stress levels. Looking further into the subtypes of parenting stress, our hypothesis was partially confirmed. As predicted, parent-child relationship stress, as opposed to other forms of parenting stress was the most significant predictor of parental modeling and monitoring of literacy behaviors, which included activities involving adult-child interaction (e.g. I encourage my child to read) and non-interactive activities (e.g. I read to myself). Adult-child relationship stress also explained the most variance in interactive reading as compared to stress related to parental distress or challenging child behavior, but this explained variance was not significant. Finally, skill building activities, i.e. adult-child activities focusing on early literacy and language skills, were not predicted by adult-child relationship stress although they most certainly require adult-child interaction. These mixed findings regarding the influence of parenting stress and parent-child relationship stress in particular are consistent with, yet extend those of Cooper et al. (2010) who found consistent levels of home-based educational activities across families from different income levels, demonstrating that some activities are robust to risk factors such as poverty and maternal educational level.

7.3. Limitations, implications and more directions for future research

7.3.1. Limitations

Our ability to generalize the current findings is limited by the methodology utilized in the current study including the sampling method, subject pool and data collection procedures. Given the unique characteristics of our sample of preschool families, the findings of this study cannot be extended beyond this low-income, primarily ethnic minority sample to the general population of preschool families without replication. In addition, although the parent measures used in this study demonstrated psychometric integrity for our sample, the current study relied on questionnaire data. Additional data sources, such as home or center-based observations, interviews or teacher reports would be useful to triangulate the data obtained from families about their practices. Even with reliance on questionnaire data, parents reported a range of practices in terms of quantity and quality of home based educational involvement, as well as stress levels, much of which was consistent with previous research, thus lending credibility to the validity of the current findings. In addition, use of questionnaires might have reduced potential social-desirability issues that face-to-face interviews would perhaps more easily reveal.

Replication of this study with more varied data sources and a larger sample would allow for greater representation of the diverse families included in the subject pool, perhaps yielding more conclusive findings. For example, in the current study mothers, fathers, and other caregivers reported similar educational interactions with their preschoolers. Expanding the currently limited sample of fathers and other caregivers would allow for closer examination of their distinct contributions and how they may be uniquely influenced by risk factors including education and multiple types of stress, contributing to the literature on father involvement (e.g. Downer & Mendez, 2005). Furthermore, future research with larger samples of diverse subgroups will allow examination of the distinct role of parenting stress in relation to parent literacy involvement across these subgroups of low-income families. For example, a larger sample of Latino families with varied levels of acculturation/ English language mastery would allow for more thorough study of this growing ethnic group, including an analysis of within-group variation in the relations between parenting stress and family educational practices. Finally, given that our study was somewhat underpowered to detect small effects, replication may reveal additional connections among parenting stress and home-based family literacy practices.

Data analytic methodologies such as Structural Equation Modeling (SEM) (Wiesner & Schanding, 2013; Xu & Gao, 2014), and Hierarchical Linear Modeling (HLM) (Crowe, Connor, & Petscher, 2009; Hofmann, 1997) may also be attempted in future research with larger samples to accommodate the nested nature of the data (e.g., data nested within students, and students nested within the classrooms). The sample used in the current study did not allow for the use of SEM or HLM for several reasons, including but not limited to the restricted overall sample size (Xu & Gao, 2014). In addition, due to the sampling method and untracked number of classrooms, which HLM would need for the computation of intra-class correlations (Crowe et al., 2009), we were unable to calculate classroom-level variances. While classroom effects were not tested, means for independent and dependent variables of interest were similar across WHS and ELC centers, which indicates that study setting effects were not present.

Given the characteristics of our sample, we controlled for parental education in all the analyses conducted; however, there are other variables that appear influential in predicting parental responsiveness to children. These variables include cultural differences in parenting style such as warmth, sensitivity, intrusiveness, monitoring, communication, cognitive stimulation, degree of aggravation and nurturance, and authoritative and harsh parenting (Iruka, 2009; Ispa et al., 2004; McGroder, 2000; Murry, Brody, Simons, Cutrona & Gibbons, 2008). Recent research has linked indicators of parent-child relationship quality to important child outcomes extending into adulthood (Kim & Kochanska, 2015; Martoccio, Brophy-Herb, & Onaga, 2014; Naumova et al., 2016). Parental positive engagement has also been shown to mediate the effects of parenting stress on the emotional and behavioral regulation of young children (Zajicek-Farber, Mayer, Daugherty, & Rodkey, 2014). Such differences in parental responsiveness (i.e., degree of parental positive engagement, quality of parentchild relationship) may be related to potential site differences in parent involvement programming, as well as the number of people living in the home (Evans, Maxwell, & Hart, 1999; Le & Lambert, 2008), all of which should be measured in future studies of parenting stress. It was beyond the scope of the current study to include child outcomes as a dependent variable; however, understanding how demographic and stress variables relate to both home based family involvement behaviors and child outcomes within the same sample of families would help to further validate the significance of the family practices included in the current study.

While much of the literature addressing the influence of family psychological risk factors on child outcomes has examined clinical levels of maternal depression, the current study was strategically limited to parental stress which is more prevalent in the general population. A direction for future research may be the concurrent study of demographic factors, parental depression, parenting stress and parent educational involvement, which may further reveal resiliency patterns within families. As cited previously, Fox and Gelfald (1994) found that mothers with both maternal stress and depression rated themselves as less effective mothers and engaged in fewer positive mother-child interactions during free play with their toddlers in comparison to non-depressed mothers. In contrast, other studies which measured depression or environmental adversity revealed more positive parental beliefs and behaviors in the presence of such stressors (Drummond & Stipek, 2004; Mendez, Carpenter, LaForett, & Cohen, 2009). For example, Mendez et al. (2009) found that low-income Head Start parents who reported moderate levels of depressive symptoms on a general depression scale sustained their involvement at home in activities such as parent-child reading and global home involvement. Thus, future studies would benefit from the concurrent examination of both stress and depression, two related yet distinct constructs, in order to understand the direct and indirect influences of these factors on parental engagement at home and the quality and frequency of parent-child literacy interactions.

7.3.2. Implications and directions for future research

The current findings along with the existing research literature suggest that parenting stress levels may play a significant role in predicting family educational practices with preschool children, including practices specific to early literacy development (Farver et al., 2006; Karrass et al., 2003), while other practices may be more resistant to stress among certain low-income families (Cooper et al., 2010). Specifically, in our sample of families we found that beyond the influence of parental education, parent perceptions of total parenting stress, as well as parent-child relationship-based stress, negatively predicted parents' general home-based educational involvement behaviors and parental modeling of literacy. Yet, only total parenting stress significantly predicted interactive reading, while neither total parenting stress nor parent-child relationship based stress predicted adult-child skill based activities, demonstrating that these activities were resistant to parenting stress. While significant relations between stress and parent behaviors have been reported in the literature as well as in the current study, not all parent behaviors were affected by stress, which is promising.

Bennett et al. (2002), defined family resiliency as an issue beyond income, that refers to how the family functions, how it is organized, how well it manages its resources, and how it copes with the internal and external stressors that families face. From a resilient family perspective, parenting stress may be considered a specific risk factor resilient families are faced with, the severity of which depends on parental perceptions of their parenting capability and the availability of coping mechanisms parents utilize while parenting. Unlike other risk factors that are mostly stable and difficult to change in the short term such as income or education, parenting stress is a mutable factor (Abidin, 1995; Bennett et al., 2002; Hoover-Dempsey & Sandler, 1997). Positive parent-child interactions marked by warmth and encouragement positively influence child development (Hoover-Dempsey & Sandler, 1997; Merlo, Bowman, & Barnett, 2007). Thus, the early identification and prevention of parenting stress, including parent-child relationship stress which has been shown to inhibit these positive interactions may help to facilitate healthy parent-child interactions and ultimately children's school readiness (Begle, Lopez, Cappa, Dumas, & De Arellano, 2012; Lopez & Cole, 1999). Further, based on the inverse relations found in the research literature between parental self-efficacy and parenting stress (Raikes & Thompson, 2005), programs that provide families with skills essential to meaningful family educational practices may also be a worthwhile focus. According to self-efficacy theory, increasing families' skills may increase their parenting self-efficacy (Bandura, 1982), which in turn has been associated with higher frequency and quality adult-child interactions (Grolnick et al., 1997). Research shows that family literacy practices are indeed changeable and may be enhanced through participation in intervention programs (Blom-Hoffman, O'Neil-Pirozzi, Volpe, Cutting, & Bissinger, 2007), with evidence of effectiveness for children from diverse backgrounds (Ginsburg-Block et al., 2010b; Lewis & Ginsburg-Block, 2014). Thus, programs aimed at both addressing barriers to family educational practices, such as parenting stress, as well as empowering families with useful practices for engaging their children in a range of literacy activities may be a viable focus for future research (Jacobson Chernoff, Flanagan, McPhee, & Park, 2007).

8. Conclusion

The current study extends the research on family educational practices with preschool children by exploring a variety of ways in which families contribute to learning in the home environment with a specific focus on early literacy practices and associated risk factors. Overall, the current findings indicate that secondary to the role of demographic variables (namely parent education), even prior to school entry, parentchild relationship stress plays a significant role in understanding home-based educational involvement and family early literacy practices. What is hopeful is that parent-child relationship stress may be amenable to prevention and intervention efforts (Webster-Stratton & Reid, 2010).

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