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Behavior Concerns Among Low-Income, Ethnically and Linguistically Diverse Children in Child Care: Importance for School Readiness and Kindergarten Achievement

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**ABSTRACT**

*Research Findings*: Recent research and teacher reports have highlighted the importance of early behavior skills for children’s school readiness and academic success in elementary school. Significant gaps in school readiness and achievement exist between children in poverty and those more affluent. Low-income children are also more likely to exhibit behavior concerns than their more financially advantaged peers. The current study examined the importance of behavior skills at age 4 for school readiness and academic achievement in kindergarten among an ethnically diverse sample of 1,618 low-income children (63% Latino, 37% Black) in an urban setting. Children’s early behavior concerns at age 4 were significantly associated with children’s school readiness scores and end-of-year kindergarten grades above and beyond the contributions of family and child demographics and children’s early cognitive and language skills. In addition, behavior problems were more strongly related to school readiness and kindergarten performance within English-dominant Latino children as opposed to Spanish-dominant Latino children. *Practice or Policy*: The findings from the current study provide support for targeting behavior skills, and not just preliteracy and/or number skills, prior to school entry as a strategy to increase the likelihood of low-income diverse children’s school readiness and school success. Behavior interventions are discussed.

Researchers and teachers agree on the importance of children’s behavioral skills for school readiness and classroom engagement in elementary school (Bulotsky-Shearer, Fantuzzo, & McDermott, 2008; Lewit & Baker, 1995; Rimm-Kaufman, Pianta, & Cox, 2000; Webster-Stratton & Reid, 2010; Welsh, Nix, Blair, Berman, & Nelson, 2010; Wilson & Ogden-Smith, 1999). The role of early behavior skills for early academics is an area of particular interest concerning children living in poverty. Children in poverty exhibit higher rates of behavior problems than children with greater economic resources and are well documented to be at risk for poor school outcomes, partly due to lower cognitive and language skills on entering school (Allhusen, Belsky, & Booth-LaForce, 2005; Anthony, Anthony, Morrel, & Acosta, 2005; Brooks-Gunn, 2003; Duncan, Brooks-Gunn, & Klebanov, 1994; Leventhal, Fauth, & Brooks-Gunn, 2005; McLoyd, 1990; Qi & Kaiser, 2004; Zhao & Brooks-Gunn, 2002). The present study examines longitudinal links between behavior problems at age 4 and early school performance in kindergarten among a large sample of low-income diverse children.

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Behavior Skills, School Readiness, and Achievement

Early academic success is critical for all children because of its association with long-term outcomes such as high school graduation, lower criminal involvement, lower likelihood of teen pregnancy, and higher earnings (F. A. Campbell, Ramey, Pungello, Sparling, & Miller-Johnson, 2002; Schweinhart & Weikart, 1998). Teachers and researchers have identified children’s behavior skills as a critical component of children’s school readiness and early success. It is agreed by many teachers that children need to have the behavior skills to, for example, stay seated, not disrupt class, not hit, take turns, and share with others to be ready for school (Lewit & Baker, 1995; Wilson & Ogden-Smith, 1999). In a survey of approximately 2,000 early educators, kindergarten teachers rated children’s behavior skills just as important for school readiness as more traditional preacademic skills such as early literacy and counting (Lewit & Baker, 1995). Behavior skills are needed on school entry in order for optimal instruction and learning to take place in classrooms (Alexander & Entwisle, 1988; Lewit & Baker, 1995; Rimm-Kaufman et al., 2000; Wilson & Ogden-Smith, 1999). Preschool teachers in particular report that disruptive child behavior hinders that child’s execution of classroom activities as well as learning for all children within the classroom (Wilson & Ogden-Smith, 1999).

Researchers are also advocating for the inclusion of behavior skills in school readiness assessments (Blair, 2002; Snow, 2006), as research findings support practitioners’ experience of the importance of behavior skills for children to be prepared for school. Specifically, behavior problems have been found to interfere with children’s learning activities as well as their engagement with teachers and peers in class (Bulotsky-Shearer, Dominguez, Bell, Rouse, & Fantuzzo, 2010; Welsh et al., 2010). In addition, disruptive behavior among kindergartners has been associated with being transferred into lower age-group classrooms throughout the elementary school years (Mässe & Tremblay, 1999). Children identified as having severe or even mild behavior problems in kindergarten exhibit lower reading achievement in kindergarten than peers who exhibit no behavior problems (Vaughn, Hogan, Lancelotta, Shapiro, & Walker, 1992). Little work, however, has been done to examine links between early behavior problems and later academic outcomes in elementary school and particularly among ethnically diverse samples of low-income children.

It is important when considering links between behavior problems and later academic outcomes to consider children’s cognitive and language skills, as there are likely multiple, bidirectional, direct, and indirect links involved. For example, children’s early behavior problems may relate to their school outcomes by interfering with the development of the cognitive and language skills that are needed to perform well in school. Teachers report that behavior problems impact school outcomes by taking time and focus away from learning and instruction and requiring that time be spent on discipline and behavior resolution (Wilson & Ogden-Smith, 1999). Indeed, negative associations between behavior problems and cognition and language have been found as early as preschool (Denham & Burton, 2003; Owens, Shaw, Giovannelli, Garcia, & Yaggi, 1999). Although there is evidence that poor cognitive abilities contribute to behavior problems (Oliver, Barker, Mandy, Skuse, & Maughan, 2011), other work supports the reverse—that behavior problems can influence cognitive functioning. For example, when a child becomes angry and unable to regulate aggressive responses, his or her cognitive processing of incoming social information may be being distorted (Denham et al., 2002; Lemerise & Arsenio, 2000). The unregulated anger may influence how the exchange is encoded and interpreted (Lemerise & Arsenio, 2000). Negative associations have also been reported between behavior problems and early language skills. Although early in language development, infant/toddler behavior can affect language development by reducing opportunities for language learning from compromised social interactions (Spiker, Boyce, & Boyce, 2002); generally speaking, once normal language development has progressed, associations between language skills and behavior concerns support more of a unidirectional path, with lower language skills putting children at risk for later behavior concerns (Petersen et al., 2013). Interventions focusing on helping children enhance their language skills have also been shown to help in decreasing children’s problem behavior (Benner, Ralston, & Feuerborn, 2012). For these reasons, we examine here links between early behavior problems and later academic performance both directly and while controlling for children’s early language and cognitive skills.
Behavior Problems and Poverty

Children living in poverty exhibit greater behavior problems than other child populations (Allhusen et al., 2005; Anthony et al., 2005; Qi & Kaiser, 2004). Researchers working with Head Start programs have reported low-income children to be at above-average risk for developing behavior problems (McLoyd, 1990). Poverty is believed to be a risk factor for young children for developing behavior problems through the negative impacts poverty can have on parental stress and anxiety and/or punitive and inconsistent parenting (S. Campbell, Pierce, Moore, Marakovitz, & Newby, 1996; Pettit & Arsiwalla, 2008). Roughly half of African American and Hispanic children and 15% of White children live below the federal poverty level, with estimated increases by one third by 2020 (Bennett & Li, 1995). In addition, a large majority (approximately 70%) of children who are English language learners (ELLs) are categorized as low income (Capps et al., 2005; Matthews & Ewen, 2006). The number of low-income children is of great concern because of overwhelming research findings that poverty hinders children’s early development (Brooks-Gunn, 2003; Currie & Thomas, 1995; Duncan et al., 1994; McLeod & Shanahan, 1993; McLoyd, 1990). Low-income children on average earn lower school grades than their peers from higher income families, with educational gaps between the two groups widening as children progress through school (Leventhal et al., 2005; Zhao & Brooks-Gunn, 2002). Thus, early behavior problems among children in poverty are important to study, as they may contribute to the income-based achievement gap (Mâsse & Tremblay, 1999).

Behavior Problems and Gender

Gender is another factor associated with early behavior problems. Specifically, being male is a well-established risk factor for externalizing behavior problems, with boys exhibiting more problems early on than girls (Card, Stucky, Sawalani, & Little, 2008; Denham & Burton, 2003). Differences in boys’ and girls’ levels of behavior problems have been found as early as age 2, and gender differences grow during the preschool years, with boys demonstrating more behavior problems (Denham & Burton, 2003; Lumley, McNeil, & Herschell, 2002). These higher levels of externalizing behavior problems found among boys may put them at risk for stronger potential negative links between poor behavioral development and school outcomes. Differential reactions by kindergarten teachers to the behavior of boys versus girls (Graham McClowry et al., 2013) can also lead to differential consequences for student learning. Thus, it is important to examine, as we do in the current study, not only gender differences in behavior concerns but also whether links between child behavior problems and later academic outcomes are similar for boys and girls.

Behavior Problems and English-Language Learners

A final relevant factor to consider when examining behavioral issues during the transition to school among low-income children is child language status. Almost 1 in 4 children in the United States speaks a language other than English in the home, and Latino/Hispanic students make up the largest proportion of ELLs in the United States (Hernandez, Denton, & Macartney, 2007). Indeed, young children in Latino immigrant families are the fastest growing population demographic (Ennis, Rios-Vargas, Albert, & U.S. Census Bureau, 2010), yet they are critically understudied in early childhood research (Garcia & Jensen, 2009). Furthermore, a disproportionately large percentage (37%) of Latino children live in poverty (Barrueco, Lopez, & Miles, 2007; Duncan & Magnuson, 2002; DeNavas-Walt, Proctor, & U.S. Census Bureau, 2014), and this, combined with generally low parental education and limited English proficiency, all contributes to a sizable school readiness gap between Latino and White children (Galindo & Fuller, 2010; Reardon & Galindo, 2009).

Despite these risk factors, however, young ELL children from Latino families (especially immigrant families) tend to excel in the area of behavior and socioemotional skills, domains that can serve as a leverage point for fostering growth in academic achievement (De Feyter & Winsler, 2009;
Galindo & Fuller, 2010; Han, 2010; Han & Huang, 2010; Luchtel, Hughes, Luze, Bruna, & Peterson, 2010). Indeed, ELL and bilingual students show a number of executive functioning and behavioral/inhibitory control advantages compared to monolingual children (Barac, Bialystok, Castro, & Sanchez, 2014; Halle et al., 2014; Winsler, Kim, & Richard, 2014), which raises the possibility that behavior skills may relate to achievement in different ways among ELL students than for monolingual students. It is interesting that the longer children and families live in the United States and assimilate into the dominant English-speaking culture, the poorer immigrant children’s academic and behavioral outcomes (De Feyter & Winsler, 2009; Garcia Coll & Marks, 2012). A recent examination using the Early Childhood Longitudinal Study–Birth data set (Winsler, Burchinal, et al., 2014) showed that some positive social and behavioral outcomes for immigrant families compared to native-born families were moderated by language use in the home, with positive outcomes being more likely when the family spoke their native language (rather than English) in the home. Thus, the present study examines Latino children’s predominant language as a potential main effect and moderator on behavior problems and links to kindergarten performance.

The Current Investigation

The aim of the current article was to examine associations between children’s early behavior problems and school readiness and early academic success among an ethnically and linguistically diverse sample of low-income children in an urban setting. We examined these associations while controlling for family and child demographics as well as children’s early cognitive and language skills. We first explored the extent to which behavior problems at age 4, as rated by child care staff the year prior to entering kindergarten, were related to both the school readiness assessment given by the school system to entering kindergartners and the end-of-the-year kindergarten grades students received from their teachers. We also explored whether relations between children’s early behavior concerns and kindergarten outcomes were moderated by child gender and/or dominant language (English/Spanish for Latino students).

School readiness as a construct includes a comprehensive set of skills that predict children’s early performance in school, for example, early cognitive and language skills, social-emotional and behavioral strengths, motor development, as well as physical well-being (Blair, 2002; Lewit & Baker, 1995; Meisels, 1999; National Education Goals Panel, 1995; Snow, 2006). In the current investigation, we used the authentic and ecologically valid school readiness measure actually used by the school system to make intervention and promotion decisions, which captured many (but not all) of these skills (e.g., counting, verbal reasoning, expression, auditory skills, visual and gross motor skills). It was hypothesized that behavior problems during the prekindergarten year would account for unique variance in children’s kindergarten entry school readiness scores and end-of-year grades even after we controlled for demographic factors and early cognitive and language skills, with lower levels of behavior problems associated with higher school readiness and kindergarten performance.

Method

Participants

The current investigation drew on data from a larger university–community program evaluation project, the Miami-Dade School Readiness Project (De Feyter & Winsler, 2009; Winsler, Kim, & Richard, 2014; Winsler et al., 2008), in which low-income, urban children who received subsidies to attend child care were assessed and tracked into elementary school. Longitudinal linking and follow-up data on children’s performance in kindergarten were made available with the assistance of the public school system. Children included in the current investigation were 2,119 four-year-olds who received state subsidies to attend one of 437 center-based child care programs in the community and who had teacher-rated behavior concern data at age 4. Approximately 81% (1,710) of the participants
subsequently enrolled in and completed kindergarten the following year in one of the county’s public elementary schools, and of these 1,618 had complete school readiness assessments at the beginning of kindergarten. The children attended 219 different elementary schools, with a range of 1 to 35 children attending the same school during the kindergarten year (the average was around 11 at the same school, but only one or two in the same classroom because of multiple kindergarten classrooms per school). Children who never enrolled in or did not complete kindergarten were not significantly different from children who did on any demographic variables (e.g., child gender, family income, parent level of education, cognitive or language skills at age 4).

Participants in the current study were thus 1,618 (54% male) predominantly Latino (63%) and Black (37%) children (with the small number of children in the White/Asian/other category excluded). Children’s mean age at the start of the prekindergarten year was 55.61 months (SD = 3.87). All children were from low-income families (M = $16,769.59, SD = $7,761.94), as participation criteria involved receiving child care subsidies. Children were typically from single-parent homes (93% single, separated, divorced, or widowed), with the vast majority (97%) of custodial parents being female. Parent self-reported race was similar to that of the children (60% Latino, 38% Black, 2% Caucasian/other), and 48% of parents denoted Spanish as their language of highest proficiency. In addition, 75% of parents had a high school diploma, with 21% yet to complete high school and 4% with an education level beyond high school.

**Procedure**

Data collection for this study took place during the child care year of 2004–2005 and the 2005–2006 year when children were in kindergarten in the public schools. Parents consented for participation at age 4 to take part in a county-wide evaluation of child school readiness and early childhood programs for children receiving subsidies to attend child care. Children were assessed in the spring (April/May) of their child care year on behavioral functioning and cognitive and language skills. Child care providers reported on children’s behavior using the Devereux Early Childhood Assessment (DECA; LeBuffe & Naglieri, 1999). Cognitive and language skills were assessed directly in the child care centers by well-trained outside assessors utilizing subscales of the Learning Accomplishment Profile–Diagnostic (LAP-D; Nehring, Nehring, Bruni, & Randolph, 1992).

School readiness scores and kindergarten grades for children were obtained from the public school system. With the assistance of the school system, children with prekindergarten data were identified and successfully matched to deidentified unique student identifiers. As part of standard school system policy, children were assessed in the fall of their kindergarten year for school readiness by their teachers using the Early Screening Inventory–Kindergarten (ESI-K; Meisels, Wiske, & Henderson, 2000). Approximately 9 months later, children received end-of-year grades from their teachers.

**Measures**

**Demographics**

Information on child gender and ethnicity and parent gender, ethnicity, family income-to-needs ratio, years of education, and marital status was obtained from participating county child care agencies on registration for receiving child care subsidies. Parent education in years was also used as a categorical variable because 75% of parents had exactly 12 years of education (a high school degree), 21% had less than 12 years of education, and the remaining 4% of parents had more than 12 years of schooling. A

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1We do not have information on classrooms (where nesting is likely of more concern) but do have information on schools. Given the fact that intraclass correlations for the amount of variance in the outcomes due to the school attended were low (.11 for the Early Screening Inventory–Kindergarten, .15 for kindergarten grades); the large number of schools involved; the relatively small number of children on average at the same school, with likely only one or two children in the same classroom; and the fact that previous similar analyses showed the same results using multilevel models, hierarchical linear modeling analyses were deemed not necessary.
dichotomous variable was used in the analyses indicating whether parents completed high school (had 12 years of education or more). Children’s dominant language (English or Spanish) at age 4 was determined as the language in which the LAP-D was administered (the child’s strongest language for completing the LAP-D assessment; see “Cognitive and Language Skills”).

Child Behavior
The behavior concerns scale from the DECA (LeBuffe & Naglieri, 1999) was used to measure children’s behavioral strengths and weaknesses at age 4. Teachers used a 5-point Likert scale to rate how often, within the past 4 weeks, each child had exhibited a specified behavior, with 0 = never, 1 = rarely, 2 = occasionally, 3 = frequently, and 4 = very frequently. Items from the scale include, for example, “fight with other children,” “destroy or damage property,” or “get easily distracted.” Total scores range from 0 to 36, with higher numbers indicating greater numbers and frequency of behavior problems. National percentile scores were used. National percentile scores have the same advantages as standard scores in that they normalize the child’s score relative to the instrument’s standardization sample (age, gender, etc.) and they are similarly normally distributed, but they have the extra advantage of assisting in ease of interpretation for a variety of audiences, re-expressing the child’s behavior concerns in terms of the percentage of the nation’s 4-year-olds who show better behavior than the target child.

Reliability of the DECA was established via examination of internal and test–retest reliabilities, which were .80 and .68, respectively, for the behavior concerns subscale for teachers (LeBuffe & Naglieri, 1999). Internal consistency reliability for both the English and Spanish forms of the DECA teacher reports within this larger community sample was good: .81 for teacher reports of behavior concerns in English and .80 for the Spanish form (Crane, Mincic, & Winsler, 2011). For the current study, 29% completed the DECA in Spanish.

Cognitive and Language Skills
The LAP-D (Nehring et al., 1992) is a standardized assessment of developmental skills for children from 30 to 72 months of age consisting of four domains that each contain two subscales: cognitive (matching and counting), language (comprehension and naming), fine motor (writing and manipulation), and gross motor (object and body); however, only the language and cognitive total scores were used in this study. Trained bilingual assessors administered the measure in English or Spanish depending on the dominant language of the child as determined by teacher report and the assessor after a brief interaction between the assessor and the child in both languages. The assessor and child worked individually through progressively harder tasks for each subscale, which were then combined across the two corresponding subscales to create an overall domain score. As with behavior problems, described in “Child Behavior,” national percentile scores were used, using the standardization procedure provided by the measure developers and their norming sample to facilitate interpretation of each child’s skill level compared to other children the same age.

The LAP-D has been reported to have high internal consistency with past samples, ranging from \( \alpha = .76 \) to .92 using split-half analyses. Content validity for the LAP-D was established by a panel of early childhood experts who reviewed each item of each subscale for content and representation of the developmental domains (Nehring et al., 1992). Internal consistency reliability of the LAP-D within this community as established in prior work was high, with .93 for the cognitive scale and .95 for language (Winsler et al., 2008).

School Readiness
The ESI-K (Meisels et al., 2000) was the school readiness screener utilized by this school district at the time to assess entering schoolchildren on three domains of school readiness: language/cognition, visual motor, and gross motor skills. Children are assessed on language and cognition skills through a short battery of tasks that involve counting, verbal reasoning and expression, auditory comprehension skills, and sequential challenges. To assess visual and gross motor skills, copying and drawing,
building objects with blocks, and balancing are used. Overall scores range from 0 to 28, with larger scores indicating higher levels of school readiness. Based on the overall score, one of three school readiness categories can be assigned to a child: not ready/refer, getting there/rescreen, or ready. For the current investigation, children’s continuous ESI-K score was used for the analyses to preserve variance, but we also report the percentages of children in the various categories for interpretation. The original norming and reliability sample for the ESI-K was 5,034 children (50% male) from 60 classrooms across 10 states, the majority of whom were enrolled in Head Start programs. High interrater and test–retest reliability and validity were established, with the measure standardized and validated again in 1997 with an additional approximately 6,000 children enrolled in Head Start programs (Meisels, Marsden, & Wiske, 1997).

**Kindergarten Grades**

Children in the public school system at the time received grades in nine subject areas for the kindergarten year: language development, reading, handwriting, mathematics, science, social studies, art, music, and physical education. The grades used by teachers were “excellent,” “satisfactory,” and “not satisfactory” and were assigned at the end of the kindergarten year. Children’s grades in each subject area were converted to numerical values (excellent = 3, satisfactory = 2, and not satisfactory = 1) and then averaged together across subjects to create an overall average and continuously distributed and numeric kindergarten grade score. Although conceptually speaking children’s grades across the nine different subjects areas are not necessarily expected to converge to form a single scale/construct (i.e., children can get good grades in music but bad grades in language arts/reading), intercorrelations between subject areas were high (average \( r = .51 \), min = .30 [physical education and handwriting], max = .81 [science and social studies]) and Cronbach’s alpha was .913 for the aggregate, so we felt justified in combining the grades into one overall kindergarten performance indicator.

**Results**

**Descriptive Analyses**

**Child Skills and Performance Scores**

Table 1 lists means for early child skills (DECA and LAP-D) and child performance (ESI-K scores and kindergarten grades). Overall, children’s DECA behavior concerns as rated by teachers at age 4 were on par with national averages, around the 54th percentile. Children’s LAP-D cognitive and language scores, however, were at the 45th and 40th percentile, indicating that children in the study were below national averages in cognitive and language skills.

Regarding ESI-K scores, children on average scored 22.60 out of 28 points on the assessment; in terms of ESI-K categories, the majority of the children (86%) were in the ready category, with 11% in the getting there/rescreen category and 3% in the not ready/refer category. Children’s average end-of-the-year kindergarten grade was 2.27 out of a total 3.00 points possible. If we consider children’s kindergarten grades as a percentage of total points possible, we find that the participants earned on average 75% of the total points possible.

**Table 1. Descriptive Statistics for Child Skill Levels and Performance Scores, Overall and by Gender.**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Overall n</th>
<th>M (SD)</th>
<th>Boys n</th>
<th>M (SD)</th>
<th>Girls n</th>
<th>M (SD)</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavior concerns (percentile)</td>
<td>1,262</td>
<td>53.86 (29.10)</td>
<td>673</td>
<td>58.13 (28.61)</td>
<td>589</td>
<td>48.99 (28.92)</td>
<td>5.64**</td>
</tr>
<tr>
<td>Cognitive skills (percentile)</td>
<td>1,309</td>
<td>45.42 (26.46)</td>
<td>699</td>
<td>43.45 (26.34)</td>
<td>610</td>
<td>47.68 (26.42)</td>
<td>−2.89**</td>
</tr>
<tr>
<td>Language skills (percentile)</td>
<td>1,310</td>
<td>39.01 (25.78)</td>
<td>697</td>
<td>37.87 (25.75)</td>
<td>613</td>
<td>40.30 (25.78)</td>
<td>−1.70</td>
</tr>
<tr>
<td>ESI-K score</td>
<td>1,618</td>
<td>22.60 (3.63)</td>
<td>871</td>
<td>22.24 (3.77)</td>
<td>747</td>
<td>23.01 (3.41)</td>
<td>−4.35**</td>
</tr>
<tr>
<td>Average kindergarten grades</td>
<td>1,452</td>
<td>2.27 (0.40)</td>
<td>782</td>
<td>2.21 (0.39)</td>
<td>670</td>
<td>2.33 (0.40)</td>
<td>−6.04**</td>
</tr>
</tbody>
</table>

*Note. ESI-K = Early Screening Inventory–Kindergarten.*

**Child gender mean differences significant at \( p < .01.\)
All child skills and outcomes, except for early language skills, were significantly different by gender (see Table 1). Boys had more frequent early behavior concerns and lower early cognitive skills as well as lower school readiness scores and kindergarten end-of-year grades than girls, supporting the importance of including gender in all analyses. The largest mean difference between girls and boys was seen in their behavior concerns scores.

**Descriptive Correlations**

Table 2 lists correlations between all continuous variables. Family income-to-needs ratio and parental education were correlated but with only a small effect size of $r = .10$. Family income-to-needs ratio was negatively related to children’s behavior concerns scores and positively related to LAP-D cognitive scores. Family income-to-needs ratio was positively correlated with kindergarten grades however was not significantly related to ESI-K school readiness scores.

Parent education was not significantly related to children’s behavior concerns. Parent education was positively associated with children’s cognitive and language scores as well as their school readiness scores but with small effect sizes and was not significantly related to kindergarten grades. In contrast, children’s behavior concerns were correlated with kindergarten grades as well as more strongly related to children’s cognitive and language skills and ESI-K school readiness scores even though parental education is well documented to be a strong predictor of children’s development and school success (McLoyd, 2000). As expected, the remaining factors were positively intercorrelated. Children’s cognitive and language scores were correlated at $r = .62$. LAP-D cognitive and language skill scores were each positively associated with children’s school readiness and kindergarten grades. ESI-K scores and kindergarten grades were also positively correlated.

**Main Analyses**

To address our hypotheses, we conducted a series of hierarchical regression analyses to investigate the extent to which children’s behavior problems at age 4, both alone and above and beyond early cognitive and language skills, help account for variance in children’s school readiness and kindergarten grades. All hierarchical regression models were run with family income-to-needs ratio and parent education as family demographic controls because of significant links between these factors and children’s development and early academic achievement in previous research (McLoyd, 2000). The dichotomous categorical variable for parent education was used, with parent education less than a high school education coded as 0 as the reference group and education equal to at least a high school degree coded as 1. In addition, child gender and child ethnicity were used as child demographic controls. Boys were used as the reference group and coded as 0, and girls were coded as 1. Ethnic group was coded as Latino = 0 and Black = 1.

Following these analyses, a series of similar hierarchical regression analyses were conducted to examine the same research question but with the addition of child dominant language (selecting just Latino children). Child dominant language was used as an interaction term with children’s behavior concerns to examine whether relations between children’s behavior concerns and school outcomes

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Income-to-needs ratio</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>2. Parent years of education</td>
<td>$.10*$</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>3. Behavior concerns</td>
<td>$-.07*$</td>
<td>$-.02$</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>4. Cognitive skills</td>
<td>$.08*$</td>
<td>$.07*$</td>
<td>$-18**$</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>5. Language skills</td>
<td>$.02</td>
<td>$.09**</td>
<td>$-16**$</td>
<td>$.62**</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>6. School readiness</td>
<td>$.04</td>
<td>$.07*</td>
<td>$-15**$</td>
<td>$.34**</td>
<td>$.30**</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>7. Kindergarten grades</td>
<td>$.11**</td>
<td>$.01</td>
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<td>$.30**</td>
<td>$.20**</td>
<td>$.40**</td>
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*p < .05. **p < .01.
varied by child’s dominant language. English as the dominant language was coded as 0, with Spanish receiving a 1. Black children were selected out of these analyses because of the small number of Black children with Spanish as their dominant language. Child ethnicity was not included in the models with child primary language included.

**Behavior Concerns and School Readiness**

First the extent to which children’s behavior concerns scores at the end of their prekindergarten year helped explain variance in children’s school readiness scores in kindergarten was examined. In the following order, family demographic control variables, child demographic control variables, DECA behavior concerns scores, and a Child Gender × Behavior Concerns interaction term were entered into a four-step hierarchical regression model for ESI-K scores (see Table 3, Model 1). Neither family income-to-needs ratio nor parent education was significant throughout this model. Child gender and child ethnicity were both significant and together helped account for 1.9% of the variance in children’s ESI-K scores. Being female and/or being Black was associated with higher ESI-K school readiness scores. After we included family and child demographics, DECA behavior concerns scores were included and found to be significant. Children’s behavior concerns helped account for an additional unique 1.8% of the variance in school readiness, with fewer early behavior concerns linked with higher school readiness. There was no significant interaction between child gender and behavior concerns.

Next these regression analyses were repeated with the addition of children’s cognitive and language abilities to examine the extent to which children’s behavior problems helped account for variance in children’s school readiness above and beyond more traditional early cognitive and language preacademic skills (see Table 3, Model 2). Children’s cognitive and language scores were introduced into the model just after the family and child control variables but prior to children’s behavior concerns. The two control variable steps were the same coefficients as the previous model. The addition of children’s LAP-D scores in the next step revealed that higher cognitive and language scores were associated with higher school readiness, accounting for 11.6% additional unique variance in school readiness. Even with the inclusion of early cognitive and language skills, children’s behavior concerns scores still helped account for additional unique variance (3.4%) in children’s school readiness. As seen in the previous model, fewer early behavior concerns were linked with higher school readiness scores. Again, no Gender × Behavior interactions were found.

**Behavior Concerns and Kindergarten Grades**

The same two hierarchical regression models (first with only behavior concerns and second with behavior concerns and early cognitive and language skills included) were conducted with kindergarten scores.
grades (see Table 4, Model 1). Family income-to-needs ratio was significant and positively related to children’s kindergarten grades, which was not seen in the school readiness models. Income-to-needs ratio accounted for 1.4% of the variance in children’s grades. Child gender was significant, as it was for school readiness, with being female associated with higher grades, and accounted for an additional 2.9% unique variance in kindergarten grades. Child ethnicity was not significant.

After we accounted for family and child demographics, children’s behavior concerns were again significantly related to children’s outcomes. Children’s early behavior concerns accounted for an additional 3.4% unique variance in children’s kindergarten grades. As previously found with children’s school readiness, fewer early behavior concerns were linked with higher end-of-year kindergarten grades. Specifically, a 1-percentile-point increase in behavior concerns was associated with a 0.19-point decrease in children’s grades, which translates into an approximate 6% decrease in kindergarten grades for every 1-unit increase in behavior concerns. There was no Gender × Behavior Concerns interaction.

For the model including cognitive and language skills for children’s kindergarten grades, all control variable regression steps were the same (see Table 4, Model 2). The addition of children’s cognitive and language scores revealed that higher cognitive scores were associated with higher end-of-year kindergarten grades, accounting for 7.8% additional unique variance in the dependent variable. Children’s early language skills were not significant. Even after we accounted for early cognitive and language skills, children’s early behavior concerns were still significantly associated with kindergarten grades a year later. Specifically, behavior concerns accounted for an additional 1.9% unique variance in children’s kindergarten grades. Again, no Gender × Behavior Concerns interaction was found.

### Behavior Concerns and Child Dominant Language

Similar regression models to the ones just mentioned were run with the addition of the child’s dominant language (English or Spanish) in place of child ethnicity. Only Latino children were included in these analyses. In the same order as prior analyses, two models examining children’s school readiness were run first (see Table 5, Models 1 and 2). The control variables in these models revealed the same pattern as seen previously, with income-to-needs ratio and parent education not significantly related to children’s school readiness but being female positively linked to readiness. Although behavior concerns and Latino child dominant language were not significant individually, after children’s early cognitive and language skill levels were controlled for, there was a significant Dominant Language × Behavior Concerns interaction (see Figure 1). Specifically, among Spanish-dominant Latino children, behavior problems in prekindergarten appeared to be unrelated to later
Table 5. Hierarchical Regression Model Beta Coefficients for Early Screening Inventory–Kindergarten School Readiness Scores With Child Dominant Language.

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*p < .05, **p < .01.
school readiness assessed with the ESI-K; however, for English-dominant Latino children, higher behavior concerns in preschool were associated with lower school readiness.

Next end-of-year kindergarten grades were examined (see Table 6, Models 1 and 2). As with all previous kindergarten grade models, family income-to-needs ratio was positively related to children’s grades and being female was associated with higher grades. The added factor of child’s dominant language alone again was not a significant factor. Children’s behavior concerns were significantly negatively related to children’s kindergarten grades. Again, after we controlled for early cognitive and language skills, there was a significant Child Dominant Language × Behavior Concerns interaction (see Figure 2). Fewer behavior concerns were related to higher kindergarten grades for all children; however, more frequent behavior concerns were more strongly related to lower kindergarten grades among English-dominant than Spanish-dominant Latino children.

**Discussion**

In the current study, the goal was to examine the extent to which low-income, ethnically diverse children’s teacher-reported behavior concerns at age 4 in child care centers were related to their school readiness and performance a year later in kindergarten. As hypothesized, fewer behavior problems the year prior to entering kindergarten was associated with higher school readiness on kindergarten entry and higher kindergarten grades, even after we conservatively accounted for demographic factors and children’s school-entry cognitive and language skills. Children’s behavior concerns at age 4 were more strongly related to kindergarten grades than to school readiness assessments, highlighting the importance of early behavior skills for everyday performance in the kindergarten classroom. A possible explanation for the larger effect size found for classroom grades compared to the standardized readiness scores has to do with the different nature of each of the dependent variables. Classroom grades are more likely to be influenced by a child’s interactions and behavior with the teacher during the school year than are standardized test scores. Although classroom grades assigned by teachers are not a form of standardized scoring, they do have real-world implications for children’s school careers and are predictors of later academic progress within schools.

It is notable that significant and unique effects of preschool behavior problems on children’s kindergarten outcomes were still observed in the present study given (a) the restricted range present in our low-income, ethnically and linguistically diverse sample of center-based subsidized child care attendees; and (b) the rather conservative analysis strategy we used, which controlled for family

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**Figure 1.** Interaction between child dominant language and behavior concerns as a predictor of children’s school readiness scores. ESI-K = Early Screening Inventory–Kindergarten.
Table 6. Hierarchical Regression Model Beta Coefficients for Kindergarten Grades With Child Dominant Language.

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*p < .05. **p < .01.
income-to-needs ratio, parental education, gender, ethnicity, and children’s early cognitive and language skills. Prior studies examining behavior problems and school readiness and/or achievement often use more heterogeneous samples involving wider range of incomes, include a limited number of Latino children, and/or do not control for children’s early cognitive and language skills (Fantuzzo, Bulotsky-Shearer, Fusco, & McWayne, 2005; Vaughn et al., 1992). Given this, it is not surprising that in the current study effect sizes for behavior problems and kindergarten outcomes were on the small side, especially for the standardized school readiness assessment. The beta coefficient for preschool behavior problems on kindergarten grades, however, was fairly substantial given the small scale used for kindergarten grades, and a 6% decrease in children’s kindergarten grades resulted from every 1-percentage-point increase in behavior concerns. Children’s kindergarten grades have real-world implications for their school lives, such as grade retention and promotion.

It is also notable that in the present study children’s behavior problems were as strongly, if not more strongly, related to their school readiness and kindergarten performance than family income-to-needs ratio and parental education, two variables well known to be substantial predictors of children’s school performance (McLoyd, 2000; Sameroff, Seifer, Baldwin, & Baldwin, 1993). Therefore, for children who are similar on multiple demographic factors as well as early cognitive and language skills, frequency of behavior concerns at age 4 can help predict and distinguish which children will be more at risk for poor school outcomes and could benefit from early behavioral intervention. Large-scale studies like this one detecting small but statistically and practically significant effects and effects that cumulate in the context of multiple children in classrooms help inform practice at scale (Cohen, 1992). In addition, recent work on the additive effects of children’s behavior and peer interactions on school readiness in classrooms (Bulotsky-Shearer, Domínguez, & Bell, 2012; Henry & Rickman, 2007) highlights implications for practice. Children’s individual behavior has been found not only to significantly impact on their own school readiness but to have an additive effect on other children’s behavior in the classroom, thus affecting overall classroom-level behavioral outcomes and climates (Bulotsky-Shearer et al., 2012). Therefore, even small effect sizes at the individual child level can have large real-world implications.

Another contribution of the current study is that gender and, in the case of Latino children, the child’s dominant language were each examined as potential moderators of relations between preschool behavior problems and kindergarten performance. Although girls showed fewer behavior concerns and performed better than boys on practically every outcome measure, relations between preschool behavior problems and later performance in kindergarten were the same for boys and girls. Thus, regardless of child gender, when a child exhibits behavior problems in his or her

Figure 2. Interaction between child dominant language and behavior concerns as a predictor of children’s end-of-the-year kindergarten grades.
prekindergarten year, this bodes ill for that child’s later kindergarten performance, and intervention is likely beneficial.

We found that the strength of the relation between Latino children’s early behavior concerns and later kindergarten performance was moderated by their dominant language (English vs. Spanish) at age 4. Specifically, Spanish-dominant Latino children’s performance on directly assessed school readiness at the beginning of kindergarten was not associated with their child care teachers’ reports of behavior problems a year earlier, but high levels of early behavior problems were linked to poorer school readiness for English-dominant Latino children. Similarly, lower levels of behavior concerns in child care were associated with higher grades in kindergarten for both groups of Latino children, but early behavior problems mattered more for kindergarten grades for English-dominant compared to Spanish-dominant Latino children. These patterns were found even after we accounted for family income, parent education, child gender, and children’s early cognitive and language skills. There were no differences in child behavior problems by language group, and the variance was similar for both groups of Latino children, so a methodological/statistical explanation for these interactions seems unlikely. For example, it was not the case that the Spanish-dominant Latino children in this sample simply had fewer behavior problems from the start.

One possibility is that Latino children with strong Spanish skills at age 4 have particular human capital or family or cultural support factors in place that help buffer them from the negative effects of early behavior problems on academic outcomes, factors not present perhaps for Latino youngsters who have acculturated to the point that English is their strongest language by age 4. As discussed in the introduction, young children from immigrant families have been shown to have particularly strong social skills and do well is school early on, but that the longer immigrants stay in the United States, the poorer they do both in terms of moving from first to second to third generation but also ontogenetically as children get older (De Feyter & Winsler, 2009; Galindo & Fuller, 2010; Garcia Coll & Marks, 2012; Han, 2010). It is indeed unfortunate that we do not have information available for this sample on language practices used in the home, family immigration history, the presence of extended family members in the home, or whether families are living in particular ethnic niches or neighborhoods; each of these factors has been found in previous research to be important for the academic performance and well-being of immigrant and/or language-minority children (Brandon, 2002; Fuligni, 1997; Leventhal, Xue, & Brooks-Gunn, 2006; Perreira, Chapman, & Stein, 2006; Rong & Brown, 2001).

Although our measure of the child’s dominant language was limited, and we do not have standardized measures of skills in both languages to determine this for sure, another possibility is that the Latino children who had mastered English by age 4 were more fully bilingual in both English and Spanish. Balanced bilingual children have been found to have stronger behavior and social-emotional skills than monolingual children (Galindo & Fuller, 2010; Han, 2010; Han & Huang, 2010; Luchtel et al., 2010) and are also known to show stronger inhibitory control and executive function (Bialystok & Viswanathan, 2009). Perhaps links between behavior control and academic performance also change and become stronger on becoming fully bilingual. Hutchison (2012) showed that behavior problems were more strongly related to executive functioning for fully balanced Spanish–English bilingual 5- to 7-year-olds compared to monolingual English-speaking children and dual language learners who were not yet fully proficient in both languages. Future research is needed to explore in more detail links between young Latino children’s language skills, behavior problems, and early academic performance.

Limitations

A major limitation of the current study is that although longitudinal, it is correlational in nature, and thus no causal inferences can be made. The current study findings instead can only help highlight significant relationships between children’s early behavior skills and early school outcomes. In addition, the measure utilized by the county school system to determine readiness at the start of kindergarten does not capture all dimensions of school readiness. For example, social skills, which
have been found to be critical for children’s academic success (Blair, 2002; Lewit & Baker, 1995; Snow, 2006), are not all captured in the ESI-K school readiness measure. Of course, the current study also examined only one community in the southeastern United States and therefore may not generalize to other communities elsewhere.

**Implications**

Teachers and researchers agree that children’s behavior problems are important for school readiness and early academic success, with behavior problems interfering with learning and linked with lower school performance (Alexander & Entwisle, 1988; Campbell, 1997; Lewit & Baker, 1995; Mâsse & Tremblay, 1999; Rimm-Kaufman et al., 2000; Vaughn et al., 1992; Wilson & Ogden-Smith, 1999). Early school success is important because of its associations with important long-term adult outcomes such as high school graduation, college attendance, and yearly earnings (F. A. Campbell et al., 2002; Schweinhart & Weikart, 1998). The current study shows that early prekindergarten teacher reports of child behavior problems in center-based child care programs can yield important information to which parents and school administrators would want to pay attention because they can help identify children at risk for poorer outcomes in early schooling. Such findings are especially important among low-income, ethnically and linguistically diverse populations of children already at greater risk for poor school outcomes compared to more affluent peers. The findings here suggest that helping enhance low-income children’s behavior skills, in addition to more common efforts of enhancing cognitive and language skills, prior to school entry would be a worthwhile endeavor to help increase the likelihood of low-income children having early school success. Specific programs that have been found to be effective for addressing children’s early behavior problems include, for example, Promoting Alternative TTHinking Strategies (Domitrovich, Cortes, & Greenberg, 2007) as well as the Chicago School Readiness Project. Promoting Alternative TTHinking Strategies is an intervention that involves teaching young children steps to solving their social problems (Domitrovich et al., 2007). The Chicago School Readiness Project (Raver et al., 2009) is a multifaceted intervention approach that involves multiple methods, which include, for example, teachers being trained on how better to support children’s emotional regulation within the classroom as well as attending workshops for themselves on how to better manage their stress and related behaviors. Similarly, college courses and/or certificate training for child care staff have also been found to be associated with lower levels of behavior problems among young children in their care (National Institute of Child Health and Human Development Early Child Care Research Network, 1999). The results of this investigation support such prevention and intervention efforts to reduce behavior problems among young low-income children as an additional vehicle to move toward ensuring all children’s school readiness and success.

**References**


