



## School readiness in children living in non-parental care: Impacts of Head Start

Shannon T. Lipscomb<sup>a,\*</sup>, Megan E. Pratt<sup>b</sup>, Sara A. Schmitt<sup>b</sup>, Katherine C. Pears<sup>c</sup>, Hyoun K. Kim<sup>c</sup>

<sup>a</sup> College of Public Health and Human Sciences, Oregon State University, Cascades, 2600 NW College Way, Bend, OR 97701, USA

<sup>b</sup> College of Public Health and Human Sciences, Oregon State University, 123 Women's Building, Corvallis, OR 97331, USA

<sup>c</sup> Oregon Social Learning Center, 10 Shelton McMurphy Blvd., Eugene, OR 97401, USA

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### ABSTRACT

The current study examines the effects of Head Start on the development of school readiness outcomes for children living in non-parental care. Data were obtained from the Head Start Impact Study, a randomized controlled trial of Head Start conducted with a nationally representative sample of Head Start programs and families. The sample included 253 children living in non-parental care (defined as a primary caregiver who self-identified as someone other than a biological, adoptive, or step-parent), who experienced elevated rates of child and family risk factors. Results revealed modest direct short-term and indirect longer-term impacts of Head Start on school readiness outcomes (increased pre-academic skills, more positive teacher–child relationships, and reductions in behavior problems) for children living in non-parental care. Limitations of this study and directions for future research are discussed.

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High-quality child-care and early-education programs appear to have positive effects on several key areas of young children's development, including self-regulation, academic achievement, and psychosocial functioning (Belsky et al., 2007; Magnuson, Meyers, Ruhm, & Waldfogel, 2004; National Institute of Child Health and Human Development Early Child Care Research Network [NICHD ECCRN], 2005a). Exposure to quality early care and education (ECE) programs may be particularly important for children from higher-risk families (Burchinal, Peisner-Feinberg, Pianta, & Howes, 2002; Peisner-Feinberg et al., 2001; Vandell, Belsky, Burchinal, Steinberg, & Vandergrift, 2010). Consistent with this view, Head Start was designed specifically to help children from disadvantaged families prepare for success in school (Child Trends, 2011).

Most children attending Head Start qualify for services as a result of living in poverty; additionally, federal policy designates children in foster care, one form of non-parental care, as categorically eligible for Head Start regardless of their family income. The effects of Head Start, for children living in non-parental care, including children in formal foster-care arrangements, remain unknown. One key mechanism through which Head Start intends to assist children's early learning is through provision of supports for both the family and the individual child (e.g., Takanishi & DeLeon, 1994; U.S. Department of Health and Human Services [U.S. DHHS], 2010a). It is important to investigate the effectiveness of this wrap-around approach for young children who live in non-traditional family situations, such as those in non-parental care.

Effectively supporting and engaging these families may be challenging, especially considering that children's primary caregivers and living situations often change, and that these children often exhibit high rates of developmental vulnerabilities (e.g., Billing, Ehrle, & Kortenkamp, 2002). The present study investigates the impact of Head Start on the school readiness development of children living in non-parental care, using data from a randomized control trial.

#### *Needs of children in non-parental care*

Children living in non-parental care represent a diverse group whose parents are not able to take care of them for varying reasons, such as concerns about abuse, neglect, or domestic violence; or as a result of parental illness (physical or mental), substance abuse, or legal or economic problems, including incarceration. In the current study, non-parental care is defined as a primary caregiver who self-identifies as someone other than a biological, adoptive, or step-parent. Almost 80% of children in the United States not living with a parent live with other relatives (often called kinship care), and most of these children are not in a formal foster-care arrangement overseen by child welfare services (Denby, 2011). However, children in foster care are perhaps the most often studied group of children living in non-parental care; as such, we draw upon some of this literature throughout this study. Regardless of whether they are in a formal or informal arrangement, children in non-parental care often experience multiple risk factors, including prenatal exposure to alcohol (Astley, Stachowiak, Clarren, & Clausen, 2002), poverty (Ehrle & Geen, 2002; Sousa & Sorensen, 2006), caregiver mental health problems (Ehrle & Geen, 2002; Minkler, Fuller-Thomson, Miller, & Driver, 2000), maltreatment (Chernoff, Combs-Orme, Risley-Curtiss, & Heisler, 1994;

\* Corresponding author. Tel.: +1 541 322 3137; fax: +1 541 322 3139.

E-mail addresses: Shannon.Lipscomb@osucascades.edu (S.T. Lipscomb), pritchme@onid.orst.edu (M.E. Pratt), schmitts@onid.orst.edu (S.A. Schmitt), katherinep@osl.org (K.C. Pears), hyounk@osl.org (H.K. Kim).

Pears, Kim, & Fisher, 2008), and instability of home environments (Rubin, O'Reilly, Hafner, Luan, & Localio, 2007).

Exposure to these compounded risks impact both short- and long-term child outcomes. Children living in non-parental care are at higher risk for developmental problems, including poor cognitive and psychosocial functioning (Billing et al., 2002; Pears et al., 2008), and behavior and mental health problems (Billing et al., 2002; Ehrle & Geen, 2002; Rubin et al., 2007; Stahmer et al., 2005). Such difficulties can lead to lower levels of achievement and school engagement (Billing et al., 2002; Pears, Heywood, Kim, & Fisher, 2011). Children in foster care and kinship care, in particular, are commonly represented in special education classrooms (Sawyer & Dubowitz, 1994; Scherr, 2007). Children living in non-parental care also show greater vulnerabilities in self-regulation, a key area of school readiness, than their peers from similar socioeconomic backgrounds (Lewis, Dozier, Ackerman, & Sepulveda-Kozakowski, 2007; Pears, Bruce, Fisher, & Kim, 2010).

In sum, this diverse group of children in non-parental care tends to exhibit an elevated need for services and supports. However, many of these children's needs remain unmet (Ehrle & Geen, 2002; National Survey of Child and Adolescent Well-Being [NSCAW], n.d.; Webb, Harden, Baxter, Dowd, & Shin, 2007), especially the needs of children younger than the age of 6 (Stahmer et al., 2005). Importantly, children in non-parental care outside of formal foster care may have even less access to services and insurance, despite high levels of physical and mental health needs, than children in formal foster-care arrangements who are served by child welfare agencies (Ehrle & Geen, 2002; Health Care Financing & Organization, 2004; Main, Macomber, & Geen, 2006).

For all young children in non-parental care, quality early-education and child-care programs may provide an avenue for meeting their service needs. Emerging evidence shows that, even though children in non-parental care often do not receive the formal mental health or special education services they need, many attend ECE programs. Over 50% of children ages 3–5 living in out-of-home placements attend center-based early-education programs, and 17–19% of these children are enrolled in Head Start (Ward et al., 2009). A recent study of a sample of 192 pre-kindergarten children living in foster care found that 88% of them had attended a center-based ECE setting, including Head Start (Lipscomb & Pears, 2011). As such, early childhood education programs, especially those that offer wrap-around services, such as Head Start, may provide an important avenue for serving this, often high-need, population that tends to be difficult to link to services through other means (e.g., Cuddeback, 2004; Leslie et al., 2000).

#### *Head Start and outcomes in disadvantaged children*

Created in 1965, Head Start is the largest publicly financed early childhood education and care program in the United States, providing comprehensive services to support disadvantaged preschool-age children and their families (Child Trends, 2011). By providing quality early learning, parental support, and wrap-around services, Head Start aims to promote development of the whole child (e.g., Takanishi & DeLeon, 1994; U.S. DHHS, 2010a). Numerous studies have explored the effects of Head Start on an array of cognitive and social outcomes for the general population of disadvantaged young children (Bryant, Burchinal, Lau, & Sparling, 1994; Lee, Brooks-Gunn, Schnur, & Liaw, 1990; U.S. DHHS, 2010a; Wen, Leow, Hahs-Vaughn, Korfmacher, & Marcus, in press; Zhai, Brooks-Gunn, & Waldfogel, 2011). However, evidence of positive impacts of Head Start remains mixed. Children who attended Head Start perform better on some, but not all, measures of vocabulary and early literacy at the end of preschool than their peers who did not attend Head Start (Nystrom, 1988; U.S. DHHS, 2010a; Williams, 1988). Similarly, Head Start has shown inconsistent effects on children's math skills (U.S. DHHS, 2010a; Wen et al., in press), as well as on their social, emotional, and behavioral development (Abbott-Shim, Lambert, & McCarty, 2003; U.S. DHHS, 2010a; Wen et al., in press). Head Start also strives to promote positive teacher–child relationships through

high standards and ongoing monitoring (U.S. DHHS, 2010a). However, to date, little is known about the impact of Head Start on these relationships.

Recent evidence from exploratory subgroup analysis of data from the Head Start Impact Study suggests that Head Start may have particular importance for subgroups of children with risk factors in addition to poverty. For example, 3-year-old children from multi-risk households (distinguished by receipt of TANF or Food Stamps, low parent education, parent unemployment, single parent household, and young age of the biological mother) appeared to demonstrate more benefits from Head Start participation on language and literacy outcomes through the first grade than the overall sample of Head Start children (U.S. DHHS, 2010a). Likewise, children with special needs appeared to experience benefits of Head Start participation on their attention abilities and their relationships with teachers, an effect that children without special needs did not experience (U.S. DHHS, 2010a). These findings are consistent with evidence that center-based child care and preschool programs may be particularly important for children with elevated risk factors (Currie & Thomas, 1999; Fantuzzo et al., 2005; Lee, Brooks-Gunn, & Schnur, 1988; Magnuson et al., 2004; Magnuson, Ruhm, & Waldfogel, 2007; Peisner-Feinberg et al., 2001).

#### *Head Start and children in non-parental care*

As noted earlier, children living in non-parental care may be among the most disadvantaged children attending Head Start and exhibit a range of developmental vulnerabilities. As such, they have much to gain from Head Start. It is possible that Head Start could provide a developmentally supportive and perhaps even therapeutic context for these vulnerable children in which warm, sensitive caregiving, cognitive stimulation, and wrap-around services help to promote positive child development. By supporting children's development broadly across multiple areas, Head Start may help to lay the underlying foundations for children's school readiness, which then carry forward as children enter formal schooling.

However, despite recent evidence suggesting that a substantial proportion of children living in non-parental care attend Head Start programs (Lipscomb & Pears, 2011; Ward et al., 2009), as well as recent efforts by the federal government to increase access to Head Start and other ECE programs for children involved in child welfare (U.S. DHHS, 2010a, 2010b), we are not aware of any studies on the impact of Head Start (or other ECE programs) on the development of children in non-parental care. This is a critical gap given the differences between children in non-parental care and those in parental care (e.g., multiple risks and greater vulnerabilities in key skills; changes in primary caregivers who receive the wrap-around family services). It is important to determine whether programs that have been shown to be effective with the general population show the same levels of efficacy with high-risk subpopulations in order to be able to best tailor existing interventions to the needs of those children (Justice, Invernizzi, Geller, Sullivan, & Welsch, 2004).

#### *The present study*

The current study provides a rigorous investigation of the impact of Head Start for children in non-parental care by utilizing a randomized controlled trial (RCT). Due to the difficulty and cost involved, large scale RCTs are rarely conducted, especially with children living in non-parental care, even though their importance in accurately estimating program effects is well understood. The present study examines effects of Head Start on children's school readiness, measured here by pre-academic skills, teacher–child relationships, and externalizing behavior problems. Pre-academic skills are well-known precursors to academic success (e.g., La Paro & Pianta, 2000; NICHD ECCRN, 2005b; Stevenson & Newman, 1986). Externalizing behavior problems, including hyperactivity, inattention, and aggressive or oppositional behaviors, impede children's abilities to succeed in classroom environments

(e.g., Ladd, Birch, & Buhs, 1999; McClelland, Morrison, & Holmes, 2000), whereas behavioral regulation (integration of attention, working memory, and inhibitory control) is related to learning more directly, independent of children's cognitive abilities (McClelland et al., 2007). Positive teacher–child relationships are linked to children's later social and behavioral competence in the classroom (e.g., Ewing & Taylor, 2009; Myers & Morris, 2009; Whittaker & Harden, 2010), as well as with academic success (Hamre & Pianta, 2001; Peisner-Feinberg et al., 2001). Head Start may contribute to more positive teacher–child relationships through supports for both teachers and children. These relationships should help children to be better prepared for both academic and behavioral success in school (Baker, 2006).

Data were obtained from the Head Start Impact Study, which was designed to overcome limitations of previous studies by recruiting a nationally representative sample of programs and families and conducting an RCT (U.S. DHHS, 2010a). In the present study, the effects of Head Start on a subpopulation of children in non-parental care were examined at the end of the Head Start year and 1 year later, comparing the outcomes of a group of children in non-parental care who received Head Start services in the first year to a group who had not. As this study focused on the impacts of Head Start within the subpopulation of children in non-parental care, we did not statistically compare effects for this subgroup with effects for the larger sample of children in the Head Start Impact Study. As illustrated in Fig. 1, it was hypothesized that, when comparing outcomes after 1 year of Head Start for children in non-parental care who were assigned to Head Start to those of children in non-parental care in the control group: (1) Head Start would have beneficial effects on pre-academic skills, externalizing behavior problems, and teacher–child relationships at the end of the Head Start year, and (2) the effects of Head Start on outcomes during the following year would be mediated through earlier effects on outcomes at the end of the Head Start year.

## Method

### Participants

This study utilized data from the Head Start Impact Study, with random assignment of 3- and 4-year-old children to a Head Start

( $n = 2,783$ ) or a community control group ( $n = 1,884$ ; U.S. DHHS, 2010a). Children in the control group could be enrolled in Head Start in the second year of the study (2003–2004) if they remained eligible and did not go onto kindergarten; thus, the difference between the Head Start and the control group represents 1 year of Head Start. When properly weighted (see Data Analysis), this sample represents the national population of newly entering Head Start children and their families for the 2002–2003 program year. Children were assessed in the fall of 2002 (baseline), the spring of 2003 (after 1 year of Head Start for the Head Start group), and the spring of 2004.

The current study examines a subsample of 253 children (47% female) who were living in non-parental care (the primary caregiver for the child was not a biological, adoptive, or step-parent) during one or more of the first three waves of data collection. The most common non-parental primary caregiver for children in the current sample at baseline was a great-grandmother (66%), followed by formal foster parent (13%), other female non-relative (10%), grandmother (4%), sister/step-sister (3%), great-grandfather (2%), grandfather (1%), and other male non-relative (1%). Rates of primary caregiver relationships were similar for 2003 and 2004. As is common for children living in both formal and informal non-parental placements, children in this sample experienced a range of zero to two transitions among primary caregivers between baseline and the spring 2004 measurement occasions ( $M = 0.77$ ,  $SD = 0.64$ ). More than half (52%) of the children lived in non-parental care for two (22%) or three (30%) of the three measurement occasions; 48% lived in non-parental care for only one of these occasions. On average, children lived in non-parental care for nearly two (of three) waves ( $M = 1.81$ ,  $SD = 0.86$ ).

Relative to the entire sample from the Head Start Impact Study, the current subsample of children in non-parental care exhibited elevated rates of characteristics that were identified as key risk factors in the Head Start Impact Study final report (U.S. DHHS, 2010a). In this subsample, a higher percentage of families were considered high risk on a household risk index (13% vs. 7% in the full sample). The index was comprised of the following characteristics reported in the baseline caregiver interview: (a) receipt of TANF or food stamps, (b) neither parent in household has high school diploma or a GED, (c) neither parent in household is employed or in school, (d) the child's biological mother/caregiver is a single parent, and (e) the child's biological mother was

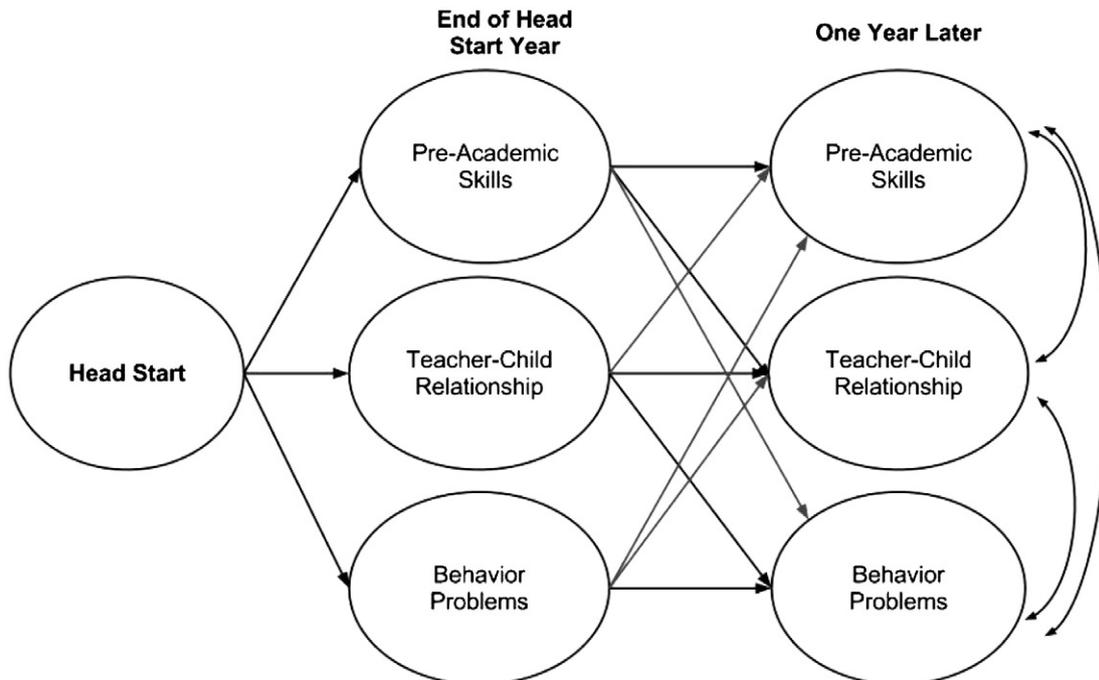


Fig. 1. Conceptual model of direct and indirect effects of Head Start on school readiness outcomes for children living in non-parental care.

age 19 or younger when child was born. Children in non-parental care also had higher rates of special needs (21% vs. 13% in the full sample), lower mean baseline scores for pre-academic skills ( $M = 339.21$  vs.  $347.27$  in the full sample), lower mean teacher relationship quality ( $M = 61.70$  vs.  $64.30$  in full sample), and higher mean baseline behavior problems ( $M = 5.33$  vs.  $4.96$  in the full sample).

In this non-parental care sample ( $N = 253$ ), 61% of the children had been randomly assigned to the Head Start group and 39% to the community control group at baseline. Children in the control group attended a mix of ECE settings, or none at all. The mean age at baseline was 48.25 months ( $SD = 6.70$ ) for children in the Head Start group, and 47.79 months ( $SD = 7.29$ ) for children in the control group. The ethnicity breakdown of the sample was 43% Anglo-American, 39% African-American, and 18% Hispanic-American for the Head Start group, and 47% Anglo-American, 37% African-American, and 16% Hispanic-American for the control group.

### Procedures

The current analysis examines data at baseline (fall 2002), the end of the Head Start year (spring 2003), and 1 year later (spring 2004). At each of these time points the primary caregiver living with each child in the study was interviewed to obtain information on several domains, including family dynamics, child behavior and achievement, and demographics. At the same time points, trained research assistants individually assessed children using a battery of measures, including achievement and language tasks. In the spring of 2003 and 2004 teachers completed a series of questionnaires, including reports of children's behavior and teacher-child relationships. Identical data were collected for children in both the Head Start and the community control group, with the exception that data from teachers were only collected for children in Head Start or other child care arrangements. Informed consent was secured from all participants.

### Measures

#### Pre-academic skills

A composite cluster of three Woodcock-Johnson III subtests – Letter-Word Identification, Spelling, and Applied Problems – was used to assess a broad constellation of children's pre-academic skills, including pre-reading and letter and word identification skills, developing mathematics skills, and early writing and spelling skills (Mather & Woodcock, 2001). The pre-academic skills composite has demonstrated moderate reliability in previous analyses of the full sample from the Head Start Impact Study (Chronbach's  $\alpha = .77$ ; U.S. DHHS, 2010a). This measure was collected at all time points.

#### Teacher-child relationship

Children's relationships with their teachers were assessed with the total positive relationship scale of the Student-Teacher Relationship Scale (short form; Pianta, 2001). Teachers rated the children on 15 items, such as "If upset, this child will seek comfort from me" or "This child easily becomes angry at me." The teachers rated the children on each item using a five-point response format ranging from 1 (definitely does not apply) to 5 (definitely applies). Total scores ranged from 15 to 75, with higher scores reflecting more positive relationships. This scale has demonstrated good reliability in previous analyses of the full sample from the Head Start Impact Study (Chronbach's  $\alpha = .62-.65$ ; U.S. DHHS, 2010a). This measure was collected in spring 2003 and 2004.

#### Externalizing behavior problems

Children's behavior problems were rated by primary caregivers at baseline (at this time 54% were non-parental caregivers; 55% were parents) at baseline and by teachers in spring 2003 and 2004. Teacher-rated measures were considered to be the most useful assessment of

school readiness outcomes because they are specific to the classroom context. Because teacher-rated measures were not available at baseline, the primary caregiver report measure served as the baseline control prior to Head Start participation. At baseline, using a modified version of the Achenbach Child Behavior Checklist (CBCL; Achenbach, 1991), developed for the Head Start Family and Child Experiences Survey (FACES), primary caregivers were asked to rate children on seven behavior-problem items, including aggressive or defiant behavior and inattentive or hyperactive behavior. Scores could range from 0 (all items marked *not true*) to 14 (all items marked *very true*). This measure has demonstrated strong reliability in previous studies utilizing data from the Head Start Impact Study (Chronbach's  $\alpha = .82-.87$ ; U.S. DHHS, 2006).

In both spring 2003 and 2004, behavior problems were assessed by teacher report using the Adjustment Scales for Preschool Intervention (ASPI; Lutz, Fantuzzo, & McDermott, 2002). The following dimensions of child behavior were reported: aggressive (22 items), oppositional (11 items), and inattentive/hyperactive (10 items). To complete the ASPI, teachers were asked to select individual behavior descriptions for each child in relation to 24 classroom situations that match descriptors of both typical and problem classroom behaviors. For example, one classroom situation was, "How is this child at free play/individual choice?" The teacher then matched each child to any of the behavior descriptions that apply, such as (a) engages in appropriate activities, (b) disturbs others' fun, (c) wants to dominate and have his/her own way, and/or (d) starts fights and rough play. Raw scores for each dimension were based on the sum of the checked items that were associated with each subscale and were standardized according to the developer's original standardization sample. This measure has demonstrated reliability and validity in previous studies (Lutz et al., 2002). The three subscale scores were then aggregated to create a composite score for externalizing behavior problems in 2003 and 2004 (Chronbach's  $\alpha$ s = .80 and .81 respectively).

### Covariates

The following covariates were selected because each tends to be associated with children's school readiness outcomes.

*Child covariates.* Child-level covariates included child sex, age, and primary caregivers' report of children's special needs. Special needs were identified at baseline by primary caregivers in response to the question "Did a doctor or other health or education professional ever tell you that [CHILD] has any special needs or disabilities—for example, physical, emotional, language, hearing, learning difficulty, or other special needs?" Primary caregivers answered 1 (*yes*) or 0 (*no*).

*Family covariates.* Family covariates included parent/caregiver-child book reading, household income, parenting/caregiving style (each assessed at baseline), and whether there was a change in the child's primary caregiver during the Head Start year (between baseline and spring 2003), coded as 0 (*no change*) or 1 (*change in caregiver*). Parent/caregiver-child reading was measured using a one-item survey that asked parents/primary caregivers how frequently they read to their children in 1 week. Responses included 1 (*not at all*), 2 (*once or twice*), 3 (*three or more times*), or 4 (*everyday*).

Parents/caregivers reported total gross monthly household income, categorized as 1 (*less than \$250*), 2 (*between \$251 and \$500*), 3 (*between \$501 and \$1,000*), 4 (*between \$1,001 and \$1,500*), 5 (*between \$1,501 and \$2,000*), 6 (*between \$2,001 and \$2,500*), or 7 (*over \$2,500*). A family income-to-needs ratio was then computed by dividing this ordinal monthly household income variable by the number of people living in the household.

Parenting/caregiving style was obtained from primary caregiver responses to 13 selected items from the Child-Rearing Practices Report (CRPR; Block, 1965), such as "I teach my child that misbehavior or breaking the rules will always be punished one way or another" and "I believe physical punishment to be the best way of disciplining." Likert-

scale responses ranged from 1 (*exactly like you*) to 5 (*not at all like you*). This survey identified four parenting/caregiving styles, according to Baumrind's typology (1971): authoritarian (Chronbach's  $\alpha = .74$ ), authoritative (Chronbach's  $\alpha = .74$ ), permissive (Chronbach's  $\alpha = .75$ ), and neglectful (Chronbach's  $\alpha = .73$ ; see U.S. DHHS, 2010a). For the current analysis a dichotomous variable was created that identified parents/caregivers as authoritarian (characterized as high control and low warmth) or not, given prior research on the linkages between authoritarian parenting styles and children's school readiness (McWayne, Hahs-Vaughn, Cheung, & Wright, in press; Walker & MacPhee, 2011).

### Data analysis

Hypothesis testing utilized path analysis, full-information maximum likelihood with Mplus Version 6.0 (Muthén & Muthén, 1998–2010). Sampling weights were employed, in conjunction with the "subpopulation" command, in order to yield a representative sample of the subpopulation of children living in non-parental care within the overall national population of newly entering Head Start children and their families for the 2002–2003 program year. The "cluster" command was utilized to account for nesting of multiple children within specific Head Start centers. See the Head Start Impact Study Technical Report for more information about the sampling weights (U.S. DHHS, 2010b).

## Results

### Preliminary results

Descriptive statistics and correlations for all study variables are presented in Tables 1 and 2. Head Start attendance was modestly correlated with spring 2003 measures of positive teacher–child relationships and pre-academic skills, but not with behavior problems. The three indices of school readiness (teacher–child relationships, pre-academic skills, and behavior problems) were significantly correlated with one another both within and across measurement occasions.

### Hypothesis testing

Table 3 and Fig. 2 summarize findings from the final path analysis model, with direct short-term impacts and indirect subsequent

**Table 1**  
Descriptive statistics for all study variables ( $N = 253$ ).

Categorical covariates	% Yes	% No		
Child sex (female = yes, male = no)	47.43	52.57		
Child with special needs	20.95	79.05		
Authoritarian parenting/caregiving	10.28	89.72		
Change in primary caregiver 2002–2003	30.99	69.01		
Continuous variables	<i>M</i>	<i>SD</i>	Min	Max
Covariates and baseline measures				
Child age (in months)	48.08	6.91	34.98	64.83
Income-to-needs ratio	1.31	0.77	0.22	5.00
Parent/caregiver–child reading per week	2.90	0.96	1.00	4.00
Child behavior problems 2002 <sup>a</sup>	5.33	2.96	0.00	14.00
Child pre-academic skills 2002	89.29	12.98	52.00	123.00
Outcome variables				
Child behavior problems 2003 <sup>b</sup>	2.60	2.76	0.00	12.67
Child behavior problems 2004 <sup>b</sup>	2.28	2.71	0.00	12.00
Teacher–child relationship 2003	61.69	10.10	30.00	75.00
Teacher–child relationship 2004	64.09	8.23	34.00	75.00
Child pre-academic skills 2003	90.54	12.20	54.00	120.00
Child pre-academic skills 2004	95.13	13.28	46.00	136.00

<sup>a</sup> Child behavior problems were measured in 2002 by parent/caregiver report of modified CBCL.

<sup>b</sup> Child behavior problems were measured in 2003 and 2004 by teacher report on the ASPI.

impacts of Head Start on children's school readiness outcomes. Impacts were detected at the end of the Head Start year, parceling out variance due to children's baseline competencies, child covariates (age, sex, and special needs) and family covariates (income-to-need ratio, authoritarian parenting/caregiving, parent/caregiver–child reading at home, and changes in primary caregiver from 2002 to 2003). Estimates are standardized regression weights. Findings pointed to statistically significant impacts during the Head Start year on gains in children's pre-academic skills and relationships with preschool teachers, as well as marginally significant effects on behavioral problems. The size of the (standardized) effects of Head Start (random assignment to Head Start versus community control group) on these school readiness outcomes in spring 2003 was modest, ranging from  $B = .16$  to  $B = .30$ .

Effects of Head Start on subsequent outcomes in the following year (2004) were only detected as indirect effects that were mediated through the impacts on outcomes in preschool/pre-kindergarten (spring 2003). Direct effects of Head Start on the spring 2004 outcomes were also tested; none were statistically significant. The total indirect effects of Head Start on outcomes in spring 2004, mediated through all possible pathways, were statistically significant for pre-academic skills,  $B = .12$  (.06),  $p = .05$ ; teacher–child relationship,  $B = .17$  (.07),  $p = .02$ ; and behavior problems,  $B = -.14$  (.06),  $p = .01$ . Fig. 2 illustrates the paths of direct and indirect effects of Head Start on school readiness, co-varying out the effects of child age, sex, special needs, authoritarian parenting/caregiving, parent/caregiver–child reading, and family income; paths from covariates are not shown.

## Discussion

This is the first study to examine the effects of Head Start on school readiness outcomes for children living in non-parental care, a diverse group of children whose parents are not able to take care of them. Children in non-parental care are eligible for Head Start either due to economic reasons or due to eligibility policies and federal priorities for increasing access to Head Start for children from particularly high-risk backgrounds, or both. However, little work has examined the specific effects of Head Start on outcomes for this particularly vulnerable group. Using data taken from a RCT, the current study indicates that Head Start has direct short-term, as well as indirect longer-term, positive impacts on school readiness outcomes for children living in non-parental care. Although effect sizes are modest, this is the only study of which we are aware to document beneficial effects of Head Start on development for these children.

### Direct impacts at the end of the Head Start year

Results supported our first hypothesis, suggesting that children assigned to Head Start had more positive school readiness outcomes at the end of the preschool year than children who were not assigned to Head Start, including better pre-academic skills and teacher–child relationship quality, although the (negative) effect on behavior problems was only marginally significant. The size of the effect on pre-academic skills in the spring of the Head Start year was modest, and is comparable to the effects detected for the larger Head Start Impact Study sample as a whole (U.S. DHHS, 2010a). It is important to find that Head Start appears to be effective in promoting pre-academic skills among children living in non-parental care to a similar magnitude as among the larger population of children living in poverty, even though children in non-parental care exhibit greater vulnerabilities in key skills when they enter Head Start, and although their primary caregivers who receive the wrap-around family services often change.

Additionally, results showed a moderate positive impact of Head Start on teacher–child relationship quality for children in non-parental care that was not detected in prior analyses with the full sample of children in the Head Start Impact Study (U.S. DHHS, 2010a). In fact, for the 4-year-old cohort in the larger Head Start Impact Study, attending

**Table 2**  
Correlations for all predictors, outcomes, and covariates (*N* = 253).

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Head Start <sup>a</sup>	–															
2. Child sex <sup>b</sup>	.04	–														
3. Child age (in months)	.03	.05	–													
4. Child with special needs <sup>c</sup>	–.05	–.01	.08	–												
5. Income-to-needs ratio	.12	.02	–.05	.07	–											
6. Authoritarian parenting/caregiving <sup>c</sup>	.13*	.10	.09	.15*	.07	–										
7. Parent/caregiver–child reading	.10	–.04	.06	.48	.13	–.12	–									
8. Change in primary caregiver 2002–2003 <sup>c</sup>	.03	–.03	.18*	–.01	–.05	–.10	.07	–								
9. Child behavior problems 2002	–.12	–.07	–.10	.37*	–.02	.16*	–.11	–.09	–							
10. Child behavior problems 2003	–.15	–.15	–.16	.18*	.20*	.07	–.11	–.07	.25*	–						
11. Child behavior problems 2004	.02	–.22*	–.18*	.06	.08	–.03	.02	–.16	.02	.51*	–					
12. Teacher–child relationship 2003	.17*	.35*	.04	–.10	–.14	–.08	.09	.05	–.16*	–.62*	–.42*	–				
13. Teacher–child relationship 2004	.14	.23*	–.02	–.11	.05	.06	.04	.13	–.09	–.42*	–.48*	.53*	–			
14. Child pre-academic skills 2002	.01	.15*	–.02	–.14*	–.07	–.01	.16*	.18*	–.18*	–.34*	–.29*	.18*	.14	–		
15. Child pre-academic skills 2003	.14*	.18*	–.03	–.12	–.01	–.04	.23*	.14*	–.19*	–.26*	–.17*	.27*	.25*	.57*	–	
16. Child pre-academic skills 2004	.05	.17*	–.04	–.18*	.19*	–.08	.09	.16*	–.15*	–.24*	–.14	.26*	.23*	.42*	.63*	–

<sup>a</sup> 0 = Control, 1 = Head Start.

<sup>b</sup> 0 = male, 1 = female.

<sup>c</sup> 0 = no, 1 = yes.

\* *p* < .05.

Head Start was associated with worse teacher–child relationships (U.S. DHHS, 2010a). This suggests a unique importance of Head Start on teacher–child relationships for children living in non-parental care. However, it should be noted that the effects of Head Start for children in non-parental care were not statistically compared with the effects of Head Start for children in parental care in the larger sample. Early teacher–child relationships have been shown to have important implications for subsequent child outcomes in both social and academic domains (Hamre & Pianta, 2001; Myers & Morris, 2009), especially for children from high-risk backgrounds (Baker, 2006). Indeed, having a positive relationship with a competent adult can serve as a protective

factor for children experiencing adversity (Masten, Best, & Garmezy, 1990). Children in non-parental care tend to struggle with socio-emotional development, including relationships, likely due to the risk factors they experience, including behavioral problems, special needs, and transitions between homes. As a result of Head Start's whole-child emphasis and standards for teacher qualifications it may be that Head Start teachers are more effective than others in establishing positive relationships with children with high needs. Results also suggested that Head Start may help to reduce behavior problems in children living in non-parental care, but this effect was only marginally significant.

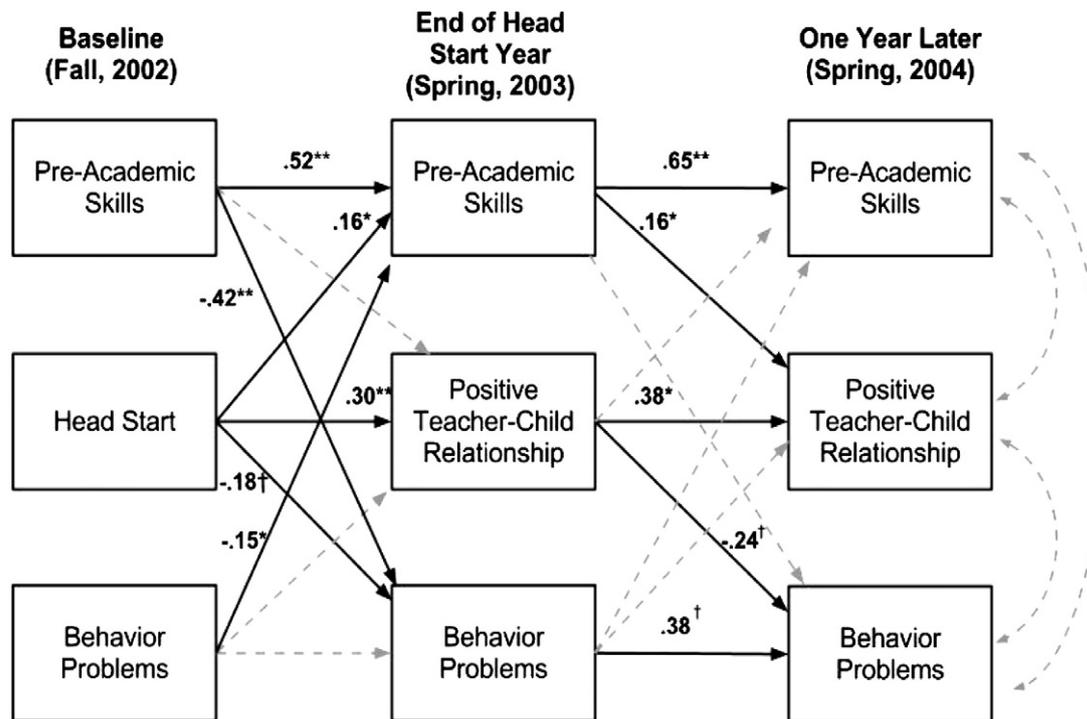
**Table 3**  
Effects of Head Start on school readiness outcomes at the end of Head Start and the following year (*N* = 253).

Effect of:	End of the Head Start year (spring, 2003)								
	Pre-academic skills			Teacher–child relationship			Behavior problems (teacher report)		
	<i>B</i>	<i>SE</i>	<i>p</i>	<i>B</i>	<i>SE</i>	<i>p</i>	<i>B</i>	<i>SE</i>	<i>p</i>
Predictors at baseline (2002)									
Head Start <sup>a</sup>	.16	0.07	.02	.30	0.09	<.01	–.18	0.09	.08
Pre-academic skills	.52	0.08	<.01	.15	0.12	.21	–.42	0.13	<.01
Behavior problems (parent/caregiver report)	–.15	0.07	.04	.13	0.10	.19	.06	0.09	.54
Child Covariates (2002)									
Age	.01	0.06	.82	.02	0.10	.80	.26	0.09	<.01
Special needs <sup>b</sup>	–.15	0.07	.03	–.03	0.08	.72	.04	0.09	.66
Sex <sup>c</sup>	.14	0.06	.03	.26	0.08	<.01	–.09	0.10	.34
Family covariates (2002)									
Income-to-needs ratio	–.03	0.06	.65	–.06	0.11	.62	.08	0.10	.46
Authoritarian parenting/caregiving <sup>a</sup>	.15	0.07	.04	.05	0.11	.69	–.05	0.11	.64
Parent/caregiver–child reading	.05	0.07	.49	–.02	0.09	.83	.07	0.09	.48
Change in primary caregiver 2002–2003 <sup>b</sup>	.02	0.06	.69	–.12	0.13	.34	.08	0.09	.42
Effect of:	Following year (spring, 2004)								
	Pre-academic skills			Teacher–child relationship			Behavior problems (teacher report)		
	<i>B</i>	<i>SE</i>	<i>p</i>	<i>B</i>	<i>SE</i>	<i>p</i>	<i>B</i>	<i>SE</i>	<i>p</i>
Predictors at end of Head Start year (spring, 2003)									
Pre-academic skills	.65	0.06	<.01	.16	0.08	.03	–.02	0.12	.88
Teacher–child relationship	.06	0.23	.81	.38	0.16	.02	–.24	0.14	.09
Behavior problems (teacher report)	.00	0.22	.99	–.16	0.13	.20	.38	0.23	.09

<sup>a</sup> 0 = control, 1 = Head Start.

<sup>b</sup> 0 = no, 1 = yes.

<sup>c</sup> 0 = male, 1 = female.



**Fig. 2.** Full model of estimated direct and indirect paths from Head Start to outcomes at the end of the Head Start Year (spring, 2003) and 1 year later (spring, 2004). Note: Estimates are standardized coefficients. Grey dashed lines indicate estimates that failed to reach significance. The total indirect effects of Head Start on outcomes in 2004, mediated through all possible pathways, were statistically significant for pre-academic skills [ $B = 0.12 (.06)$ ,  $p = .05$ ], teacher–child relationship [ $B = 0.17 (.07)$ ,  $p = .02$ ], and behavior problems [ $B = -0.14 (.06)$ ,  $p = .01$ ].  $R$ -square values for pre-academic, teacher–child relationship, and behavior problems in 2004 were 0.44, 0.26, and 0.25, respectively. Covariates (not shown) include child age, sex, special needs, authoritarian parenting/caregiving, parent/caregiver–child reading, and family income-to-needs ratio. \*\* $p < .01$ . \* $p < .05$ . † $p < .10$ .

Although the current study was not able to identify the reasons that Head Start may have had positive effects on children living in non-parental care, that have not been observed for other children, some speculation is possible. This group of children tends to struggle with establishing positive teacher–child relationships, exhibits higher rates of behavioral problems and special needs, and more often lives in high-risk households than the broader population of at-risk children who are eligible for Head Start (see Method section). For all of these reasons, as well as the higher instability at home (e.g., Rubin et al., 2007) and less access to supportive services (e.g., Health Care Financing & Organization, 2004; Main et al., 2006), children in non-parental care may be particularly responsive to the benefits of programs like Head Start that include wrap-around services and supports, in addition to ECE programs that emphasize quality care. Further research is necessary to understand which aspects of Head Start are the most useful to children living in non-parental care.

#### Indirect impacts of Head Start on outcomes the following year

Prior investigations of the effectiveness of Head Start have often failed to detect sustained effects of Head Start; effects appear to fade after the Head Start year (U.S. DHHS, 2010a; Zhai et al., 2011). The exceptions are economics-based studies that focus on later-life outcomes, such as high school completion (e.g., Garces, Thomas, & Currie, 2002). Prior studies have not generally considered indirect effects, or mediating pathways, of Head Start on subsequent outcomes. Results from the current study suggest that, although 1 year of Head Start did not have direct effects on school readiness outcomes 1 year after the end of Head Start, it did have indirect effects on the following year's outcomes through the skills promoted during the Head Start year. For example, although Head Start participation did not directly predict the following year's pre-academic skills, results pointed to a modest indirect effect on the following year's pre-academic skills that was mediated

through gains in children's pre-academic skills during the Head Start year, and the establishment of positive teacher–child relationships.

Additionally, results suggest that a year of Head Start had a modest indirect effect on teacher–child relationship quality a full year later, following two paths: teacher–child relationships and pre-academic skills at end of Head Start year. Similarly, Head Start had a modest indirect effect on a reduction of behavior problems through two paths: decreased behavior problems and more positive teacher–child relationships at end of Head Start year. These paths from pre-academic skills in one given year to teacher–child relationships the subsequent year, and also from teacher–child relationships during a given year to reduced behavior problems the subsequent year, are consistent with prior research (Ewing & Taylor, 2009; Justice, Cottone, Mashburn, & Rimm-Kaufman, 2008; Myers & Morris, 2011; Whittaker & Harden, 2010). Moreover, the overall findings of indirect effects of Head Start on subsequent outcomes at the end of the year following Head Start are consistent with our conceptual model and developmental theory, in which indirect influences follow multiple pathways, contributing to a foundation of school readiness competencies that support subsequent development.

#### Limitations and future directions

Although the current study provides an important first step to understanding the effects of Head Start for children living in non-parental care, several limitations must be noted. First, data regarding the reasons that children were living in non-parental care were not available, such as whether children were living with relatives on a voluntary basis or as a result of formal involvement in the child welfare system. Although most non-parental caregivers self-identified as the child's relative (e.g., great-grandmother) they could also be serving as formal (relative) foster parents. Moreover, little was known about the timing or frequency of children's transitions between home environments. Inclusion of these characteristics of children's home lives as covariates in future research

may help to increase precision in estimating effects of Head Start, and other ECE programs, on children's development. Measuring and including more information about children's risks at home may also contribute to a deeper understanding of the role of ECE programs like Head Start in children's development. For example, previous work has suggested that frequent placement changes negatively affect children's well-being (James, Landsverk, Slymen, & Leslie, 2004). It could be that children who experience the most frequent changes at home, and/or trauma due to child abuse and parent separation, may be the ones that benefit most from stable, quality ECE programs like Head Start. Further research that quantifies reasons why children are living in non-parental care, and the frequency of placement changes, is clearly necessary.

Second, teacher's reports of children's behavior problems were not available at baseline; changes in the reporter are likely responsible for the low stability in behavioral problems from baseline to spring, 2003. Moreover, although children's ability to abstain from exhibiting behavior problems at school are important to their readiness for school (Ladd et al., 1999; McClelland et al., 2000; Rimm-Kaufman, Pianta, & Cox, 2000), future research should also examine behavioral measures of children's self-regulatory competencies that are more directly associated with early academic success (e.g., working memory, inhibitory control; Blair & Razza, 2007; McClelland et al., 2007). As is noted above, children living in non-parental care, including children living with relatives outside of the child welfare system, as well as those in formal foster care, tend to exhibit particular difficulties with self-regulation (Billing et al., 2002; McMillen et al., 2005; Pears & Fisher, 2005; Pears et al., 2008). Third, an intent-to-treat (ITT) analysis was used in the current study such that the effect of Head Start was estimated based on which group (Head Start versus control) children were originally assigned to. Whereas this type of analysis generates unbiased estimates regarding the effect of being assigned to Head Start, estimates regarding the effects of actually receiving Head Start could be biased (Shadish, Cook, & Campbell, 2002). As policy is being implemented in the real world, crossovers (i.e., participants moving in and out of treatment and control groups) and dropouts are likely, which makes using ITT of interest to policy makers because it allows for the examination of the likely effects of a particular policy. In the case of the Head Start Impact Study, it appears that the ITT design resulted in slight under-estimation of the magnitude (but not the statistical significance) of some impacts (see U.S. DHHS, 2010b). The Head Start Impact Study was also designed to examine the added impact of Head Start over whatever types of early experiences children would otherwise receive without Head Start. A large percentage (approximately 60%) of children in the control group attended other types of formal and informal ECE programs.

Another potential reason for the relatively modest size of effects in the current study, and in other analyses of data from the Head Start Impact Study, is substantial variability in the experiences of children in both the Head Start and in the control group. Children's experiences in ECE programs depend on a variety of factors that have implications for the effects of these programs on children's development. For example, the quality of teacher-child interactions in ECE programs, including Head Start, appears to be both substantially varied (Pianta et al., 2005; Resnick & Zill, 1999), and particularly important to children's development (Burchinal, Vandergrift, Pianta, & Mashburn, 2010). However, little is known about which aspects of teacher-child interactions, or of other aspects of quality, are most important for children from specific high-risk populations, such as those living in non-parental care. This is an important task for future research in this area, considering the unique needs and vulnerabilities of children living in non-parental care. Future research should also examine the potential importance of stability of ECE arrangements for children living in non-parental care, considering that many of them have a heightened need for stability and consistency in their lives (Jones Harden, 2004).

## Conclusion

In sum, by using a RCT, the present study suggests that Head Start has positive direct and indirect effects on school readiness outcomes for children living in non-parental care. Findings pointed to similar effect sizes on academic outcomes as those that have been documented for the broader Head Start population, but also highlighted novel effects on teacher-child relationships. Even though effect sizes were modest, these findings are critically important, considering how little is currently known about how to promote positive development for children who live in non-parental care. This work also provides an important foundation for future research on the effects of Head Start, and of ECE programs, more generally, for this high-risk group. Policies and priorities are being designed to increase access to Head Start and other quality ECE programs for children with high needs, including those living in non-parental care (e.g., U.S. DHHS, Administration for Children & Families, 2011a, 2011b). Empirical evidence about the impact of programs like Head Start for these children is critical to the success of these efforts. The current study offers an important first step in this emerging line of research. These findings would be useful to other ECE programs as well, and will be critical to the development of effective interventions to enhance these children's readiness for success in school and in life.

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