Head Start Effects Beyond the Classroom:

Parent Involvement Promotes Children's School Readiness by Changing Parenting

Corresponding Author: Arya Ansari
aansari@utexas.edu

Elizabeth Gershoff
liz.gershoff@austin.utexas.edu

Department of Human Development and Family Sciences
University of Texas at Austin
1 University Station A2702, SEA 1.142
Austin, Texas 78712

Acknowledgments
This research was supported from the grant 1R01HD069564 awarded to the second author and grant 5T32HD007081 awarded to the Population Research Center at The University of Texas at Austin, both provided by the Eunice Kennedy Shriver National Institute of Child Health and Human Development.

Abstract

This article examined the extent to which parent involvement within Head Start programs predicted changes in both parent and child outcomes over time using a nationally representative sample of 1,020 three-year old children over three waves of the Family and Child Experiences Survey (FACES-2006). Center policies that promote participation predicted greater parent involvement, and parents who were more involved in Head Start centers demonstrated increased investment and warmth and decreased spanking. In turn, these changes in parenting behaviors were associated with gains in children's academic and behavioral skills. These findings have clear implications for Head Start policy, such that encouraging parent involvement in the Head Start program can serve as an important means for promoting both parent and child outcomes.

Keywords: Parent involvement; Head Start; Parent investment; Spanking; Warmth.

Head Start Effects Beyond the Classroom:

Parent Involvement Promotes Children's School Readiness by Changing Parenting

With President Obama's recent declaration to improve access to early childhood education programs nationally, there has been renewed emphasis on the school readiness of young children, especially those from low-income communities (Duncan & Magnuson, 2013). Indeed, there is an extensive body of literature suggesting that children from these communities enter kindergarten ill-prepared to learn– anywhere from half to a full standard deviation below their more advantaged peers (Brooks-Gunn & Duncan, 1997; Duncan & Magnuson, 2005). Unfortunately, once children fall behind, they are unlikely to catch up and thus the gaps in school achievement persist throughout school (Heckman, 2006; Reardon, 2011). One generally accepted method for improving the school readiness of young children has been intervening during the early years (Duncan & Magnuson, 2013; Cunha, Heckman, Lochner & Masterov, 2006), more specifically, investing in early education programs for vulnerable children (for a review see, Camilli et al., 2010).

Despite the rapid growth in the number of children enrolled in early childhood programs (Barnett, Carolan, Fitzgerald, & Squires, 2011; U.S. Census Bureau, 2013), there remains little doubt that supportive homes and quality parenting remain the most important predictors of children's school success (Crosnoe, Leventhal, Wirth, Pierce, & Pianta, 2010; Belsky, Vandell, Burchinal, Clarke-Stewart, McCartney, & Owen, 2007). Prior research suggests that family-school partnerships are critical for children's early school readiness (Crosnoe et al., 2010, 2012). Thus, early childhood programs that connect with parents and help them learn more about their children, garner new skills, and move out of poverty stand the greatest chance of promoting children's school readiness and adjustment.

The oldest and largest program to provide such a two-generation approach is the federal

Head Start program, which was founded in 1965 as part of the War on Poverty (Zigler & Muenchow, 1992). Fifty years after its founding, Head Start remains the largest federally funded compensatory program in the U.S., serving nearly one million low-income children and their families (ACF, 2013a). The intention of Head Start was always to reach both generations by providing an enriched educational setting for children and by encouraging parents to participate in and learn skills from these settings that would extend beyond the classroom and into children's homes. Current Head Start regulations call for parents to be included in all aspects of the program and require that programs provide opportunities to enhance parents' "parenting skills, knowledge, and understanding of the educational and developmental needs of their children," (Administration for Children and Families [ACF], 2006).

Head Start's Promotion of Parent Involvement

Despite the long history of Head Start and its emphasis on parent involvement, there is a limited literature examining how centers involve parents, whether such involvement has long-term impacts on their behavior, and whether involvement or behavior changes are linked to improvements in children's outcomes. Hindman and colleagues (2013) examined outreach services and opportunities for involvement within Head Start classrooms using the Family and Child Experiences Survey [FACES]-2003 cohort and found that parents became more involved as the year progressed; however, no center characteristics were found to promote involvement in children's classrooms. Using FACES-2000 cohort data, Hindman and Morrison (2011) found that parent involvement went up as there were more opportunities to become involved. Classroom quality and teachers' years of experience in Head Start centers have also been found to predict parents' classroom involvement (Castro et al., 2004). To date, however, studies have not examined whether any services or activities provided by the center to support parent

involvement actually do so.

Parent Involvement and Child Outcomes

Although there is an extensive body of literature on parent involvement, it is primarily focused on the elementary school years (Dearing et al., 2006; Jeynes, 2005). As noted by Arnold and colleagues (2008), parent involvement in preschool is unlike elementary school involvement due to the differences in the classroom structure; specifically, elementary school involvement is geared toward children's academic development (e.g. grades, homework) while involvement during the preschool years is more family oriented with a stronger emphasis on volunteering in the classroom. It is also likely that the early childhood setting is more accustomed to and accommodating of parent presence in the classroom than are elementary school classrooms, where parent presence is confined to specific volunteering roles. Parents' involvement in early childhood settings can take many forms, but the most frequent activities are volunteering in classrooms, attending parent-teacher conferences, and attending other school-related functions (e.g. workshops, school-board meetings, policy-council; Castro, Bryant, Peisner-Feinberg, & Skinner, 2004). Within Head Start programs in particular, parents report engaging in such activities a few times a year on average (Hindman & Morrison, 2011; Hindman et al., 2013).

Parent involvement is thought to contribute to better child outcomes because families are more engaged in their children's learning which in turn results in children who are better equipped for the transition to school (Arnold, Zeljo, Doctoroff, & Ortiz, 2008). There is a growing body of literature which finds that parent involvement in early childhood programs and elementary school settings generally (Ginsburg-Block, Manz, & McWayne, 2010; Dearing et al., 2006; Jeynes, 2003, 2005; Miedel & Reynolds, 1999; Tang, Dearing, & Weiss, 2012) and in Head Start specifically (Hindman & Morrison, 2011; McWayne, Hahs-Vaughn, Cheung, &

Wright, 2013) is directly related to children's short- and long-term school success in addition to lower rates of grade retention and of placement in special education.

Although such direct pathways are possible, the founders of Head Start hypothesized a more indirect means by which involvement affects children, such that involvement in the program actually changes the parents themselves, changes which in turn have benefits for their children (Zigler & Muenchow, 1992). It is this possible pathway that is explored in the current paper. We focus on three potential parent behavior mediators of parent involvement's effects on children over time, namely parent investment, parent warmth, and parent discipline.

Parenting Mediators of Involvement and Child Outcomes

The families of children enrolled in Head Start are typically poor or low income. Efforts to understand why and how growing up in poverty adversely affects children have focused on two parent-mediated mechanisms, namely parent investment in children (Gershoff, Aber, Raver, & Lennon, 2007; Mistry, Benner, Biesanz, Clark & Howes, 2010; Yeung, Linver, & Brooks-Gunn, 2002) and parent stress and its consequent effects on parent behavior including parental warmth and discipline practices (Conger, Conger, & Martin, 2010; Gershoff et al., 2007; Yeung et al., 2002). While Head Start cannot raise families' incomes, if it can improve parent investment and parent behavior, it may be able to disrupt the strong link between poverty and detrimental outcomes for children.

Parental Investment. Parent investment refers to the amount of money, time, or effort that parents spend on goods, activities, or experiences that will directly benefit their children. Greater levels of parent investment have been linked with higher levels of child achievement (Fantuzzo, et al., 2004; Gershoff et al., 2007; Mistry et al., 2010), especially for children from low-income backgrounds (Chien & Mistry, in press). Despite the potential for poor children to

benefit most from investment, their parents generally report low levels of investment in their children (Bradley, Corwyn, McAdoo, & Coll, 2001; Gershoff, et al., 2007; Mistry et al., 2010; Yeung et al., 2002).

A main reason that poor and low-income parents invest less in their children is that they have limited financial resources and, if they are working multiple or non-standard jobs to make ends meet, limited time. While restricted resources and time likely play a strong role in determining why poor parents invest less in their children, it may also be that poor parents are not aware of the importance of small investments, such as reading a book with a child, for children's development, or they may not know on which investments to focus. It is here that early childhood programs like Head Start can provide intervention. Head Start teachers can model investment by demonstrating and valuing small investments of time and effort with children, such as reading books, playing math-related games, or listening to children's own stories. When parents become involved in Head Start themselves by volunteering in the classrooms or elsewhere in centers, they can observe child investments in action, can try them out in a safe setting, and then can apply what they have learned in their interactions with their children at home. Thus, if involvement in Head Start can increase parents' investments in their children, it may be able to stave off the negative impacts of poverty on children's achievement and behavior.

There is some evidence that parents with children in Head Start do in fact increase their investments in their children. In one study, Chazan-Cohen & Kisker (2013) found that families who experienced both Early Head Start and Head Start were more likely to read daily to their children, had more books at home, and had stronger support for language and literacy than families who participated in neither program. Strong evidence of the potential for Head Start to

increase parent investment also comes from the randomized control trial of the program known as the Head Start Impact Study, which found that parents whose children attended Head Start for a year were also more likely to read to their children and engage in activities outside of the home (e.g. going to playgrounds, museums, movies) than were parents whose children were not assigned to Head Start (Puma et al., 2010). Similarly, Hindman and colleagues (2013) documented improved home involvement when parents were more involved in their children's Head Start programs.

Parental Discipline. An important skill parents can learn from Head Start is how to manage children's behavior without harsh forms of discipline such as yelling or hitting. Head Start teachers model positive discipline and non-punitive methods of child behavior management which parents can learn and then use at home with their own children, and thereby supplant punitive forms of discipline, such as spanking. Spanking in particular has been shown to be both ineffective and potentially harmful for children (Gershoff, 2002, 2010; Gershoff, Lansford, Sexton, Davis-Kean, Sameroff, 2012; Lee, Altschul, & Gershoff, 2013). If involvement in Head Start can reduce parents' use of spanking, this may be a main way that participation in Head Start improves children's behavior over time.

There is indeed some evidence that participation in Head Start is linked with reductions in parents' use of spanking (Aikens, Tarullo, Hulsey, Ross, West, & Xue, 2010; Chazan-Cohen, Raikes, & Vogel, 2013; Puma et al., 2010; Zhai, Waldfogel, & Brooks-Gunn, 2013). Small-scale qualitative studies have revealed that single mothers who were actively involved in the Head Start program were less likely to spank their children and were more likely to use non-punitive forms of discipline such as reasoning or time out (Bruckman & Blanton, 2003). The randomized trial of Head Start has documented similar trends, such that teenage mothers and mothers of

three-year olds enrolled in the Head Start program spanked their children less often than non-Head Start parents (Puma et al., 2010). It is also worth noting that recent evaluations of the Early Head Start program with only a school-based component found no impact for parents' use of spanking, but programs with a mixed approach (home visits and school component) did have a positive impact on spanking (Chazan-Cohen, et al., 2013).

Parental Warmth. Parental warmth is characterized by parents' display of love, affection, and their responsiveness toward their children. Unfortunately, children in low-income families tend to experience lower levels of parental warmth and responsiveness than their higher income peers (Burchinal et al., 2006; Mistry et al., 2010). This is troubling, in large part because parental warmth has been associated with a wide range of positive child outcomes including children's academic achievement, behavior problems, social skills, and self-regulation (Mistry, Vanderwater, Huston, & McLoyd, 2002; Mistry et al., 2010). It is worth noting, however, that some studies have found that warmth does not predict children's aggression directly or buffer children from the harmful effect of spanking (Lee et al., 2013). However, it may still be the case that warmth may have an indirect effect on child outcomes by predicting parents' discipline practices and investments, such that parents who display greater warmth toward their children would be less likely to spank their children and invest more time (Afifi, Brownridge, Cox, & Sareen, 2006). Accordingly, if Head Start programs can model the importance of parental warmth within the classroom, this in turn might be another way the program can improve both parental behaviors, and children's early socio-emotional and behavioral competencies, a potential mediational pathway which has not yet been examined.

Indeed, it is promising that early education programs generally, and the Head Start program in particular, have been found to promote warmth and responsiveness among high-risk

and disadvantaged families (Puma et al., 2010; Zhai et al., 2013). In one study, Zhai and colleagues (2013) found that children enrolled in Head Start programs experienced greater parental warmth than their peers in exclusive parental care. Randomized control trials have also documented similar patterns; specifically, parents of children in Head Start were more likely to report warmth toward their children than were parents whose children were not in Head Start (Puma et al., 2010).

The Current Study

To our knowledge, there has been no large-scale analysis of the specific mechanisms by which Head Start might improve parenting, or in other words, *how* Head Start might reduce parents' use of spanking and increase their investment and warmth. Thus, the current study examines whether parent involvement in Head Start constitutes such a mechanism. We used structural equation modeling (SEM) to examine how organizational features of the Head Start program, including practical services in addition to teacher and staff training in parent involvement, might promote parent involvement in Head Start, whether parent involvement is associated with change in parenting practices over time, and whether any changes in parents behaviors are associated with children's gains across areas of early academic achievement and behavior over the course of two years in Head Start. The full hypothesized model is presented in Figure 1. This analysis is especially important in light of recent calls to examine the mechanisms of successful early education programs (Duncan & Magnuson, 2013) and to understand the associations between parents' school involvement and their home-based practices (Ginsburg-Block et al., 2010).

Method

The Family and Child Experiences Survey (FACES)-2006 cohort followed a nationally

representative sample of 2,205 3-year olds and 1,290 4-year olds children enrolled in 125 Head Start centers across the country between their enrollment in Head Start (age three or age four; fall 2006) and the end of their kindergarten year (spring 2008). For the purposes of the current study, we restricted our sample to: 1) children who experienced Head Start for two years, at the age of three and four (n = 1,203), 2) children who did not switch language of assessment (e.g. Spanish to English or English to Spanish), 3) children who had a center level identification number for clustering, and 4) children who had a longitudinal child level weight. These restrictions resulted in a final sample of 1,020 children (51% female) and families enrolled in 118 Head Start centers (see Table 1 for unweighted child and family demographics).

As can be seen in Table 1, children were on average 40.83 months old at beginning of the Head Start program. The majority came from Black (41 %) and Hispanic (27%) families while a smaller number of children came from White (22%) or 'Other' (10%) homes. Almost all children came from single parent families (e.g. not married or not two-parent; 66%) while one in three children had mothers (M_{age} = 28.50, SD = 6.02), with less than a high school education (32%) and half had mothers who were unemployed (44%). Similarly, two in five children (38%) had fathers (M_{age} = 31.67, SD = 7.48) with less than a high school diploma; however, the majority (68%) held a full-time job. It is also worth noting that nine in ten (87%) of our parent respondents were mothers. ANOVA and chi-square tests indicated that family background variables (e.g. employment, depression, marital status, household size) were stable across the two years, thus we used the measures of the demographic variables from the children's three-year-old year as control variables.

Measures

Descriptive information on all of the study variables is available in Tables 2, 3, and 4.

Practical support and services. During the fall of 2006, center directors provided information regarding whether their center provided any of the following services to encourage parents to participate in Head Start programs: 1) transportation, 2) childcare, 3) interpreters, 4) serving food, snacks, or supper, and 5) offering incentives (e.g. door prizes). Items were scored as 0 = "no" or 1 = "yes." Responses were summed into a variable that ranged from 1 to 5 and had a mean of 4.32 (*SD* = .99).

Teacher and staff training in parent involvement. Education coordinators provided information regarding whether in-service training was provided for teachers in "effective communication with parents" and "involving parents in the classroom". Information was also collected regarding the extent to which coordinators were themselves involved in promoting parent involvement within the Head Start program. Sample items included: "supervising and mentoring teachers/staff", "arranging activities that involve parents" and "providing outreach/recruitment services". All five questions were scored as 0 = "no" or 1 = "yes" and were combined to create a staff training in parent involvement scale (*M* = 3.82, *SD* = 1.20, range = 1-5).

Obstacles to involvement. During the spring of 2007, parents reported whether or not (0 = "no" or 1 = "yes") they encountered any of 13 obstacles to involvement, with the most frequently reported obstacles being: work interference (56%), childcare needs (31%), school or training interference (22%), and need for transportation (15%). In an approach taken by Hindman and colleagues (2013), we created a sum variable that ranged from 0 to 13 and had a mean of 1.63 obstacles (*SD* = 1.22).

Parent involvement. Parents also reported on how often they participated in Head Start since the start of the program year. The parent involvement survey was based on a five-point

Likert scale (0 = "not yet" to 4 = "at least once a week") with parents indicating how often they engaged in each of 12 potential involvement activities, from which we created two subscales. Classroom-oriented involvement (α = .70) included the following activities (percentages of parents reporting at least a 2 on the scale ("once or twice") reported in parentheses): attending parent-teacher conferences (83%), observing in the classroom (73%), having home visit from Head Start staff (70%), and volunteering in the classroom (62%). Center support involvement (α = .70) was created from the following activities: helping prepare food or materials (56%), attending workshops (49%), attending fundraising activities (34%), participating in Head Start policy council (26%), and preparing Head Start newsletters (16%). Looking across activities, 98% of parents reported participating in at least one involvement activity. The two subscales were significantly correlated, r (954) = .65, $p < .001$ and were used to indicate a latent factor of parent involvement in the analyses.

Parent investment. Parents' reported on their investment of time and effort in activities with their children at the spring wave of each Head Start year using twelve questions from the Home Observation for Measurement of the Environment scale (HOME; Caldwell & Bradley, 1984). Questions were scored as 0 = "no" or 1 = "yes" and were summed; averages of the summed variable ranged from 3 to 12. Sample items included: told child a story; taught child letters, words, or numbers; played counting games; and read to child at least three times in the past week. Reliability of this scale was low (α = .58-.59), however, the scale was retained because the HOME scale is often used to measure parent investment (Chien & Mistry, in press; Gershoff et al., 2007; Mistry et al., 2010; Yeung et al., 2002) and is the only such measure available in FACES-2006.

Parental spanking. During the spring of each Head Start year, mothers also reported on

whether they had spanked their child during the last week, and if so, roughly how many times, with responses ranging from 0-21. A scale was created with responses above four times per week (less than 2% of the sample) top coded at four.

Parental warmth. Also at the spring assessments, parents reported the degree to which they engage in warm behavior toward children using five items drawn from the Child Rearing Practices Report (CRPR; Block, 1965). Sample items include: "my child and I have warm intimate moments together", "I encourage my child to be curious, to explore, and to question things", and "I make sure my child knows I appreciate what (he/she) tries to accomplish". The scale was based on prior studies (Aikens et al., 2010) and rated on a five-point scale (1 = "exactly" to 5 = "not much") and rescaled so that high scores reflected high warmth (α = .48-.50).

Children's problem behaviors. Teachers rated the extent to which children exhibited problem behaviors (1 = never, 2= sometimes, 3= very often) in the spring of each Head Start year using 14 items from the Behavioral Problems Index (BPI; Peterson & Zill, 1986). Sample items include: "hits/fights with other children", "is very restless," and "is unhappy." The measure had strong internal consistency with this sample (α = .88-.89).

Children's approaches to learning. Teachers also reported the extent to which children exhibited positive approaches to learning using 29 items from the Preschool Learning Behaviors Scale (PLBS; McDermott, Green, Francis, & Scott, 2000). Sample items include: "pays attention to what you say", "is reluctant to tackle a new activity", and "is distracted too easily by what is going on in the classroom." The scale was internally consistent (α = .72-.82).

Children's literacy skills. Children's receptive vocabulary was tested using the Peabody Picture Vocabulary Test (PPVT; Dunn & Dunn, 1997). Spanish speaking children were administered both the PPVT and the Test de Vocabulario en Imagenes Peabody (TVIP; Dunn,

Padilla, Lugo, & Dunn, 1986). The PPVT and TVIP are norm-referenced assessments with high-published reliabilities (α = .93 & .95; Dunn & Dunn, 1997). All children were also assessed using subsets of the Woodcock Johnson (WJ-III; Woodcock, McGrew, & Mather, 2001) to measure their language and literacy skills including: letter-word identification, spelling, diction, oral comprehension, phonological skills, and basic reading. Children who failed the language screener or children who missed three consecutive items within a subscale were assessed with the Woodcock-Muñoz (WM-III; Woodcock & Muñoz-Sandoval, 1996). The Woodcock Johnson is also a norm-referenced assessment with strong published reliabilities (α = .80-.90; Woodcock, McGrew, & Mather 2001). The Story and Print Concepts task (Mason & Stewart, 1989) was administered to evaluate children's comprehension of basic story concepts and how knowledge of how print is used to convey meaning. The reliability for the Story and Print Concepts task was good (α = .70-.78).

Children's math skills. The Applied Problems subscale of the Woodcock Johnson (Woodcock, McGrew, & Mather, 2001) was used to assess children's early math skills in preschool. Spanish versions of the assessment were again administered to children who failed the language screener (Woodcock & Muñoz-Sandoval, 1996). Assessed math skills include: applied problems, quantitative concepts, number series, calculation, and counting. Published reliabilities of the math sections are high (α = .86; Woodcock, McGrew, & Mather 2001). In addition to the Woodcock Johnson, preschool children's math skills were also evaluated directly through nationally normed assessments that were developed for the Early Childhood Longitudinal Study, Birth Cohort (ECLS-B; Snow et al., 2007). The ECLS-B assessment has high published reliability (α = .89; Najarian, Snow, Lennon, & Kinsey, 2010) and included questions that evaluated children's classification, comparison, pattern, and shape recognition skills.

Covariates. All analyses controlled for a comprehensive set of child, family, teacher, classroom, and center covariates measured at the Fall of the first Head Start year, with the only exceptions being characteristics of the teachers in the second year of Head Start. Child level covariates were children's age, gender, and race and ethnicity (Latino, Black or Other, with White as the referent). Demographic covariates for both parents were age, highest degree attained, and employment status (employed part time or not employed, with employed full time as the referent). Family-level covariates were ratio of income to poverty (1= 50% of poverty threshold to 6 = above 200% of the poverty threshold), family structure (not married or not two parent household, with married as the referent), family size, language spoken at home (Spanish or Other, with English as the referent), and the respondent's relation to the child (father or grandparent/other, with mother as the referent).

It might also be that parents who have high levels of depressive symptoms will both be less involved and have children with more behavior and academic problems. We thus controlled for the respondent parent's depressive symptoms, measured via the short form of the Center for Epidemiological Studies-Depression Scale (CES-D, α = .88-.91; Radloff, 1977), which included 12 items with scores ranging from 0 to 36 (M = 5.67, SD = 6.30). Note, however, that for our analyses, we used the categorical depression variable that was derived from the continuous measure (0-4, not depressed; 5-9, mildly depressed; 10-14, moderately depressed, 15 or more, severely depressed).

Several teacher-level characteristics were included as covariates in both year one and year two because children did not have the same teachers over the two years, namely highest education level, years of experience in early childhood education, whether they had received a degree in early childhood education, and their depressive symptoms. The latter was measured

using the CES-D (*M's* = 4.13 to 4.42, *SD's* = 4.54 to 4.78, range = 0-28). On average, teachers had 12 years of experience (*SD's* = 7.54-7.78) and the majority held an associate's degree or greater (79-84%) in a field related to early childhood education (93-94%).

Because the extent to which parent involvement is promoted in a center is likely determined by both the center director and the center education coordinator, who is responsible for ongoing training of teachers, we included as covariates the highest degree of the director and of the education coordinator as well as whether each had a degree in early childhood education.

Finally, to account for the possibility that high quality classrooms in the first Head Start year promote both parent involvement and positive child outcomes, we controlled for the structural quality of the classrooms using the Early Childhood Environmental Rating Scale-Revised (Harms, Clifford, & Cryer, 2005; α = .71-.92), the sensitivity and responsiveness of teachers using the Arnett Caregiver Interaction Scale (Arnett, 1989), and the frequency of both math and literacy instruction. During the initial Head Start year, children were in classrooms of mediocre quality that averaged 3.58 (*SD* = .56) on the 1 to 7 scale of the ECERS-R, but for the most part, had fairly sensitive and responsive teachers (Arnett; *M* = 66.05, *SD* = 9.72, range = 23-85). Teachers also reported that they instructed in math (*M* = 5.25, *SD* = .64) and literacy (*M* = 5.10, *SD* = .73) three- to four-days a week on average.

Analytic Strategy

To address our research questions, we employed structural equation modeling (SEM) with latent factors using Mplus 6.1 (Muthen & Muthen, 2011). Missing data were minimal; however, we used the Mplus estimation procedure, full-information maximum likelihood estimation (FIML), to handle any missing data. FIML estimation fits the covariance structure to the data for each individual participant and is the preferred methodological approach for

generalizing results to the population. In the current study, there were 373 missing data patterns, suggesting that data were in fact missing at random and meeting the assumptions for FIML (Schafer & Graham, 2002). Due to the nested nature of the data, we clustered at the center level (children nested within centers, Fall 2006) in order to adjust the standard errors for children within the same center. Finally, to account for sampling stratification and nonresponse bias, we utilized a longitudinal child level weight (PRA13WT) to ensure that our sample was representative of the larger population of Head Start attendees. Model fit was evaluated using a range of fit indices including: the chi-square statistic, the Comparative Fit Index (CFI), the root-mean square error of approximation (RMSEA), and the Standardized Root-Mean-Square Residual (SRMR). In general, values greater than .90 on the CFI and less than .05 on the RMSEA and SRMR have been considered as indicators of good model fit (Hu & Bentler, 1999).

Results

Measurement Model

Before testing our structural models, we conducted a single measurement model for our latent variables, namely parent involvement in year one and all four child outcomes (behavior problems, positive learning behaviors, math, and literacy skills) at both year one and year two. As can be seen in Table 4, all factor loadings were significant at $p < .001$ and were comparable across time. Our measurement model demonstrated good fit: CFI = .966, RMSEA = .039, SRMR = .041, and x^2 (df = 325) = 639.79, $p < .001$. To confirm our decision to include the child outcomes as four separate factors, we also conducted an alternative measurement model combining children's behaviors (negative and positive) into one latent factor and children's achievement (math and literacy) into another. This model, however, did not fit the data as well: CFI = .939, RMSEA = .050, SRMR = .078, and x^2 (df = 325) = 972.94, $p < .001$.

Structural Model

The full hypothesized structural model is presented in Figure 1. The model fit the data well: CFI = .914, RMSEA = .028, SRMR = .043, and x^2 (*df* = 1600) = 2886.57, $p < .001$. Given the complexity of the model, we will summarize the findings by each successive set of dependent variables in the model, namely involvement, parenting behavior, and child outcomes. All unstandardized and standardized path coefficients are presented in Table 5.

Parent Involvement. After controlling for the full set of child, family, center, and classroom covariates, we found that teacher and staff training in how to involve parents did in fact promote parents' participation ($\beta = .10$, $p < .05$). Parents who faced more frequent obstacles were less likely to participate in the Head Start program ($\beta = -.22$, $p < .001$). Contrary to our expectations, center directors' reports of the practical support and services they provide to facilitate parent involvement were linked with less rather than more parent involvement ($\beta = -.07$, $p < .05$). Neither the structural classroom quality (ECERS) nor process quality (Arnett) significantly predicted parents' involvement. Similarly, none of the parent or household covariates predicted parents' participation in Head Start.

Parent Investment, Spanking, and Warmth. Across the two years of Head Start, parents demonstrated stability in their investment ($\beta = .50$, $p < .001$), and, to a lesser extent, in their warmth ($\beta = .24$, $p < .001$), and use of spanking ($\beta = .42$, $p < .001$). Despite this stability, parent involvement in Head Start predicted Year 1 levels of these parenting behaviors as well as changes in them between the spring of Year 1 and the spring of Year 2. Parents who demonstrated stronger participation in the Head Start program in the spring of Year 1 were more likely to be invested at home ($\beta = .24$, $p < .001$) at that same point, but more importantly, increased their investment in their children over the following 12 months ($\beta = .10$, $p < .001$).

Involvement was not significantly associated with concurrent measures of warmth or spanking, but it did predict increases in parental warmth over the ensuing year (β = .11, p < .01) which in turn predicted decreases in parents' use of spanking (β = -.14, p < .001); involvement did not significantly predict changes in spanking over time directly. There was a small but significant (β = -.02, p < .05) indirect association of involvement with change in spanking as mediated through change in parents' warmth.

Child Outcomes. By controlling for children's initial skills at the start of their first Head Start year and looking at these same child behaviors at the end of their second Head Start year, we examined whether changes in parenting precipitated by parent involvement in turn predicted children's early skill gains over the course of two years in the Head Start program. We found that the effects of involvement on change in children's academic skills were mediated through improvements in parent investment (β*'s* = .01, p < .05, for both math and literacy). The effects of involvement on children's early behaviors were not mediated through warmth (β*'s* = .002, p = .08) or spanking (β*'s* = -.002, p = .08) but were, however, close and in the hypothesized direction. Thus, although parent involvement did predict improvements in investment and warmth as noted above, there were few significant indirect effects of involvement on child outcomes as mediated through improvements in parenting.

We did find, however, that improvements in parenting over time predicted improvements in child outcomes. Changes in parents' investment were associated with children's gains across early math (β = .09, p < .01) and literacy skills (β = .06, p < .05) but not children's behavior ($\beta_{behavior\ problems}$ = .00, *ns*, & $\beta_{positive\ learning\ behaviors}$ = .02, *ns*). Increases in parental warmth over the year did not directly predict change in any of the child outcomes (see Table 5 for coefficients). Consistent with prior literature, increases in parents' use of spanking were associated with

increases in behavior problems over the year (β = .11, p < .01) and decreases in children's positive approaches toward learning (β = -.11, p < .01). Indirect estimates indicated that change in warmth did have indirect effects on change in child outcomes as mediated through change in parenting, and that these pathways were specific; increases in warmth predicted improvements in child behavior by changing spanking (behavior problems, β = -.02, p < .01; approaches toward learning, β = .02, p < .01), while warmth predicted increases in child achievement through increased investment (math, β = .02 p < .01; literacy, β = .01, p < .05).

Considering the existing literature, which suggests that involvement is directly linked with children's early school success (Arnold et al., 2008; Dearing et al., 2006; Hindman & Morrison, 2011; Miedel & Reynolds, 1999), we also tested an alternative model that included direct paths from involvement to all child outcomes. The alternative model fit the data equally well: CFI = .914, RMSEA = .028, SRMR = .043, and x^2 (df = 1596) = 2882.56, p < .001. It is notable that there were no differences in the substantive findings between the alternative model and our hypothesized model; when taking into account the parent mediators, involvement did not directly predict any child outcomes. Thus, we retained our original hypothesized model, which was more parsimonious.

Discussion

Since its inception in the sixties, parent involvement has been a cornerstone of the Head Start program (Zigler & Muenchow, 1992); yet, little is known about what constitutes effective involvement in order to foster children's early academic and behavioral skills. Although we know that Head Start attendance is associated with positive parenting behaviors (Aikens et al., 2010; Chazen-Cohen et al., 2013; Puma et al., 2010; Zhai et al., 2013), it remains unclear what drives these effects. In order to better understand why some programs are more successful than

others, we need to examine specific processes that might promote children's early development in addition to parenting behaviors (Duncan & Magnuson, 2013). Thus, the current study addressed some important gaps in the existing literature by examining: a) predictors of families' participation within the Head Start program, b) the association of parent involvement with changes in other parenting practices over the course of children's two years in Head Start, and c) whether changes in parenting (investment, spanking, and warmth) predicted changes in children's academic and behavioral skills over the course of two years.

In this sample of Head Start attendees, parents were more actively involved in classroom-oriented activities than in social gatherings at the center. More specifically, parents actively participated in social events at least six times during the year while they participated in the classroom on a minimum of 14 different occasions. Notably, families did not experience many logistical obstacles to involvement; however, the obstacles they did encounter were strongly linked with less frequent involvement in the Head Start program. Two of the most frequently cited reasons for not being involved pertained to parents' work and school schedules, which interfered with opportunities to partake in school activities. Taken together with the fact that a large number of low-income parents work non-traditional hours (Dunifon, Kalil, Crosby, & Su, 2013), it might therefore be beneficial if Head Start programs offered a variety of opportunities for involvement that go beyond traditional school hours in order to maximize parents' participation. This is particularly important given that the practical support and services (e.g. childcare, interpreters, and transportation) that Head Start programs currently provide do not promote involvement and in fact, were linked with reduced parent participation. Note, because the level of support and services variable was reported by the center directors and not the parents, it may be that level of support and services is an indicator of a highly disadvantaged sample that

has many needs, needs which in turn preclude them from being involved in Head Start.

It is intriguing, however, that teacher and staff training in parent involvement was linked with stronger parent participation, which to our knowledge has not been demonstrated before. This is of considerable importance for Head Start programs because, within the existing literature, not many center-level processes (e.g. center outreach, center quality, teacher education) have been found to promote parent involvement within Head Start (Castro et al., 2004; Hindman et al., 2011, 2013; Hindman & Morrison, 2011). Accordingly, teacher and staff training, which is both flexible and affordable, can serve as one means for connecting teachers with parents and ultimately encouraging greater parent involvement within the Head Start program.

The importance of getting parents involved was made clear once we examined links between involvement and both parenting change and child behavior change. Specifically, parent involvement in Head Start predicted significant direct improvements in parent warmth and investment and indirect improvements on parents' use of spanking. Results from the current investigation underscore the importance of parent involvement in Head Start programs as one means for promoting parental investment and warmth at home and indirectly reducing parents' usage of spanking. Indeed, this study is consistent with a growing literature which finds that Head Start promotes more positive parenting behaviors (Aikens et al., 2010; Chazan-Cohen et al., 2013; Puma et al., 2010; Zhai et al., 2013), but more importantly, our results also highlight parent involvement as an important mechanism for achieving improvements in parenting.

Consistent with our expectations, involvement did not directly support children's early learning when taking into account other parenting practices. Rather, the improvements in parenting over the course of a year that were predicted by involvement were in turn predictive of improvements in children's behavior and in their academic achievement. We found some

specificity of effects, such that increases in investment were associated with gains in children's early academic achievement (Chien & Mistry, in press; Gershoff et al., 2007; Mistry et al., 2008) while any increases in spanking were associated with heighted behavioral problems (Gershoff, 2002; Gershoff et al., 2010; Lee et al., 2013). We found that parental warmth was not directly linked with children's early behaviors, similar to Lee and colleagues. (2013), nor with early academic achievement, which is consistent with prior work by Yeung and colleagues (2002). It is worth noting, however, that changes in parental warmth were linked with a reduction in parents' use of spanking and an increase in investment, and indirectly with children's early school success spanning across academic skills and behaviors. Thus, these data support the ideas put forth by Zigler and Muenchow (1992), who suggested that the benefits for Head Start children occurred, at least in part, because their parents changed.

Strengths, Limitations, and Directions for Future Research

Our use of a longitudinal study with a large and nationally representative sample of children attending Head Start is the first key strength of the study. By including two measures of our parenting mediators and child outcomes, we were able to focus on whether early parent involvement predicted change in parenting and in turn change in child behavior. This approach, along with our inclusion of a broad set of child-, family-, and teacher-level covariates minimizes the possibility that unmeasured third variables account for the relations identified in this study.

Among the limitations of the study are that almost all parents who reported on their parenting practices were mothers (87%). Although the literature on fathers is scarce, we know that children with caring and supportive fathers demonstrate greater well-being and school success (for an overview see, Avellar et al., 2011); yet, to date, there exist very few programs and services that actually target fathers. Notably, the Head Start program has established new

father engagement initiatives in order to raise awareness regarding the importance of fatherhood and the important roles fathers can play within the Head Start program (ACF, 2013b). These initiatives involve teacher and staff training in creating a father friendly environment and how teachers and staff can build these important connections with fathers. By doing so, Head Start programs hope to increase father involvement within the program, and more importantly, their children's lives. In light of these recent policy initiatives, future research is needed to understand: a) how fathers are involved in Head Start, b) whether father involvement is different from that of mothers, c) what Head Start programs can do to specifically support fathers' participation, and ultimately d) how we can better serve fathers during the early years of parenthood.

A second limitation is that our involvement and parenting variables were based upon parent reports, and thus these variables share method variance that may have inflated the associations among our parenting constructs. However, two of our predictors of involvement were from center directors or education specialists and all of our measures for child outcomes were based on direct child assessments or teacher reports. It is also the case that the measure of warmth had low internal consistency, which likely affected its predictive ability. It should also be kept in mind that our findings were restricted to the three and four year old years of Head Start attendees. Therefore, understanding these processes among older children during the early elementary school years as well as children and families in other forms of early education programs would be beneficial. Finally, the current investigation is observational in nature and although we controlled for a wide-range of covariates and included lagged child outcomes and parenting practices, we cannot make causal conclusions. We provide insight into the relations between the study constructs but future research should build on our findings by using experimental methods.

Conclusions

Our results make clear that parent involvement in Head Start centers predicts improvements in parenting over time, and that these improvements are in turn associated with gains in children's behavior and academic achievement. Further, we determined that teacher and staff training can promote parent involvement, while family-level barriers reduce it. To increase parent involvement, Head Start programs should consider devoting more time and resources for teacher and staff training while offering more opportunities for involvement that go beyond traditional school hours for working parents. At a time when policymakers are seeking to understand how programs influence young children's school success (Duncan & Magnuson, 2013), this study provides timely new evidence that highlights the importance of parent involvement. Maximizing parents' participation in the Head Start program can serve as an important way of improving parental behaviors at home and, in turn, improving children's early school readiness.

References

Administration for Children and Families. (2006). *Head Start program performance standards and other regulations.* Washington, DC: U.S. Department of Health and Human Services. Retrieved from: http://eclkc.ohs.acf.hhs.gov/hslc/standards/Head%20Start%20 Requirements/1304/ 1304.40%20Family%20partnerships..htm

Administration for Children and Families. (2013a). *Head Start program facts fiscal year 2012.* Washington, DC: US Department of Health and Human Services. Retrieved from: http://eclkc.ohs.acf.hhs.gov/hslc/mr/factsheets/docs/hs-program-fact-sheet-2012.pdf

Administration for Children and Families. (2013b). *Father engagement.* Washington, DC: US Department of Health and Human Services. Retrieved from: https://eclkc.ohs.acf.hhs.gov/hslc/tta-system/family/center/fatherengagement

Afifi, T. O., Brownridge, D. A., Cox, B. J., & Sareen, J. (2006). Physical punishment, childhood abuse and psychiatric disorders. *Child Abuse & Neglect, 30,* 1093-1103. doi:10.1016/j.chiabu.2006.04.006

Aikens, N., Tarullo, L., Hulsey, L., Ross, C., West, J., & Xue, Y. (2010). ACF-OPRE report: A year in Head Start: children, families and programs. *Washington, DC: US Department of Health and Human Services.* Retrieved from: https://www.acf.hhs.gov/sites/default/files/ opre/catalog_dec_2011.pdf

Alexander, K. L., Entwisle, D. R., Blyth, D. A., & McAdoo, H. P. (1988). Achievement in the first two years of school: Patterns and processes. *Monographs of the Society for Research in Child Development, 53,* 1–157

Arnett, J. (1989). Caregivers in day-care centers: Does training matter? *Journal of Applied Developmental Psychology, 10,* 541-552. doi.org/10.1016/0193-3973(89)90026-9

Arnold, D. H., Zeljo, A., Doctoroff, G. L., & Ortiz, C. (2008). Parent involvement in preschool:

Predictors and the relation of involvement to preliteracy development. *School Psychology Review, 37,* 74-90.

Avellar, S., Dion, M. R., Clarkwest, A., Zaveri, H., Asheer, S., Borradaile, K., ... & Zukiewicz, M. (2011). *Catalog of research: Programs for low-income fathers.* Washington, DC: Mathematica Policy Research.

Barnett, W. S., Carolan, M. E., Fitzgerald, J., & Squires, J. H. (2011). The State of Preschool 2011. *National Institute for Early Education Research, New Brunswick, NJ.*

Belsky, J., Vandell, D. L., Burchinal, M., Clarke-Stewart, K. A., McCartney, K., & Owen, M. T. (2007). Are There Long-Term Effects of Early Child Care? *Child Development, 78,* 681–701. DOI: 10.1111/j.1467-8624.2007.01021.x

Berry, D. J., Bridges, L. J., & Zaslow, M. J. (2004). *Early childhood measures profiles*. Washington, DC: Child Trends.

Bradley, R.H., Corwyn, R.F., Burchinal, M., McAdoo, H., & Coll, C.G. (2001). The home environments of children in the United States: Part I. Variations by age, ethnicity, and poverty status. *Child Development, 72,* 1844-1867. DOI: 10.1111/1467-8624.t01-1-00382

Brooks-Gunn, J., & Duncan, G. J. (1997). The effects of poverty on children. *The Future of Children, 7,* 55-71. doi.org/10.1111/1467-8624.00149.

Bruckman, M., & Blanton, P. W. (2003). Welfare-to-work single mothers' perspectives on parent involvement in head start: Implications for parent-teacher collaboration. *Early Childhood Education Journal, 30*, 145-150. DOI: 10.1023/A:1022057720814

Burchinal, M., Roberts, J. E., Zeisel, S. A., Hennon, E. A., & Hooper, S. (2006). Social risk and protective child, parenting, and child care factors in early elementary school years. *Parenting: Science and Practice, 6,* 79–113. DOI:10.1207/s15327922par0601_4

Camilli, G., Vargas, S., Ryan, S., & Barnett, W. S. (2010). Meta-analysis of the effects of early

education interventions on cognitive and social development. *The Teachers College Record*, *112*, 579-620.

Castro, D. C., Bryant, D. M., Peisner-Feinberg, E. S., & Skinner, M. L. (2004). Parent involvement in Head Start programs: The role of parent, teacher and classroom characteristics. *Early Childhood Research Quarterly*, *19*, 413-430. doi.org/10.1016/j.ecresq.2004.07.005

Chazan-Cohen, R., & Kisker, E. E. (2013). Links between early care and education experiences birth to age 5 prekindergarten outcomes. *Monographs of the Society for Research in Child Development, 78*, 110-129. DOI: 10.1111/j.1540-5834.2012.00705.x

Chazan-Cohen, R., Raikes, H. H., & Vogel, C. (2013). Program subgroups: Patterns of impacts for home-based, center-based, and mixed-approach programs. *Monographs of the Society for Research in Child Development, 78*, DOI: 10.1111/j.1540-5834.2012.00704.x

Chien, N.C., & Mistry, R. S., (in press). Geographic variation in cost of living: Associations with family and child well-being. *Child Development*. DOI: 10.1111/j.1467-8624.2012.01846.x

Conger, R. D., Conger, K. J., & Martin, M. J. (2010). Socioeconomic status, family processes, and individual development. *Journal of Marriage and Family*, *72*, 685-704. DOI: 10.1111/j.1741-3737.2010.00725.x

Crosnoe, R. (2010). *Two-generation strategies and involving immigrant parents in children's education*. Urban Institute.

Crosnoe, R. (2012). Family-school connections, early learning, and socioeconomic inequality in the US. *Multidisciplinary Journal of Educational Research*, *2*, 1-36. doi:10.4471/remie.2012.01

Crosnoe, R., Leventhal, T., Wirth, R. J., Pierce, K. M., & Pianta, R. C. (2010). Family

socioeconomic status and consistent environmental stimulation in early childhood. *Child Development, 81*, 972–987. DOI: 10.1111/j.1467-8624.2010.01446.x

Cunha, F., Heckman, J. J., Lochner, L., & Masterov, D. V. (2006). Interpreting the evidence on life cycle skill formation. Interpreting the evidence of life cycle skill formation. In F. Hanushek & F. Welch (Eds.), *Handbook of the economics of education*. North Holland, Amsterdam: Elsevier.

Dearing, E., Kreider, H., Simpkins, S., & Weiss, H. B. (2006). Family involvement in school and low-income children's literacy: Longitudinal associations between and within families. *Journal of Educational Psychology, 98*, 653–664. doi.org/10.1037/0022-0663.98.4.653

Duncan, G. J., Dowsett, C. J., Claessens, A., Magnuson, K., Huston, A. C., Klebanov, P., … & Japel, C. (2007). School readiness and later achievement. *Developmental Psychology*, *43*, 1428–1446. doi.org/10.1037/0012-1649.43.6.1428.

Duncan, G. J., & Magnuson, K. A. (2005). Can family socioeconomic resources account for racial and ethnic test score gaps? *Future of Children, 15,* 35–5. doi:10.1353/foc.2005.0004

Duncan, G. J., & Magnuson, K. A. (2013). Investing in preschool programs. *Journal of Economic Perspectives, 27,* 109-132. doi.org/10.1257/jep.27.2.109

Dunifon, R., Kalil, A., Crosby, D. A., & Su, J. H. (2013). Mothers' night work and children's behavior problems. *Developmental Psychology.* doi:10.1037/a0031241

Dunn, L. M., & Dunn, L.M. (1997). *Peabody Picture and Vocabulary Test, Third Edition. Examiner's Manual and Norms Booklet*. Circle Pines, MN: American Guidance Service.

Dunn, L. M., Padilla, E. R., Lugo, D. E., & Dunn, L. M. (1986). *Test de Vocabulario en Imagenes Peabody*. Circle Pines, MN: American Guidance Service.

Fantuzzo, J., McWayne, C., Perry, M. A., & Childs, S. (2004). Multiple dimensions of family involvement and their relations to behavioral and learning competencies for urban, low-

income children. *School Psychology Review*, *33*, 467-480.

Gershoff, E. T. (2002). Corporal punishment by parents and associated child behaviors and experiences: a meta-analytic and theoretical review. *Psychological Bulletin, 128,* 539-579. doi:10.1037/0033-2909.128.4.539

Gershoff, E. T., Aber, J. L., Raver, C. C., & Lennon, M. C. (2007). Income is not enough: Incorporating material hardship into models of income associations with parenting and child development. *Child Development, 78,* 70-95. DOI: 10.1111/j.1467-8624.2007.00986.x

Gershoff, E. T., Lansford, J. E., Sexton, H. R., Davis-Kean, P., & Sameroff, A. J. (2012). Longitudinal links between spanking and children's externalizing behaviors in a national sample of white, black, Hispanic, and Asian American families. *Child Development, 83,* 838-843. DOI: 10.1111/j.1467-8624.2011.01732.x

Ginsburg-Block, M., Manz, P. H., & McWayne, C. (2010). Partnering with families to foster early achievement in reading and mathematics. In A. L. Reschly & S. Christenson (Eds.). *The handbook on school family partnerships for promoting student competence* (pp. 176-203). Oxford, UK: Routledge/Taylor and Francis Group.

Harms, T., Clifford, R. M., & Cryer, D. (2005). *Early childhood environment rating scale--Revised edition*. New York, NY: Teachers College Press.

Heckman, J. J. (2006). Skill formation and the economics of investing in disadvantaged children. *Science*, 312, 1900-1902. DOI: 10.1126/science.1128898

Hindman, A. H., Miller, A. L., Froyen, L. C., & Skibbe, L. E. (2012). A portrait of family involvement during Head Start: Nature, extent, and predictors. *Early Childhood Research Quarterly, 27,* 654-667. doi.org/10.1016/j.ecresq.2011.11.002

Hindman, A. H., & Morrison, F. J. (2011). Family involvement and educator outreach in head start: Nature, extent, and contributions to early literacy skills. *The Elementary School*

Journal, *111*, 359-386. DOI: 10.1086/657651

Hu, L.-T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives *Structural Equation Modeling, 6,* 1–55. doi:10.1080/10705519909540118

Jeynes, W. H. (2005). A meta-analysis of the relation of parental involvement to urban elementary school student academic achievement. *Urban Education, 40*, 237-269. doi: 10.1177/0042085905274540

Jeynes, W. H. (2003). A meta-analysis the effects of parental involvement on minority children's academic achievement. *Education and Urban Society*, *35*, 202-218. doi: 10.1177/0013124502239392

Lee, S. J., Altschul, I., & Gershoff, E. T. (2013). Does warmth moderate longitudinal associations between maternal spanking and child aggression in early childhood? *Developmental Psychology.* doi: 10.1037/a0031630

Mason, J. M., & Stewart, J. (1989). *The CAP early childhood diagnostic instrument* (prepublication edition), American Testronics.

McDermott, P. A., Green, L. F., Francis, J. M., & Stott, D. H. (2000). *Preschool Learning Behaviors Scale*. Philadelphia: Edumetric and Clinical Science

Melhuish, E. C., Phan, M. B., Sylva, K., Sammons, P., Siraj-Blatchford, I. & Taggart, B. (2008). Effects of the home learning environment and preschool center experience upon literacy and numeracy development in early primary school. *Journal of Social Issues, 64*, 95–114. DOI: 10.1111/j.1540-4560.2008.00550.x

Miedel, W. T., & Reynolds, A. J. (2000). Parent involvement in early intervention for disadvantaged children: Does it matter? *Journal of School Psychology*, *37*, 379-402. doi.org/10.1016/S0022-4405(99)00023-0

Mistry, R. M., Benner, A. D., Biesanz, J. C., Clark, S. L., Howes, C. (2010). Family and social risk, and parental investments during early childhood years as predictors of low-income children's school readiness outcomes. *Early Childhood Research Quarterly, 25*, 432-449. doi.org/10.1016/j.ecresq.2010.01.002

Mistry, R. S., Vandewater, E. A., Huston, A. C., & McLoyd, V. C. (2002). Economic Well-Being and Children's Social Adjustment: The Role of Family Process in an Ethnically Diverse Low-Income Sample. *Child Development, 73*, 935-951. DOI: 10.1111/1467-8624.00448

Muthén, L. K., & Muthén, B. O. (1998-2011). Mplus User's Guide. Sixth Edition. Los Angeles, CA: Muthén & Muthén.

Najarian, M., Snow, K., Lennon, J., & Kinsey, S., (2010). *Early childhood longitudinal study, birth cohort (ECLS-B), preschool-kindergarten 2007 psychometric report.* NCES 2010-009. Washington, DC: U.S. Department of Education, National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education; Washington, DC

Peterson, J. L., & Zill, N. (1986). Marital disruption, parent-child relationships, and behavior problems in children. *Journal of Marriage and the Family, 48*, 295-307. doi.org/10.2307/352397.

Puma, M., Bell, S., Cook, R., Heid, C., Shapiro, G., Broene, P. Jenkins, F…, & Spier, E. (2010). *Head Start Impact Study Technical Report*. Washington, DC: U.S. Department of Health and Human Services. Retrieved from: http://www.acf.hhs.gov/programs/opre/hs/impact_ study/reports/impact_study/ hs_impact_study_tech_rpt.pdf

Radloff, L. S. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement, 1,* 385-401. doi: 10.1177/014662167700100306

Raver, C. C. (2003). Young children's emotional development and school readiness. *Social Policy Report, 16,* 3-19.

Reardon, S. F. (2011). The widening achievement gap between the rich and the poor: New evidence and possible explanations. In G. J. Duncan & R. J. Murnane (Eds.), *Whither Opportunity? Rising Inequality, Schools, and Children's Life Chances* (pp. 91-113). Washington, DC: Russell Sage Foundation.

Schafer J.L., & Graham J.W. (2002). Missing data: our view of the state of the art. *Psychological Methods, 7,*147–177. DOI: 10.1037//1082-989X.7.2.147

Snow, K., Thalji, L., Derecho, A., Wheeless, S., Lennon, J., Kinsey, S., Rogers, J. et al. (2007). *Early childhood longitudinal study, birth cohort (ECLS-B): Data file user's manual (2005-06).* Washington, DC: National Center for Education Statistics.

Tang, S., Dearing, E., & Weiss, H. B. (2012). Spanish-speaking Mexican-American families' involvement in school-based activities and their children's literacy: The implications of having teachers who speak Spanish and English. *Early Childhood Research Quarterly, 27,* 177-187. doi.org/10.1016/j.ecresq.2011.09.001

U.S. Census Bureau (2013). *Who's minding the kids? Child care arrangements: Spring 2011. Household economic studies.* U.S. Department of Commerce Economics and Statistics Administration. Retrieved from: http://www.census.gov/prod/2013pubs/p70-135.pdf

Woodcock, R. W., McGrew, K. S., & Mather, N. (2001). *Woodcock-Johnson III tests of achievement*. Itasca, IL: Riverside Publishing.

Woodcock, R. W., & Muñoz-Sandoval, A. F. (1996). *Bateria Woodcock-Muñoz Pruebas de Aprovechamiento-Revisada*. Chicago: Riverside.

Yeung, W. J., Linver, M. R., & Brooks–Gunn, J. (2002). How money matters for young children's development: Parental investment and family processes. *Child Development, 73,*

1861-1879. DOI: 10.1111/1467-8624.t01-1-00511

Zhai, F., Waldfogel, J., & Brooks-Gunn, J. (2013). Estimating the effects of Head Start on parenting and child maltreatment. *Children and Youth Services Review*, *35,* 1119-1129. doi.org/10.1016/j.childyouth.2011.03.008

Zigler, E., & Muenchow, S. (1992). *Head Start: The inside story of America's most successful educational experiment.* New York, NY: Basic Books.

Table 1

Child and Family Sample Descriptives

Variable	*% or M (SD)*	*n*
Child race and ethnicity		
Black	41.3%	418
Hispanic	26.9%	272
White	21.9%	222
Other	10.0%	101
Child gender		
Female	51.1%	521
Child age (months)	40.83 (3.83)	1015
Father's age	31.67 (7.48)	879
Mother's age	28.50 (6.02)	994
Father's education		
Less than a high school diploma	37.6	174
High school diploma/GED	33.5%	155
Some college	20.7%	96
Bachelor's degree or more	8.2%	38
Mother's education		
Less than a high school diploma	31.7%	305
High school diploma/GED	33.4%	321
Some college	28.2%	271
Bachelor's degree or more	6.8%	65
Father's employment status		
Full-time	68.2%	307
Part-time	14.4%	65
Unemployed	17.4%	78
Mother's employment status		
Full-time	33.9%	319
Part-time	22.0%	207
Unemployed	44.1%	415
Parent marital status		
Married	34.1%	339
Not married	15.5%	154
Not two parent household	50.4%	501
Respondent parent depression		
Not depressed	55.6%	551
Mildly depressed	24.5%	243
Moderately depressed	11.2%	111
Severely depressed	8.7%	86
Respondent relation with child		
Mother/mother figure	86.8%	864
Father/father figure	8.4%	83
Grandparent/other	4.6%	46
Household size	4.55 (1.58)	993
Household language		
Language majority	83.0%	842
Language minority	17.0%	173
Ratio of income to poverty	2.73 (1.43)	993

Note. Measures were collected in the fall of Year 1

Table 2

Descriptives for Teacher, Classroom, Center-Director, and Education Coordinator Covariates

	Year 1		Year 2	
Variable	***% or M(SD)***	***n***	***% or M(SD)***	***n***
Teacher information				
Years of experience	12.39 (7.54)	1018	12.47 (7.79)	888
Highest degree				
High school diploma/GED	5.5%	56	6.1%	44
Some college or less	15.9%	162	10.9%	97
Associate's degree	41.7%	424	45.5%	404
Bachelor's degree	30.5%	310	31.1%	276
MA or graduate school	6.5%	66	7.5%	67
Specialization in ECE	92.9%	893	94.4%	997
Depression				
Not depressed	64.5%	657	63.8%	623
Mildly depressed	24.3%	247	20.2%	197
Moderately depressed	7.3%	75	12.4%	121
Severely depressed	3.9%	40	3.7%	36
Classroom information				
Amount of instruction				
Math	5.25 (.64)	1019	-	-
Literacy	5.10 (.73)	1019	-	-
Quality (ECERS-R)	3.58 (.56)	974	-	-
Responsiveness/Sensitivity (ARNETT)	66.05 (9.72)	979	-	-
Program type				
Full day Head Start	54.2%	552	-	-
Half day Head Start	43.2%	441	-	-
Home-based Head Start	2.6%	27	-	-
Center director information				
Highest degree				
Some college or less	7.5%	75	-	-
Associate's degree	18.3%	182	-	-
Bachelor's degree	42.0%	417	-	-
Graduate school but no degree	5.1%	51	-	-
Graduate degree (MA or PhD)	26.6%	264	-	-
Specialization in ECE	93.4%	928	-	-
Education coordinator information				
Highest degree				
Some college or less	1.2%	12	-	-
Associate's degree	7.5%	77	-	-
Bachelor's degree	33.2%	339	-	-
Graduate school but no degree	11.4%	116	-	-
Graduate degree (MA or PhD)	46.7%	476	-	-
Specialization in ECE	92.3%	941	-	-

Note. ECE = early childhood education

Table 3
Descriptives for Main Variables in the Model

	Year 1		Year 2	
Variable	***M (SD)***	***n***	***M (SD)***	***n***
Obstacles to involvement	1.63 (1.22)	951	-	-
Practical support/services	4.31(.99)	991	-	-
Teacher/staff training	3.82 (1.20)	1019	-	-
Parent involvement				
Classroom	1.17 (.68)	955	-	-
Social	.54 (.55)	955	-	-
Parent investment	10.62 (1.49)	956	10.59 (1.56)	956
Parent warmth	4.28 (.48)	956	4.26 (.49)	943
Parents' use of spanking	.65 (1.09)	955	.50 (.95)	950
Behavior problems				
Hyperactivity	3.52 (2.91)	987	2.24 (2.58)	968
Aggression	1.68(1.97)	986	1.32 (1.82)	968
Withdrawal	1.68 (2.05)	986	1.34 (1.83)	968
Positive learning behaviors				
Persistence	48.62 (10.14)	987	53.16 (8.91)	968
Attitude	49.18 (10.05)	987	51.90 (9.10)	968
Motivation	48.78 (10.08)	987	52.41 (9.35)	968
Literacy skills				
WJ-Letter Word	297.87 (18.65)	853	336.81 (26.21)	990
WJ-Spelling Word	337.58 (28.77)	915	382.62 (28.67)	992
Story & Print Concepts	2.85 (2.10)	831	6.06 (2.15)	973
PPVT	84.72 (15.66)	955	89.95 (15.24)	992
Math skills				
ECLS-B Math	6.14 (2.40)	939	12.41 (3.62)	973
WJ-Applied Problems	368.48 (24.24)	834	399.77 (20.69)	981

Table 4
Factor Loadings on Latent Variables

Latent Factors	Factor Loadings			
	Year 1		Year 2	
	B	***β***	**B**	***β***
Parent involvement				
Classroom	1.00 [a]	.80	-	-
Social	1.23***	.81	-	-
Behavior problems				
Hyperactivity	1.00	.86	1.00	.89
Aggression	.61***	.79	.60***	.77
Withdrawal	.38***	.48	.42	.53
Positive learning behaviors				
Persistence	1.00	.92	1.00	.93
Attitude	.91***	.85	.89***	.83
Motivation	.77***	.73	.80***	.74
Literacy skills				
WJ-Letter Word	1.00	.59	1.00	.72
WJ-Spelling Word	.77***	.30	.98***	.68
Story & Print Concepts	.10***	.54	.07***	.66
PPVT	.88***	.63	.49***	.66
Math skills				
ECLS-B Math	1.00	.97	1.00	1.00 [b]
WJ-Applied Problems	4.98***	.49	4.93***	.91

Note. [a] According to SEM requirements, for each factor, one variable loading was set to equal 1.00. [b] Residual variance was set to .001. *** $p < .001$

Table 5
Unstandardized and Standardized Path Coefficients for the Main Model

Structural Model Paths by Endogenous Variable	B (SE)	*β*
Parent involvement		
Obstacles to involvement → parent involvement	-.12 (.02) ***	-.22
Practical support/services → parent involvement	-.05 (.02) *	-.07
Teacher/staff training → parent involvement	.05 (.02) *	.10
Parent investment		
Investment Y1→ investment Y2	.52 (.05) ***	.50
Parent involvement → investment Y1	.54 (.12) ***	.24
Parent involvement → investment Y2	.23 (.07) ***	.10
Warmth Y2 → investment Y2	.55 (.10) ***	.17
Parents' use of spanking		
Spanking Y1→ spanking Y2	.37 (.04) ***	.42
Parent involvement → spanking Y1	.05 (.07)	.03
Parent involvement → spanking Y2	-.06 (.05)	-.04
Warmth Y2 → spanking Y2	-.29 (.07) ***	-.14
Parent warmth		
Warmth Y1→ warmth Y2	.25 (.05) ***	.24
Parent involvement → warmth Y1	-.01 (.02)	-.01
Parent involvement → warmth Y2	.08 (.03) **	.11
Behavior problems		
Behavior problems Y1→ behavior problems Y2	.43 (.06) ***	.47
Investment Y2 → behavior problems Y2	.00 (.03)	.00
Warmth Y2 → behavior problems Y2	-.04 (.09)	-.01
Spanking Y2 → behavior problems Y2	.16 (.06) **	.11
Positive learning behaviors (PLBS)		
PLBS Y1 → PLBS Y2	.36 (.05) ***	.41
Investment Y2 → PLBS Y2	.12 (.19)	.02
Warmth Y2 → PLBS Y2	.23 (.44)	.02
Spanking Y2 → PLBS Y2	-.86 (.28) **	-.11
Literacy skills		
Literacy Y1 → literacy Y2	1.04 (.10) ***	.83
Investment Y2 → literacy Y2	.06 (.03) *	.06
Warmth Y2 → literacy Y2	.03 (.09)	.01
Spanking Y2 → literacy Y2	-.07 (.05)	-.05
Math skills		
Math Y1 → math Y2	1.14 (.16) ***	.72
Investment Y2 → math Y2	1.08 (.37) **	.09
Warmth Y2 → math Y2	-.64 (1.17)	-.02
Spanking Y2 → math Y2	-.71 (.59)	-.04

Note. Covariances among factors or variables within time and coefficients for control variables are not included in the table but are available upon request. Y1 = year 1; Y2 = year 2. * $p < .05$, ** $p < .01$, *** $p < .001$

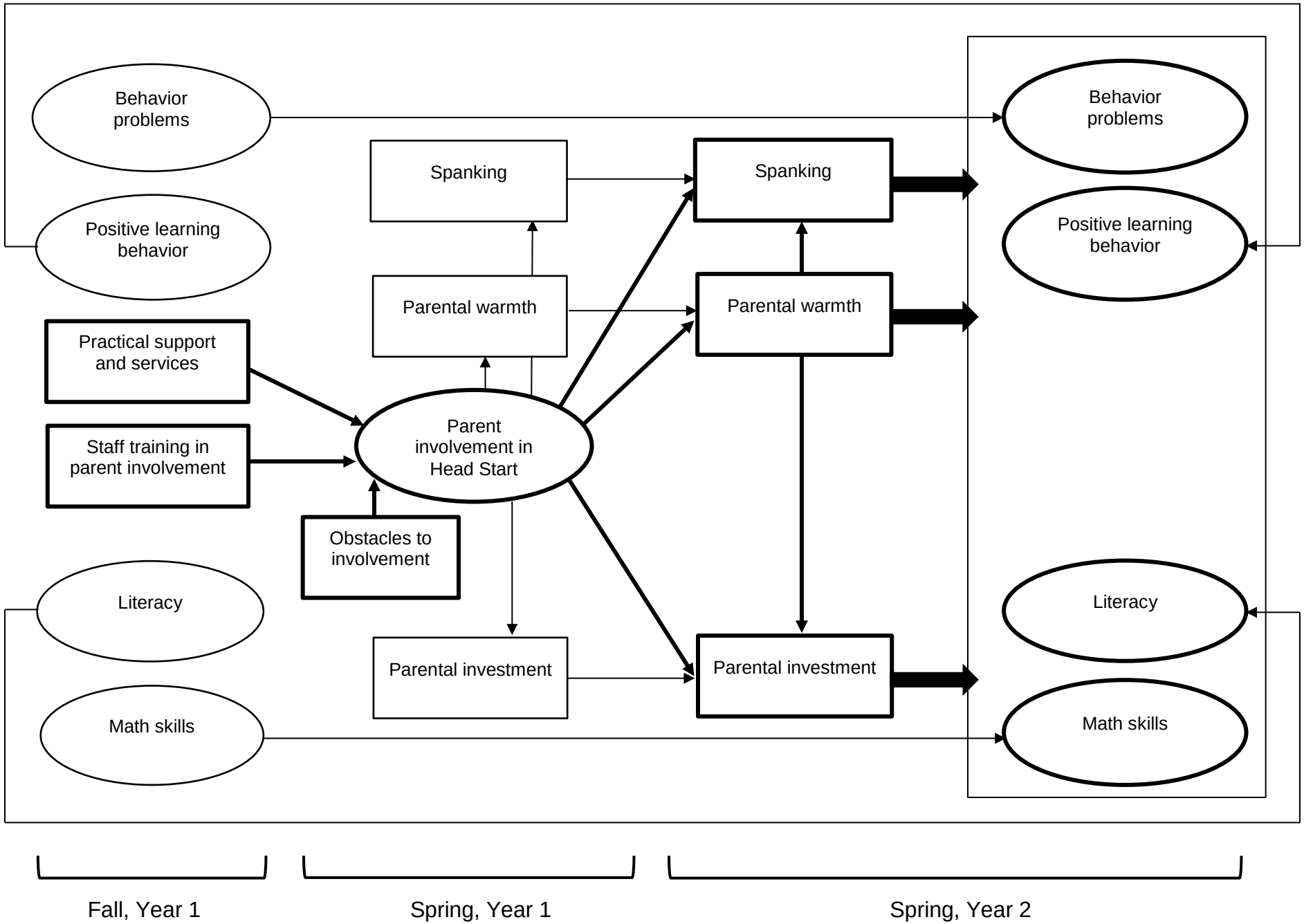

Figure 1. Hypothesized model of the influence of parent involvement in Head Start on child outcomes mediated through parenting behaviors.