

AN ABSTRACT OF THE THESIS OF

Bethany J. Harmon for the degree of Master of Sciences in Human Development and Family Studies presented on June 6, 2014.

Title: The Effect of Head Start on Mother and Father Involvement.

Abstract approved: _____

Richard A. Settersten, Jr.

Past research on Head Start has focused on child outcomes, yet Head Start services also target the behaviors of parents. Using data from the Fragile Families and Child Well-being Study (FFCW), the current study examined the effect of Head Start on mother ($n = 3,575$) and father ($n = 1,812$) involvement in activities at home with children. The first four waves of FFCW data followed children and their parents from birth to age five. FFCW data included families from low- to middle-income backgrounds allowing direct comparisons in this study between very low-income families whose children were eligible for Head Start to more advantaged families whose children were not. Using scales of parental involvement in at-home activities with children, mothers and fathers of Head Start students were compared to mothers and fathers of children in parent care, daycare, pre-kindergarten and preschool.

A two-step analytic process was used (a) to establish that average levels of parent involvement varied significantly across childcare setting groups at each of the three waves, and (b) to control for known background characteristics and previous parent involvement while predicting post-intervention parent involvement. In the first step, analysis of variance (ANOVA) revealed significant differences between mothers of Head Start children and mothers of children

in other childcare categories before Head Start entry, and revealed positive effects of Head Start on mother involvement after program exit. In the second step, Ordinary Least Squares (OLS) regression further controlled background characteristics that have predicted mother involvement in previous literature. The OLS results supported the ANOVA finding that Head Start positively influenced mother involvement.

Although ANOVA and OLS regression results suggested that Head Start did not affect the involvement of fathers, results indicated that the level of father involvement when the child was one year old predicted involvement when the child was five years old, even after controlling for whether fathers lived with the child. A post-hoc Structural Equation Model (SEM) further examined the effect of fathers' involvement and co-residence in years one and three on involvement at year five. Fathers who reported high levels of involvement in daily activities when children were very young maintained high levels as children moved through preschool and into kindergarten. Efforts to engage fathers early on in the daily lives of their children may bring cumulative dividends for both father and child through his continued involvement as the child grows older, even – and perhaps especially – when the father no longer lives with the child.

©Copyright by Bethany J. Harmon
June 6, 2014
All Rights Reserved

The Effect of Head Start on Mother and Father Involvement

by
Bethany J. Harmon

A THESIS

submitted to

Oregon State University

in partial fulfillment of
the requirements for the
degree of

Master of Science

Presented June 6, 2014
Commencement June 2015

Master of Science thesis of Bethany J. Harmon presented on June 6, 2014

APPROVED:

Major Professor, representing Human Development and Family Studies

Co-Director of the School of Social and Behavioral Sciences

Dean of the Graduate School

I understand that my thesis will become part of the permanent collection of Oregon State University libraries. My signature below authorizes release of my thesis to any reader upon request.

Bethany J. Harmon, Author

ACKNOWLEDGEMENTS

The author expresses sincere appreciation to Dr. Richard Settersten for invaluable guidance and support throughout the brainstorming, writing, proposing, analyzing, interpreting, and ever more writing that this thesis has entailed. Thank you for your excitement about the evolution of my research questions, your encouragement to pursue interesting twists in the data, and for helping me find my tiny piece of the research puzzle.

This project benefitted greatly from the input of Dr. Megan McClelland, Dr. Leslie Richards, Dr. Kathryn Ciechanowski, Dr. Bobbie Weber, and Dr. Alan Acock. Thank you for your gifts of time, knowledge, and advice at key junctures of this project.

No graduate school endeavor is complete without obsessive discussion about research questions, analytic strategies, and data gripes with other students. The support and advice from the graduate students in the HDFS program was both humbling and motivating. Special thanks to Timothy Ottusch and Claudia Recksiedler for graciously listening to my long-winded stories and hypotheses, and to Rob Duncan for so patiently teaching my cohort how to survive and thrive in Stata. Thanks to Joy Lile and Terese Jones for endless philosophical discussions.

Thank you to my parents, Darrell and Shirley Harmon, for the opportunity to go to college and for your support along the way. Thanks to Tricia Chorak for keeping me healthy and for sharing your fabulous friendship and family. Finally, thanks to Peter Godlewski for unwavering encouragement, flexibility, and for celebrating each small accomplishment!

TABLE OF CONTENTS

	<u>Page</u>
1. Introduction.....	2
2. Literature Review	5
2.1. Head Start's Intended effect.....	5
2.2. Childcare Options for Low-Income Families.....	8
2.3. Predictors of Parent Involvement.....	9
2.4. Life Course Framework.....	12
2.4.1. Cumulative Disadvantage.....	13
2.4.2. Linked Lives	15
3. Research Question.....	16
4. Method.....	17
4.1. Sample.....	17
4.2. Research Design.....	18
4.2.1. Childcare setting at age 5	18
4.2.2. Covariates for all models.....	19
4.2.3. Parent Involvement Scale.....	20
4.2.4. Parent at-home involvement scale at age 1.....	21
4.2.5. Parent at-home involvement scale at age 3	22
4.2.6. Parent at-home involvement scale at age 5.....	22
4.3. Procedure.....	22
5. Results	23
5.1. Descriptive Statistics for Mothers.....	23
5.2. Analysis of Variance for Mothers	24
5.3. Residualized Change Analysis for Mothers.....	25
5.4. Descriptive Statistics for Fathers.....	27
5.5. Analysis of Variance for Fathers	27
5.6. Residualized Change Analysis for Fathers.....	28
5.7. Post-hoc Structural Equation Model for Fathers.....	29
6. Discussion	31
6.1. Head Start's effect on Mothers and fathers.....	31
6.2. Early Father Involvement and Residence with Child.....	35
6.3. Limitations of this study.....	37
7. Conclusion	39
8. References.....	41
9. Appendices.....	52
9.1. Appendix A.....	52
9.2. Appendix B: Figures.....	54
9.3. Appendix C: Tables	56

LIST OF FIGURES

<u>Figure</u>	<u>Page</u>
<i>Figure 1.</i> Conceptual model: Head Start participation and at-home parent-child involvement.	54
<i>Figure 2.</i> Relationship between father involvement and number of days per week father resides with child.....	55

LIST OF TABLES

<u>Table</u>	<u>Page</u>
Table 1: <i>Mother and Father Scale Alphas</i>	56
Table 2: <i>Mother and Father Involvement by Childcare Setting</i>	57
Table 3: <i>Description of Mothers</i>	58
Table 4: <i>OLS Regression Results for Mothers</i>	59
Table 5: <i>Description of Fathers</i>	60
Table 6: <i>OLS Regression Results for Fathers</i>	61
Table 7: <i>Standardized Coefficients for Structural Equation Model</i>	62

The Effect of Head Start on Mother and Father Involvement

1. INTRODUCTION

Parents are a proximal, continual influence over their children, and are connected to their children much longer than the months that any given teacher might spend with them in a formal schooling or daycare setting (Epstein, 2001). Parents not only control their child's home environment, but also choose the environments to which the child will be exposed outside of the home, although opportunities to provide certain experiences are often constrained or determined by social and economic status and policies (Tekin, 1996). For example, availability of quality childcare before kindergarten entry depends on household income and eligibility for subsidies or early interventions such as Head Start.

Activities inside the family's home also shape the development of the child: by engaging in their child's learning processes, parents help build foundational skills that the children will utilize throughout their lives in school, family life, and jobs. Even simple activities such as mealtime conversation between parents and children and reading aloud are related to vocabulary acquisition and emergent literacy skills (Beals, 1997; Hindman, Skibbe & Foster, 2014). These skills are strong predictors of later academic success and high school completion (Alexander, Entwisle, & Horsey, 1997). Children from socioeconomically disadvantaged families are at greater risk than their higher-income peers of entering first grade without these skills (Wasik & Hindman, 2010).

Interventions to improve academic outcomes for children in economically disadvantaged families include programs such as Head Start, which is documented to prevent cognitive delay and increase school readiness (Anderson, Shinn, Fullilove, Scrimshaw, Fielding, Normand, & Carande-Kulis, 2003). A nationally representative dataset of Head Start families was used to show that family involvement at school and at home was associated with greater literacy gains

for children (Hindman, Miller, Froyen & Skibbe, 2012). One of the intended outcomes of Head Start is to increase parent involvement with their children (Zigler & Styfco, 2010; Henrich & Gadaire, 2008). If the program meets this goal, then the levels of parent involvement over time should significantly differ between Head Start and non-Head Start parents from similar backgrounds. The goal of this study are to test whether Head Start programming is associated with greater gains in parent involvement than would be expected if those families had not received Head Start services.

Most existing literature on parent involvement focuses on how involved the parent is in the child's academic training before and after formal school entry. Not enough is known about how parents and children interact in their homes apart from activities solely intended to foster academic skills. Non-academic activities may foster relational interdependency between parent and child, serving as a buffer against risk as the child grows. A recent meta-analysis of parent education programs' effects on parents' involvement with their child's education suggested that the more subtle aspects of the programs were strongly associated with positive child outcomes (Jeynes, 2007). Elements such as open communication, warmth in parenting, and high expectations of one's children were more strongly associated with these positive child outcomes than overt behaviors such as attending school activities.

In the example of reading aloud, several dimensions beyond literacy skills may be intertwined in the activity; for example, the parent and child are persisting in a task, likely exhibiting warmth to one another, and the parent may be modeling appropriate social interaction skills such as taking turns talking (Hindman & Morrison, 2012). However, it is also likely that displays of affection and behavior modeling can take place in activities with shared goals, such as playing games together, playing inside or outside, going on outings, and doing chores

together. The latter activities are not necessarily geared directly toward academic outcomes, but they likely meet social, emotional, and physical developmental needs while children and parents build relationships with one another. Given the focus in existing literature on parent involvement in child academic activities to the exclusion of non-academic activities, current research may lack key insights into how parents interact with their children to produce positive developmental outcomes, and how social programs and policies influence parents' behaviors.

Given the realities of Head Start funding, many parents are turned away from this resource and must find other childcare. The literature provides insights into the disparities that these families face, as well as on Head Start's goals and outcomes relating to parent-child involvement for mothers and fathers and traditional predictors of these patterns. A life course perspective will help to frame the existing literature and provide insight into patterns of mother and father involvement. The Fragile Families and Child Well-being Study (FFCW) provides data on parent-child involvement in families utilizing a variety of care settings. The FFCW data includes families from middle-income backgrounds and the data allow direct comparisons between very low-income families eligible for Head Start and more advantaged families whose children attend preschool. The primary question that this study will address is: does Head Start affect mother and father involvement in at-home activities? Because mothers and fathers have different patterns of involvement with their children, the models in this study will analyze mothers and fathers separately. An additional post-hoc analysis of patterns of father involvement will add to the discussion of intriguing patterns of father involvement and father's co-residence with the children. Taken together, the findings this study will present suggest specific influences on parent involvement and implications for the field of childcare and family policy.

2. LITERATURE REVIEW

2.1. HEAD START'S INTENDED EFFECT

Most research on childcare settings focuses primarily on childrens' social, cognitive, and health outcomes, yet programs such as Head Start attempt to enhance positive parent behaviors as well as prepare disadvantaged students for school. Head Start explicitly offers support to parents through parenting workshops in an effort to enhance family goal setting, and implicitly models developmentally appropriate child engagement strategies as they volunteer during classroom activities (Henrich & Gadaire, 2008). One recent study using matched pairs within the Fragile Families and Child Well-being Study demonstrated that receipt of Head Start services was significantly related to decreases in spanking, low parental warmth, and low access to learning materials when compared to children in parental care (Zhai, Waldfogel & Brooks-Gunn, 2013). Although it is possible that Head Start served a monitoring function that deterred parents from engaging in the latter negative parenting behaviors, it is also possible that Head Start served as a resource that provided parents with new knowledge or other resources. If these services decreased negative parenting behaviors, could the services also increase positive parenting behaviors such as parent involvement in at-home activities?

Bronfenbrenner and Ceci (1994) advocate a model in which the proximal processes in the environment determine how an individual's potential for adaptation is expressed. For a parent and child that live together, the dyad that their relationship creates may bi-directionally shape each of their developmental paths. A key proposition of Bronfenbrenner's bioecological model of development is that development occurs through interactions of individuals with people, objects, and one's immediate environment over time (Bronfenbrenner & Morris, 2006). Any time one person in a dyad develops and changes, the other member of the dyad is influenced

through interaction with their partner. In the context of a parent with a child who is enrolled in Head Start, both members of the dyad receive services through the program that are meant to maximize developmental opportunities for the child. As the parent learns and enacts new strategies to foster a safe and nurturing environment for the growth of the child, this should positively affect the child's development. Conversely, as the parent observes and participates in the Head Start classroom, they develop alongside their child. Head Start can be viewed as a niche to which both parents and children belong: the goal of Head Start is to drive parents and children to the very front of their individual adaptive ranges to maximize social, emotional, physical, and cognitive outcomes. Head Start recognizes that creating a stimulating, healthful environment at school for the students may not effect lasting change if the more proximal microsystems to which the students return are not also stimulating, nurturing, and healthful.

Head Start performance standards require programs to build partnerships with parents by providing them with training to set family goals and access social and health services, providing opportunities for volunteering, inviting input on curriculum and class activities, and inviting parents to serve on Head Start governance (Henrich & Gadaire, 2008; Improving Head Start for School Readiness Act of 2007). Jeynes' (2012) meta-analysis of parent involvement programs demonstrated that emphasizing equal partnerships between parents and teachers resulted in positive effects for child outcomes. Findings from the Head Start Impact Study (HSIS) suggest that parents whose children received one year of Head Start services reported spending more time with their children at third grade than the control group (Puma et al., 2012). Using the same data, Gelber and Isen (2013) suggested that this effect could represent the parents' desire to compliment and reinforce their child's engagement with school.

The current study uses FFCW data to further explore the relationship between Head Start participation and parent involvement using information about mother and father involvement from birth through early childhood from a wider sample than HSIS. The HSIS was designed as a randomized control trial, but the randomization occurred at Head Start application and thus did not randomize from the entire eligible population but rather from families knowledgeable about Head Start. This not only narrows the generalizability of the findings but also prevents researchers from knowing whether prior levels of parent involvement push parents to seek out Head Start services. The HSIS data collection began when the children were 3 years old and cannot be used to illuminate patterns of parent involvement before Head Start entry. The current study adds to the literature by following parents from the birth of their child and throughout early childhood.

Much research related to Head Start families uses a broad comparison group of “non-Head Start” without attention to exactly which type of care the child received instead of Head Start. However, Zhai and colleagues (2011) divided the non-Head Start families into specific comparison groups by center care, preschool, parent, and relative care and found significant differences on varied dimensions of school readiness in the children in these distinct care settings. Due to the sampling criteria, there is no way to directly compare the participants in the HSIS with their more economically advantaged peers in preschools, whose early education settings Head Start attempts to approximate. The current study relies on rationale provided for dividing the childcare settings of FFCW participants into multiple varied categories. These categories allow differences between individuals in different care settings to be explored: cognitive gains for children were most apparent in Head Start children when compared to parental care, but not when compared to children in other center-based care (Zhai, Brooks-Gunn

& Waldfogel, 2011). However, social-emotional gains for the Head Start children were apparent when compared to both reference groups (Zhai, Brooks-Gunn & Waldfogel, 2011).

2.2. CHILDCARE OPTIONS FOR LOW-INCOME FAMILIES

Increases in women's labor force participation over the last several decades have escalated demand for non-parental childcare. Sixty-three percent of all preschool-aged children receive some type of non-parental care and recent research estimates that existing centers only have capacity to serve about a third of children eligible for Head Start (Greenberg, 2011; Hillemeier, Morgan, Farkas & Maczuga, 2013).

One of the primary concerns for families in low-income households is the cost of childcare. Access to affordable, reliable childcare is an important factor in maternal employment. Research has documented that low-income families receiving childcare subsidies have access to and utilize higher quality childcare options than low-income families without subsidies (Ertas & Shields, 2012). According to a report released by the U.S. Census Bureau with data collected in 2005, low-income families spend an average of 28 percent of their household income on childcare, while their advantaged counterparts may spend an average of 7 percent of their income on childcare (Laughlin, 2010). Families with very young children paid more in childcare costs than families with older children, increasing the salience of childcare subsidies and other government assistance for low-income families with young children. In recent years, subsidies for childcare have grown to serve about 2 million children per month, although these children comprise only about 29 percent of families eligible to receive childcare subsidies (Johnson, Martin & Brooks-Gunn, 2011).

A study of whom among the eligible population uses childcare subsidies suggested that eligible non-applicants have less income, more food insecurity, and more young children than

families who receive subsidies (Johnson, Martin & Brooks-Gunn, 2011). Some of these mothers are non-native English speakers and may not be aware of their eligibility or have the skills necessary to navigate the subsidy system. Others may simply lack the skills to navigate this system due to poverty and general disadvantage. Although there is no data to directly measure differences in families receiving Head Start services compared to eligible families who did not apply for services, it is likely that the pattern of families able to apply for and receive Head Start services mirrors the trend of child care subsidies. Perhaps many eligible families lack the knowledge, time, or resources to apply and advocate for Head Start services. Another issue is that the federal program's capacity is well under the level of need for families who do apply for services.

It is clear that parents juggle a variety of needs and values while choosing how to provide care for their children, and that not all low-income families are aware of or able to apply to federal child care assistance programs. Rational choice theory may help explain how parents seek to maximize efforts toward goals of continued employment and positive development of their children within the constraints that they perceive in the child care market, such as cost and convenience (Yesil-Dalgi, 2011). Parents likely choose from the options they perceive as available to their families, as dictated by employment needs, receipt of assistance for paying for childcare, and educational and developmental values.

2.3. PREDICTORS OF PARENT INVOLVEMENT

Parent involvement is a broad term that encompasses a variety of activities of parents and children throughout the institutions with which both generations interact, especially in the home and school settings (Fantuzzo, McWayne, Perry, & Childs, 2004; Fantuzzo, Tighe, & Childs, 2000). For the purpose of this study, parent involvement includes parent-child activities that take

place at home, like reading together, playing games, and daily routine activities like putting the child to bed. Existing literature on parent involvement usually focuses on how at-home activities with young children relates to positive child developmental outcomes, such as social competency, school readiness, and later academic outcomes (Amato & Rivera, 1999; Lamb, 2010; Martin, Ryan & Brooks-Gunn, 2010). Historically, research on parenting focused on mother-child activities, but a systematic review of 24 recent publications of longitudinal studies related to father engagement with children revealed 22 studies with positive developmental outcomes associated with higher levels of father involvement (Sarkadi, Kristiansson, Oberklaid, & Bremberg, 2007). Covariates of parent engagement often include educational levels of the parents, household income, co-residence with the child, and measurements of the mother-father relationship such as co-parenting support.

Completing higher levels of education consistently predicts both mother and father involvement (Bennet, Weigel, & Martin, 2002; Coley & Chase-Lansdale, 1999; Cooksey & Craig, 1998; Davis-Kean, 2005; Fagan & Lee, 2012; Martin, Ryan, & Brooks-Gunn, 2010; Roggman, Boyce, Cook, & Cook, 2002), and higher education may also provide a foundation for more supportive co-parenting in which mothers allow and encourage residential and non-residential fathers to engage with their child (Waller, 2012; Coley & Chase-Lansdale, 1999). Head Start serves low-income families, and the mothers and fathers of Head Start students often have less than a high school education. Therefore, education may affect levels of parent involvement in this population.

Non-residence with the child is well recognized as a risk factor for low father involvement (Cabrera, Shannon, Vogel, et al., 2004; Coley, 2001; Coley & Chase-Lansdale, 1999; Cooksey & Craig, 1998; Lamb, 2010; Ryan, Kalil & Ziol-Guest, 2008). Research and

dialogue about the effect of family structure on individual outcomes has become increasingly complex over the last two decades (Thompson & McLanahan, 2012). Beyond the relationship quality of the parents, family structure does impact the accumulation of wealth and sense of financial security, which is associated with fewer stresses and may allow parents more time and energy to parent (Hao, 1996). Residing with one's child also affects a parent's ability to interact with his or her child on a regular basis, and living more than 11 miles away from the child negatively affects fathers' time spent with their children (Cooksey & Craig, 1998).

There is no single trajectory of non-residential father involvement. A study using waves of data from National Longitudinal Survey of Youth from 1979 cohort found several patterns among non-residential fathers of adolescent children: some increased contact over time, some maintained a steady high or low level of contact with the child, and some fathers' contact gradually decreased over time (Cheadle, Amato & King, 2010). Another study found that low-income, non-married fathers fell into two groups over the first two years of the child's life: consistently high involvement and consistently low involvement in child care, financial support, and decision-making (Manning & Smock, 1999; Thullen, Henly & Hans, 2012). This suggests that there is variability across fathers as well as within fathers over time. However, fathers are a fairly understudied population, and more research is needed on the effects of Head Start programs on father involvement, specifically.

One study using the first four waves of Fragile Families and Child Well-being data found that mothers in married or cohabiting relationships reported higher levels of involvement for their partners and higher household income than mothers living without a cohabiting partner (Carlson & Berger, 2013). However, mothers' reports of their own involvement with their child did not vary significantly across different family structures. Mothers who reported higher co-

parenting quality with non-resident fathers also reported higher levels of the father's involvement than mothers who characterized their relationship with the father to be less supportive (Carlson, McLanahan & Brooks-Gunn, 2008). Another study of low-income fathers found that mothers reported higher levels of involvement for residential partners, whether or not they were the biological father, than they reported for non-residential biological fathers (Gorvine, 2010).

2.4. LIFE COURSE FRAMEWORK

The life course framework lends itself well to answering questions about how the trajectories of parents and children interact with one another and external social structures to alter their pathways over time (Elder, Shanahan & Jennings, forthcoming). People choose from opportunities that they view as available to them, according to their knowledge of and practical access to assistance from their networks, as well as wider cultural norms that inform the roles individuals adopt over time. The foundational tenets of cumulative disadvantage and linked lives provide a stage for understanding how individuals constrain or contribute opportunities for positive development within family and social structures.

Head Start may embody reciprocal continuity by eliciting certain actions from the parents and children that spark reactions within the home and school environments, further spiraling into more desired actions. For example, as they volunteer in Head Start classrooms, parents assist teachers in engaging the students in reading and other individual and group activities that foster social, emotional and cognitive skills in children. This may implicitly teach parents strategies for engaging children in school. The program then assumes that these engagement strategies will generalize to the child's home environment. This intervention is meant to slow the ripple of disadvantage that low-income children are likely to experience throughout their educational

trajectories. Changing the behaviors of parents should have a long-lasting effect by investing in relationships that will impact the child throughout his or her life.

2.4.1. CUMULATIVE DISADVANTAGE

What had been seen as private troubles of the children on the wrong side of the achievement gap became public problems (Wright Mills, 1959) during the War on Poverty in the 1960s as authorities recognized the persistence of the negative impact of low educational attainment across generations. Dannefer (2003) defines the accumulation of advantage or disadvantage as the accentuation of small differences that grow over time, limiting further opportunities to make developmental gains. The compounding of growing differences within cohorts translates into cumulative disadvantage in the lives of parents and echoes into the life chances of their children (Dannefer, 2003). Small differences in knowledge, abilities and skills can grow over time between individuals inhabiting the same social structures. For example, a child who enters first grade without basic pre-literacy skills may struggle with increasing difficulty to catch up to peers who start school with these skills (DiPrete & Eirich, 2006).

Research demonstrates that the many contexts of the early years of life affect the cognitive, social, and biological development of a child, all of which interact with individual vulnerabilities, resiliencies, and protective factors, to lay a foundation for developmental risk or success (Anderson, Shinn, Fullilove, Scrimshaw, Fielding, Normad, & Carande-Kulis, 2003; Masten & Gerwitz, 2006). Many environmental factors can influence a child's readiness to learn (Anderson et al., 2003), and by addressing cognitive, social, and physical health factors, Head Start strives to improve the school-readiness of the most at-risk children. Lifelong perspectives on health and well-being have revealed that early experiences continue to influence an individual's health trajectories throughout childhood and adulthood (Halfon, Larson, Lu et al.,

2014). Relevant to the present study, one element that distinguishes Head Start from other early childcare settings is its emphasis on parent involvement in the classroom and in center policies (Zhai, Brooks-Gunn, & Waldfogel, 2011), based on the assumption that engaging the parents will result in longer-lasting change in the child's environment.

Inequalities can be produced and bound up in the economic structures in which parents participate, and trickle down to their children through poorer housing, schooling, and the availability of academic engagement in the home. How children experience these consequences and attribute meaning to their lived realities provides the foundation for the worldview with which they will approach social and educational structures, determining the opportunities that they see as available to them (Dannefer, 2003).

One of the duties of society is to absorb new generations into its fold (Cain, 1964), and Head Start arguably exists in order to smooth the process of integrating the most disadvantaged parents and children into society. The parents, by selecting into the Head Start environment and the assistance available may be exercising agency within the social structures available to them. By doing so they move from the pathways that led to their own disadvantage and remove their children from some of the negative effect of cumulative disadvantage (Elder, Shanahan & Jennings, forthcoming). Halting these negative trajectories create new opportunities such as increased job chances, financial security, and residential stability that could lead to supportive social networks that decrease the likelihood of children falling behind peers at school entry (Elder, Shanahan & Jennings, forthcoming). The democratic nature of the Head Start program in which parents participate in choosing curriculum, helping in the classroom, and planning how to spend allotted funds may aid parents in gaining leadership and civic skills. Parents may gain

advocacy skills through this process, helping their children navigate the public school system and the structures of their local communities.

2.4.2. LINKED LIVES

Naturally linked to one another through family and community ties, individuals are social beings whose opportunities are constrained or opened by the people in our lives. As students, children grow and develop along a more optimal trajectory through Head Start program engagement; reciprocal processes can explain why parents would change along with them through behavioral continuity of a child engaging a parent through conversation and activities at home that are similar to what the child experiences at school (Elder, Shanahan & Jennings, forthcoming). If the child elicits the desired parent behavior, then these processes will likely continue. The parent may also initiate similar interactions as they continue role transitions of becoming a parent and becoming a helper in a classroom. Change in role status can be described as continuous versus discontinuous (Elder, Shanahan & Jennings, forthcoming), and Head Start wants the child to continue learning after walking out the door every day and at the end of the year, creating and maintaining a continual state of learning. Head Start wants to spur parents forward in their development as co-creators of home environments with their children and kin networks by encouraging them to engage in developmentally appropriate activities with their children.

Relationships with teachers and other staff at Head Start centers also offer opportunities for resilience in the face of adversity. The interdependence of children, teachers and parents supports positive development that can compensate for less than optimal environments in which the children and parents find themselves (Elder, Shanahan & Jennings, forthcoming). A fading Head Start effect on parent involvement over time could potentially be explained by the family's

more proximal ties to non-supportive communities and individuals than to the relatively short amount of time spent in Head Start programming.

An individual's lifelong associations influence how they their own access to and exercise of agency. Associations might also affect whether the individual's behavior changes related to school engagement are supported or discouraged. It is possible that Head Start insufficiently addresses enough persons with whom to intervene in the life of the child in order to create and sustain network-wide changes that support adaptive school engagement for parent and child. The relationships in this web of linked lives can help buffer the parent and child's shared and individual experiences of stress and risk, yet it is conversely appropriate to ask whether those same relationships may hinder positive change through lack of support or active discouragement.

Bronfenbrenner's bioecological theory has traditionally been used as an inherent pedagogical model for Head Start; this model essentially describes the experience of an individual as the impact of networks and policies filter down to the individual. The cumulative disadvantage and linked lives elements of life course theory offer more dynamic views of the reorienting of entire webs of individuals as their continuing development, choices, and opportunities shape each others' trajectories.

3. RESEARCH QUESTION

This study seeks to answer the following question: Does Head Start positively affect the involvement of mothers and fathers with their children in at-home activities?

The life course framework would posit that because the lives of children and parents are linked to one another, and because they both interact with at least one of the same institutions outside of home, that Head Start would influence the behaviors of both children and parents. This study addresses the effect of Head Start on mothers and fathers separately, allowing broad

comparisons of patterns of influences on involvement. By analyzing mothers and fathers in parallel but separate models, differing patterns of influence may emerge than if gender were treated as a moderator. The cultural norms of primary caregiving and breadwinning roles may leave mothers more susceptible to the influence of Head Start. For example, fathers are more likely to be employed when their children are young than mothers, and low-income fathers may be less likely have the autonomy to flex their work schedules around volunteering or attending Head Start activities. Mothers may be more comfortable participating in Head Start services because they interact with the Head Start staff several times per week. The current study uses father's co-residence with children as an indicator of access to the children and opportunity to engage children in daily activities.

4. METHOD

4.1. SAMPLE

Throughout this study, Head Start parents are compared to parents who use other care types within the Fragile Families and Child Wellbeing Study dataset. The Fragile Families and Child Well-being (FFCW) study recruited in 18 urban cities in hospitals primarily on the basis of relational status (not-married) (Reichman, Teitler, Garfinkel & McLanahan, 2001). This non-married status was essentially how the families were deemed to be fragile and eligible for this study. These cities were selected through a stratified random sample in which the investigators stratified based on policy environments, population and labor market conditions. When there were more than 5 hospitals within the cities, the investigators chose from hospitals with more than 1000 non-marital births per year. Births within those hospitals were randomly sampled until quotas based on the previous years' rates of marital and non-marital births were reached. Married parents constituted about a quarter of the sample. Fifty-nine percent of the sample had completed

a high school education at the time of the child's birth. Race characteristics of the sample included: 69 percent Black non-Hispanic, 19 percent Hispanic, 8 percent white non-Hispanic, and 4 percent identifying with a race not previously listed. Eighty-four percent of the sample was under the age of 30 at the beginning of the study, with 62 percent participants 24 years or younger. Unique to this dataset is that 75 percent of the fathers were recruited at the birth of the child, although the rate of attrition from the study was higher for fathers over time than for mothers. About fourteen percent of the entire sample received Head Start programming. Characteristics such as mother's age, employment, education, income, and timing of child's birth for families receiving Head Start support in this sample were similar to the nationally representative sample of the Head Start Impact Study (Zhai, Brooks-Gunn & Waldfogel, 2011).

4.2. RESEARCH DESIGN

This study utilized a quasi-experimental design with multiple comparison groups. First, mother and father group means of involvement at each of the three waves were compared using ANOVA. In the second step Ordinary Least Squares regression was used to control background characteristics and previous involvement while predicting post-intervention mother and father involvement. Data were collected when the focal child was 1, 3 and 5 years old. Assignment to childcare category is nonrandom in this study, reflecting both self-selection through opportunities related to income level and external authorities at Head Start centers selecting from eligible students.

4.2.1. CHILDCARE SETTING AT AGE 5

Consistent with previous literature comparing families across childcare settings (Zhai, Waldfogel, & Brooks-Gunn, 2013), this study used multiple comparison groups: parent care, day care center, pre-kindergarten, and preschool to be compared with the Head Start group. The

categorization of the childcare setting variable results from a combination of three questions asked of the focal child's mother. All of the mothers in this sample were interviewed between January and May of the year that the focal child's fifth birthday while the fathers were interviewed between June and December. Only the categorizations by the mother were used in order to provide consistency across the sample for the school year used for the categorization.

First, mothers were asked if the child attended day care, nursery school, Head Start, preschool or pre-kindergarten regularly. If the mother said yes, the interviewer asked her to describe which type of program the child attended most often and then coded the mother's response into one of the following categories: day care, nursery school, preschool, Head Start, pre-kindergarten, junior kindergarten or kindergarten. According to advice from a national expert in the area of childcare settings and child development, five primary care settings were used in this study. These categorizations were based upon descriptive statistics of household income, mother's education, age of the child, and hours worked each week by mother (R. Weber, personal communication October 11, 2013). Children in pre-kindergarten and junior kindergarten were combined into one group due to the similarity of the mothers in these groups. Children in nursery school and preschool were combined into another group given the similarity of the mothers in these groups. Children in kindergarten were dropped because the principal investigators cautioned that the kindergarten categorization was flawed and unreliable in this wave of data collection.

4.2.2. COVARIATES FOR ALL MODELS

Combined household income, age of parent, education level of parent and residence with child were expected to covary with childcare setting, and were expected to be related to self-reported parent involvement. Sample characteristics by childcare setting are listed in Table 3 for

mothers and Table 5 for fathers. Residing most or all of the time with the focal child affects the accessibility of being involved in home activities with the child on a daily basis. At each wave, mothers and fathers were asked if they live with the child all or most of the time, about half the time, some of the time, none of the time, or only on weekends. These categories are recoded into numerical values on a scale of 0 to 7 for the present study. Residential status for mothers and fathers is described below by childcare category across each of the four waves of data. Reported proportions reflect the proportion of the total number of possible in that care category.

4.2.3. PARENT INVOLVEMENT SCALE

Each wave of data collection includes a scale meant to measure the parent's involvement with the focal child in activities outside of school. These scales have been used in the Early Head Start Parent Interviews and the Minnesota Family Investment Program Child Outcome Study to measure at-home activities with children and as part of quality of home environment assessments (Fragile Families Scale Documentation, 2005). Although the items slowly change as the child continues to develop and move away from home and toward school and social spheres, each scale included age-appropriate activities that are commonly enjoyed by parents and children that can also develop social, emotional, cognitive and physical development. These scales have been adjusted slightly after running factor analyses and inter-item correlations (Table 1). As adjusted, these scales also correlated significantly with each other over time ($r = .26$ to $.53$, $p < .05$). Adjusted scale items are listed in Appendix A.

Principal component factor analyses in Stata 13 showed that each adjusted scale revealed strong one-factor loadings for all of the father's scales. However, two items on the mother's scale at year 5 loaded heavily on a second factor. Given that the items related to showing

affection and putting child to bed, it is likely that the mothers simply discriminated between these activities as required daily as opposed to other activities perceived as non-urgent and therefore less likely to occur daily. It is likely that this distinction draws the alpha for that scale down (Table 3). Fathers may be less likely to differentiate between the frequency of the activities on the parent involvement scale, which could explain why all of the father items loaded with only one factor. The careful consideration given by the mothers may enhance the theoretical integrity of the mother's parent involvement scales, although these differences are reflected in lower alphas for the mother's scales than the father's scales (A. Acock, private communication, January 20, 2014).

Row means were used to calculate the scale scores for each parent at each year. Thirty-seven percent of fathers ($n = 1,812$) and 73 percent of the mothers ($n = 3,575$) answered every item on each scale at all three of the waves (Table 2). Although the rate of attrition for fathers was much higher than for mothers, given the oversampling of unmarried couples it is not surprising that by the fifth year of the study about 40 percent of fathers were missing.

4.2.4. PARENT AT-HOME INVOLVEMENT SCALE AT AGE 1

Items on the first parent involvement scale ask questions about frequency of playing games, singing songs, telling or reading stories, showing affection, putting child to bed, and taking the child to visit relatives. All of these items strongly correlated with one another and add to the scale's alpha except for taking the child to visit relatives, so that item was dropped from the scale. The alpha for the mother's Year 1 scale with 7 items was .67, and the father's alpha was .84. Seventy-six percent of fathers and 88 percent of mothers answered every item on this scale.

4.2.5. PARENT AT-HOME INVOLVEMENT SCALE AT AGE 3

Items on the second parent involvement scale asked about frequency of showing affection, telling child that you love the child, helping with simple chores, playing games, telling and reading stories, putting child to bed, helping child eat, taking child out to eat, and visiting relatives. Due to low correlations with other items and small contributions to the scale's alpha, taking the child to visit relatives, helping the child eat, and taking the child out to eat were dropped from the scale. The alpha for the Year 3 scale with 10 items was .73 for the mothers and the alpha for fathers was .81. Sixty-two percent of fathers and 84 percent of mothers answered every item on this scale.

4.2.6. PARENT AT-HOME INVOLVEMENT SCALE AT AGE 5

Items on the parent involvement scale at year 5 asked about frequency of singing songs, playing with inside toys, telling or reading stories, telling child that you appreciated something the child did, playing outside, taking the child on an outing, and watching television or a video with the child. All of these items strongly correlated with one another and added to the scale's alpha except for watching television or a video with the child, so that item was dropped from the scale. The alpha for the Year 5 scale with 7 items was .70 for mothers and .80 for fathers. Fifty-two percent of fathers and 82 percent of mothers answered every item on this scale.

4.3. PROCEDURE

As the first step of a 2-step process, One-way Analysis of Variance (ANOVA) in Stata 13 tested the difference in mean levels of mother and father involvement by childcare setting. ANOVA also tested for significant differences in income, education and other covariates of interest by childcare category.

Second, residualized change analysis using standardized mother and father involvement scales in Ordinary Least Squares regression in Stata 13 explored how levels of mother and father involvement changed over in time. The F statistic tested the independence of the outcome variable from the predictor variables, and indicated overall goodness of fit for the models. A small p -value indicated that at least one predictor is significantly related to the outcome. In order to compare the complete model to the partial model, an F test compared the difference in the residual sum of squares for the two models.

Finally, a post-hoc analysis utilized a Structural Equation Model to explore a surprising relationship that emerged in the OLS results between father involvement and father residence with child.

5. RESULTS

5.1. DESCRIPTIVE STATISTICS FOR MOTHERS

ANOVA models by childcare setting were run in order to test whether the mothers whose children were in different childcare categories differed significantly from one another on background characteristics. There were no significant differences between childcare categories on age of the mother or the mother's self-identified race or ethnic category. Comparisons of the mothers in childcare categories revealed some difference in education and income (Table 3). Mothers in the preschool category were most advantaged in having significantly higher education than the Head Start mothers [$F(4, 3,537) = 3.88, p = .003$], and significantly higher income than the mothers in Head Start, daycare, and parent care categories [$F(4, 3,537) = 65.80, p < .0001$]. Fewer mothers in the parent care group reported having worked in the last week than mothers in the Head Start, daycare, and preschool categories [$F(4, 3,099) = 10.80, p < .001$].

Mothers of children in daycare reported significantly greater amount of time that the child spent in a care setting at year 5 [$F(3, 2,946) = 59.28, p < .05$].

5.2. ANALYSIS OF VARIANCE FOR MOTHERS

A series of one-way ANOVAs were run to test for differences in mean levels of mother involvement across Head Start and comparison groups during the two waves before Head Start entry and at the conclusion of Head Start. At year 1 of the child's life there were significant differences in mother involvement by care category [$F(4, 3,317) = 5.86, p = .0001$]. Post-hoc Tukey tests revealed that preschool mothers ($M = 5.75, SD = 1.02$) were engaged in significantly more activities per week than mothers of children who would enter Head Start ($M = 5.56, SD = 1.08$). Mothers of children in preschools also reported higher involvement than mothers of children in daycare ($M = 5.47, SD = 1.12$) and parent care ($M = 5.57, SD = 1.13$).

At year 3 of the child's life there were also significant differences in mother involvement by care category [$F(4, 3,298) = 2.68, p = .03$]. A post-hoc Tukey test revealed that preschool mothers ($M = 5.78, SD = .96$) reported significantly more activities per week than mothers of children who would enter Head Start ($M = 5.61, SD = 1.05$). When involvement was treated as a count outcome of total activities reported during the period of a week across all items, this difference translated to approximately 2 more activities per week for the preschool mothers.

After participating in Head Start, at year 5 of the child's life, there were significant differences by childcare category on mother involvement [$F(4, 3,537) = 3.68, p = .005$]. However, post-hoc Tukey tests revealed that mothers of preschoolers ($M = 4.60, SD = 1.22$) and mothers of children in parent care ($M = 4.68, SD = 1.26$) reported significantly more activities than mothers of children in daycare ($M = 4.41, SD = 1.28$). Mothers of Head Start students ($M = 4.52, SD = 1.21$) did not report significantly different frequency of activities than the preschool

mothers. These results suggested that Head Start boosted the involvement of the most disadvantaged (Head Start) mothers to a level similar to the most advantaged group (preschool mothers). The mothers of children in daycare, a comparison group which reported similar levels to the Head Start mothers before Head Start entry, continued to report significantly lower frequencies of activities than preschool and Head Start mothers.

5.3. RESIDUALIZED CHANGE ANALYSIS FOR MOTHERS

In order to explore the relationship between childcare setting and mother involvement after Head Start participation, Ordinary Least Squares regression was used to control for covariates beyond childcare category that may have explained variance in mother involvement. Mother involvement scales were standardized with a mean of 0 and a standard deviation of 1. The resulting standardized coefficients can be interpreted as change in the mean of the dependent mother involvement scale in proportion to the standard deviation of that scale per standard deviation increase in the independent mother involvement scale (Blair, Raver & Berry, 2014). OLS regression, using robust standard errors and maximum likelihood with missing values, tested the influence of Head Start on mother involvement. Mother involvement at years 1 and 3 were treated as pretests to the intervention of Head Start, and year 5 reports of mother involvement as a post-test to the intervention.

The models increased in complexity by first predicting mother involvement at year 5 with the control variables of household income, maternal education, race or ethnicity, and co-residence of father. The numerical representation of household income was reported income divided by 10,000. Dummy variables represented each education category. Due to the broad distribution of mothers with less than a high school education and mothers who identify as black across all childcare categories (Table 3), these two categories served as a baseline for all of these

models. The second model added mother involvement at year 1. The third model added mother involvement at year 3. The final model added childcare arrangements right before kindergarten entry, omitting Head Start from the model as the comparison group (Table 4).

Out of all of the listed controls, only income loaded significantly ($b = .05$; $p < .05$). With the addition of mother involvement at year 1 in the second model, income no longer loaded significantly. None of the other control variables were significant predictors of mother involvement at year 5. It was surprising that the mother's level of education did not significantly affect involvement at year 5. To check that mother involvement and education were not related in this data, a one-way ANOVA confirmed that mother involvement did not significantly vary from one education level to another [$F(3, 4,040) = .21, p = .89$]. Adding mother involvement from year 1 significantly added to the model with only covariates, and loaded significantly in all of the following models. Mother involvement from year 3 further significantly added to the first two models, and loaded significantly in both of the last models. Interestingly, mother involvement at year 3 did not fully mediate the relationship between mother involvement at years 1 and 5. Childcare category also significantly added to the model, with preschool and pre-kindergarten mothers not significantly different from Head Start mothers. Daycare mothers reported significantly fewer activities than Head Start mothers, and mothers in the parent care category reported significantly more activities than Head Start mothers. Post-hoc variance inflation tests indicated that multicollinearity was not a concern for the full model.

After controlling for household income, maternal education, race or ethnicity, and co-residence of father, the regression coefficients in the residualized change model supported the ANOVA results. Specifically, Head Start mothers reported similar levels of involvement as the preschool and pre-kindergarten mothers, who were the most educationally and economically

advantaged of the comparison groups. Head Start mothers also surpassed the educationally similar group of daycare mothers, although the Head Start mothers reported fewer activities than the educationally and economically similar group of the mothers in the parent care category.

5.4. DESCRIPTIVE STATISTICS FOR FATHERS

ANOVA models tested whether the fathers in specific categories significantly differed from fathers in other care categories on background characteristics. There were not significant differences between childcare categories on age of the father, self-identified race or ethnic category, level of education, or co-residence with the focal child (Table 2). Fathers in the preschool category reported significantly higher income than the fathers in Head Start, daycare, and parent care categories [$F(4, 3,537) = 65.80, p < .0001$].

5.5. ANALYSIS OF VARIANCE FOR FATHERS

A series of one-way ANOVAs tested for differences in mean levels of father involvement across Head Start and comparison groups during the two waves before Head Start entry and at the conclusion of Head Start. There were no significant differences in father involvement between the childcare categories at years 1 and 3. After participating in Head Start, at year 5 of the child's life, there were significant differences by childcare category on father involvement [$F(4, 1,873) = 2.76, p = .03$]. However, post-hoc Tukey tests revealed that the only difference between groups of fathers is that fathers in the parent care category ($M = 3.71, SD = 1.50$) report significantly more activities than fathers of children in daycare ($M = 3.40, SD = 1.40$). In contrast to the mothers, no other difference between groups of fathers by childcare category was apparent at any of the three points in time.

5.6. RESIDUALIZED CHANGE ANALYSIS FOR FATHERS

Ordinary Least Squares regression controlled for covariates beyond childcare category that may have explained variance in father involvement. Father involvement scales were standardized with a mean of 0 and a standard deviation of 1, and the resulting standardized coefficients can be interpreted as change in the mean of the dependent father involvement scale in proportion to the standard deviation of that scale per standard deviation increase in the independent father involvement scale (Blair, Raver & Berry, 2014). OLS regression with robust standard errors to control for heteroskedasticity tested the influence of father involvement at years 1 and 3 and father co-residence with child on father involvement at year 5. Due to the high quantity of missing data across these three time points for fathers, listwise deletion was used to estimate these models upon the advice of a statistician (A. Acock, private conversation on February 18, 2014).

The models increased in complexity by first predicting father involvement at year 5 with the control variables of household income, paternal education, and race or ethnicity. Household income was divided by 10,000 before addition to the model, and dummy variables represented each education category. Due to the broad distribution of fathers with less than a high school education and fathers who identified as black across all childcare categories (Table 2), these two categories served as a baseline for all of these models. The second model added father involvement at year 1. The third model added father involvement at year 3. The fourth model added childcare arrangements right before kindergarten entry, using Head Start as the baseline category to which the other four groups were compared. The fifth model added a variable representing the number of days per week that the father reported living with the child ($M = 4.98$, $SD = 2.71$) (Table 6).

Out of all of the listed controls, only identifying as white loaded significantly ($b = .07$; $p < .05$), although this indicator became insignificant after the addition of coresidence to the model. None of the other control variables were significant predictors of father involvement at year 5. Adding father involvement from year 1 significantly added to the model with only covariates, and loaded significantly in all of the following models. Father involvement from year 3 further significantly added to the first two models, and loaded significantly in both of the last models; interestingly, father involvement at year 3 did not fully mediate the relationship between father involvement at years 1 and 5, even after adding co-residence to the model. Consistent with the ANOVA results, childcare category did not significantly add to the model. Adding father's residence with the child at year 5 significantly added to the model, although the addition of this variable influenced the coefficients for father involvement at years 1 and 3 to a lesser degree than expected. Practically speaking, an increase of 2 days residence per week with the child was associated with an increase of engagement in about 2 more activities with the child. Addition of the residence variable was associated with surprisingly little change in the size of the coefficients for previous father involvement. Post-hoc variance inflation tests indicated that multicollinearity was not a concern for the full model.

5.7. POST-HOC STRUCTURAL EQUATION MODEL FOR FATHERS

Given the unexpected strength of the coefficients for early father involvement in the residualized change model, a post-hoc analysis further explored the effect of very early father involvement on father involvement at year 5. A structural equation model, also run in Stata, tested whether father involvement at year 5 was significantly influenced by previous father involvement at years 1 and 3 as well as by concurrent residency at each wave. The exogenous variable is residence with child at year 1. Endogenous variables were the number of days per

week that the father lived with the child at years 3, and 5, and father involvement at years 1, 3, and 5. Assessing the goodness of fit of the models in the analyses described below included discussion of the model's *chi-square* and associated level of significance, which indicated whether the covariance matrix of the model was significantly different from the covariance matrix in the data. The model's goodness of fit was also evaluated through the *comparative fit index* (CFI), the *root mean square error of approximation* (RMSEA), and the *standardized root mean residual* (SRMR). Post-estimation statistics evaluated whether the model should be modified to improve its fit for the data. The sample size in this study was more than adequate to satisfy the widely accepted convention of 10 to 20 cases per parameter estimated in the structural equation model (Schreiber, Nora, Stage, Barlow & King, 2006). Large samples followed longitudinally over 5 years will inevitably have missing data. Due to the large quantity of missing data for the fathers, listwise deletion was used for the analyses, because there were not enough constant father cases to justify using multiple imputation (A. Acock, private communication, February 18, 2014).

SEM builder in Stata 13 with maximum likelihood was used to run a structural equation model to test the influence of early father involvement and residence on father involvement at year 5 (Figure 2). Residence was measured on a scale of 0 to 7, representing the number of days per week that the father reported living with the child. Father involvement was measured using the same method of standardized row mean scores as used in previous regression analysis. The model adequately fit the data [$\chi^2(2) = 15.99, p < .001; RMSEA = .06; CFI = .99, SRMR = .01$], and was consistent with the OLS results that fathers who reported high involvement at year 1 continued to report high involvement at year 5 even if they no longer lived with the focal child (Table 7). The more days a father reported living with the focal child at each wave, the more

positive an effect on father involvement on that wave, especially in year 1. Residence with child in previous years does not seem to universally influence father involvement at later waves. Surprisingly, the coefficients for the paths between residence at year 1 and father involvement at year 3 as well as residence at year 3 and involvement at year 5 were negative, although only the former was statistically significant. It is possible that the model was struggling to express the correlation of coresidence and involvement in the data, which lead to the surprising direction of these coefficients.

There are positive, statistically significant direct and indirect effects of high residency at year 1 on residency at years 3 and 5. Highly involved fathers at year 3 reported higher residency at year 5. There were also positive, statistically significant direct and indirect effects of high father involvement at year 1 on father involvement at years 3 and 5, even with concurrent residency as a predictor of involvement at each wave.

6. DISCUSSION

6.1. HEAD START'S EFFECT ON MOTHERS AND FATHERS

The current study examined how Head Start affects the involvement of mothers and fathers with their children at home. After testing for mean differences across childcare settings at each wave, the analyses controlled for background characteristics: income, race or ethnicity, and education level. In the years preceding preschool, mothers whose children enrolled in Head Start reported significantly fewer activities with their children than mothers of children who enrolled in preschool. However, the difference in reported activities between these two economically and educationally dissimilar groups disappeared after the mothers received Head Start services.

Children from socioeconomically disadvantaged backgrounds are more likely to enter kindergarten with fewer skills that they need to succeed in school (Wasik & Hindman, 2010),

and at-home parent-child activities can help children gain skills that later predict academic success (Alexander, Entwisle, & Horsey, 1997; Beals, 1997; Hindman, Skibbe & Foster, 2014). Because of this documented relationship, the boost of mother-child activities through Head Start can likely decrease the achievement gap between the disadvantaged children and their advantaged, preschool peers. Slowing the accumulation of disadvantage by reinforcing the mother-child relationship and transfer of skills and knowledge through more at-home activities may improve the life chances of these children (Dannefer, 2003; DiPrete & Eirich, 2006). Forging strong links between the mother and child through daily activities will likely create a buffer against future threats to the resources that their relationship provides (Elder, Shanahan & Jennings, forthcoming).

The dual-generation intervention model for low-income parents and children has been more successful worldwide than interventions that exclusively target children (Burger, 2010), likely because intervening at both levels creates continuity of experience for the child as well as investing in the parent as a child's lifelong resource. Head Start has provided a foundation for more specific programs for low-income parents and children intended to improve selective attention, which improves the child's skills needed for school and may also improve the stress management strategies for parents (Neville, Stevens, Pakulak, Bell, Fanning, Klein, & Isbell, 2013). Strategies taught in Head Start settings can positively affect child and parent outcomes, and they hopefully carry these skills with them throughout the rest of their lives. As effective as Head Start was in increasing the mother's involvement in this study, it is possible that targeting more caregivers beyond the mothers could have increased the intervention's effect. Reaching out to other primary caregivers could have elicited more changes in the behaviors and environments surrounding the mother and child as the network of people around them supported the mother-

child activities. Alternatively, others may notice changes in mother involvement, and as the mother adds new dimensions to her parental role, she may inspire others to adopt new beliefs or behaviors around parenthood. This spillover would further reinforce the mother's choices to remain involved with the child, and would allow positive changes to ripple out into her network. In the case of mothers and fathers connected to the same child, this would encourage them to complement one another's involvement with the child. Improving parent-child dyads in a community network creates a healthier network from which all families can draw social support. The better the parent-child relationship and the less the child struggles behind peers at school, the less stress is added to the household at large.

Although Head Start positively influenced mother involvement relative to comparison groups, fathers did not seem to be directly affected by Head Start or other childcare settings. Perhaps childcare settings reach out to and welcome mothers more often than fathers, or maybe mothers flex their workplace policies and schedules in ways that allow them to drop off and pick up the child. This may also be connected to the model of home visits that Head Start requires twice a year (Improving Head Start For School Readiness Act of 2007), which might only reach out to the child's primary residence instead of multiple homes in which the child resides. These visits are not only assessments of need but also give the Head Start staff the opportunity to advise parents on how best to engage with their child at home. As stated earlier, one of the goals of Head Start is to empower parents to be equal partners in their child's education services (Henrich & Gadaire, 2008; Improving Head Start for School Readiness Act of 2007). If mothers interact more often with Head Start activities than fathers by virtue of residence, then perhaps the fathers are not benefitting from this dimension of Head Start. In the last couple of years, Head Start has renewed its commitment to reaching fathers more effectively, and it is possible that

these efforts may be reflected in future research on the effect of Head Start on father involvement. Perhaps including fathers' homes in the home visits in cases where the father does not reside with the mother would increase the likelihood that a father would be engaged with and benefit from Head Start services.

Transitioning from home and family care into childcare institutions and later into formal schooling decreases the amount of time that parents have available to spend with their children. Only about half of the mothers across care categories reported working in the week before the year 5 data were collected, so the transition to childcare likely affected time spent with the child for at least half of the mothers in a new way. In practical terms, Head Start slowed the decrease in mother involvement which was apparent in all other center-based care settings, which resulted in similar levels of mother involvement across educational center-based care settings, higher involvement for mothers whose children did not attend any center-based care, and lower involvement for mothers of children in non-educational center-based care (daycare). If Head Start had not provided parenting education and support, then the Head Start mothers should have reported as low or lower involvement as the daycare mothers, given the groups' similarities in background characteristics and previous involvement described earlier. It was surprising that education was not a significant predictor of mother or father involvement across care categories, although other studies have similarly noted the lack of relationship between education and involvement in models with multiple predictors (e.g., Thullen, Henly & Hans, 2012).

The overwhelming majority of mothers lived with the focal child all of the time, so the question of mother's practical access to the child for opportunities to engage the child in daily at-home activities likely relates more to the amount of time that the child spends in a care setting away from the mother. Indeed, the mothers who cared for their children at home reported the

highest levels of involvement at year 5, while the mothers of children in daycare reported the lowest levels of involvement. The children in daycare spent more hours in a care setting than any other group of children, and this may have limited the amount of opportunities available to mothers of daycare children to engage them in daily at-home activities.

6.2. EARLY FATHER INVOLVEMENT AND RESIDENCE WITH CHILD

Residing full-time with the focal child is clearly an advantage for promoting father involvement when compared to all other categories of residence with child. Although residence with the child is clearly related with literal access to the child and opportunity to engage the child in daily activities, it is interesting to note that the effect of co-residence did not overpower the importance of previous involvement at years 1 and 3. Involvement at 3 years did not overpower the effect of involvement at 1 year on father involvement at 5 years. This would suggest that fathers who reported high involvement at year 1 were more likely to report high levels of involvement at year 5, even if those fathers no longer lived full-time with the focal child. Developing a close emotional relationship with one's child through daily activities likely facilitates the adoption of a positive role of fatherhood, which in turn motivates the father to maintain the relationship in order to enjoy the social and emotional benefits of that relationship.

This trend of father involvement may illustrate another form of cumulative disadvantage: the difference between fathers who report lower levels of father involvement at early years and highly involved fathers grows over time, decreasing the child's access to the resources of the father. The fathers who report low involvement report living less time with their child in later years. If Head Start and other educational programs effectively reached out to non-residential fathers with the intention of increasing father involvement, it is possible that the low-involved

fathers would have maintained their ties to their child in a way that maintained a higher level of contact and co-residence.

Prior research on father involvement following a non-marital birth focused exclusively on non-resident fathers and their co-parenting relationship with the birth mother found that the co-parenting relationship can exist outside of romantic relationships, and that strong co-parenting was related to higher father involvement (Carlson, McLanahan, & Brooks-Gunn, 2008; Sobolewski & King, 2005). It is apparent in this study that fathers vary over time in the amount of time they report living with their child from year to year, and yet 98 percent of the mothers report living with a focal child. Mothers may therefore act as gatekeepers to their children. Although some research assumes that mothers may use criteria related to economic provision as a ticket for entry into the child's life (Fagan & Barnett, 2003), more in-depth research indicates that low-income rural mothers desire high father involvement and that behaviors interpreted as gatekeeping by the fathers are intended to elicit higher quality father involvement and not to discourage father involvement (Richards, Zvonkovic & Sano, 2008). However, if a father perceives a mother's behaviors as gatekeeping, intended or not, the father may feel less empowered to pursue activities with the child. Perhaps some of the variance in levels of involvement in at-home activities in the fathers whose residence with the child changes over time could be explained by how the mother perceives the father as a co-parent. If father involvement relies on mother's appraisal of the father's potential resources, then the children with the most highly involved fathers are also the most resource-rich, which would add to the accumulation of disadvantage for the children with rarely involved fathers.

The pattern of early investment with later pay-off fits with and extends prior research, which found that fathers who provided material support to mothers during pregnancy were more

likely to be involved when the child was 3 years old (Cabrera, Fagan & Farrie, 2008). This also reinforces research cited earlier that early non-residential father involvement reported by the mother predicts continued mother-reported father involvement (Carlson, McLanahan, & Brooks-Gunn, 2008). Given the documented discrepancy between mother-report and self-report of father involvement (Coley & Morris, 2002; Mikelson, 2008; Smock & Manning, 2007), this study also contributes to the literature by using the fathers' self-reports to measure their involvement with their child.

6.3. LIMITATIONS OF THIS STUDY

One of the key weaknesses of the available FFCW data is lack of information about how the parents interacted with the Head Start services. There are not assessments of the quality of the Head Start centers (or any other care condition) that would allow the parents to be nested within different levels of quality of programming provided to them. Such quality assessments would rely on workshops offered, workshop attendance and parent feedback, involvement and volunteer rates of parents in the center, and accessibility of professionals who could assess family needs and make referrals. All of these elements probably influence how influential Head Start enrollment is for a parent. However, it is possible that beyond Head Start strategies targeted at parents, the children may be learning strategies in the classroom for acquiring and maintaining parental attention in order to engage their parents in at-home activities.

Another limitation is selection bias into the study and into the treatment setting of Head Start. Although the participants in this study were randomly selected through stratification processes, they were not randomly assigned to the treatment condition of Head Start or to specific comparison groups. However, the available comparison groups did cover the realistic

range of care settings that urban families have available to them, and relevant background characteristics were used in the analytical models.

Attrition in the FFCW study was very high for fathers, and the most disadvantaged fathers were the most likely to drop out when compared to higher educated, employed, married fathers. High residential mobility for lower income families may also have affected their availability to participate in later waves of data collection as well as the researchers' ability to find these participants. Although the rate of attrition from the FFCW study is greater for men than for women, this dataset still offers a surprisingly high rate of participation from fathers that are difficult to track down, namely, those who may not live with the mother or child. It is also possible that being involved with the child made it easier for researchers to find fathers for the follow-up waves of data while fathers with minimal or no contact with the mother and child may have been harder to find.

Parent involvement was only measured with one scale in this study, and this leaves open the possibility of mono-operation bias. This leaves the data more vulnerable to social desirability bias and error in self-report, in which Head Start mothers may report higher levels of involvement with their children because they are aware of the importance and desirability of high involvement. It is possible that the items on the parent involvement scales did not adequately measure the activities of all mothers and fathers from all backgrounds, especially non-residential fathers. The parent involvement scales did not measure the quality of interactions between the parents and children.

Finally, single-point survey data were used in this study to determine the enrollment of the children in childcare. However, childcare arrangements may change frequently, especially for families with high residential mobility and low income. For example, when a family moves to a

new area, there is no guarantee that the child will be able to transfer in to a Head Start program due to the long waitlists. It is hard to assess dosage of the intervention for these families, because the survey collection may not occur frequently enough to capture all possible information about a family's exposure to Head Start services.

7. CONCLUSION

This study adds to the literature by using three longitudinal waves of self-reported parent involvement to show that Head Start positively affects the involvement of mothers relative to mothers of children in comparison care settings. Results indicated that Head Start achieved its goal of empowering mothers to provide similar levels of involvement with their child at home as the students' more advantaged preschool peers received from their mothers.

Head Start did not appear to affect the involvement of fathers in the same way as mothers. Of course, many fathers do not co-reside with children and therefore have less access and ability to be involved. However, even after controlling for fathers' residential status, those who reported high levels of involvement with children when they were very young continued to report high levels of involvement when the children were in preschool and moving into kindergarten. Early links between the daily lives of fathers and their children may pay off in continued involvement as the child grows and develops. Fathers who link their lives closely to their child's may experience more support in their social networks that encourages them to maintain that close tie and helps facilitate a continued relationship. If Head Start had included home visits for non-residential fathers in its father outreach, perhaps the involvement of fathers with children in Head Start would have been even higher.

The current study provides evidence for a recommendation to use early fatherhood programs to promote early, frequent father involvement, adding a new dimension to the

literature's recommendation to focus on forming strong co-parenting alliances between mothers and fathers rather than simply incentivizing marriage (Carlson, McLanahan, & Brooks-Gunn, 2008; McHale, Waller, & Pearson, 2012). Continued residential and nonresidential father engagement throughout childhood likely increases the child's access to both direct and indirect dimensions of paternal engagement, such as financial and human capital (Becker, 1991; Amato, 1998; Palkovitz, 2002; Gorvine, 2010).

Advantages of father involvement for children are well documented in existing research literature, as described earlier. An emerging field of research has also begun to document a variety of positive effects of involvement for fathers themselves (e.g., Settersten & Cancel-Tirado, 2010). The salience of the father role is likely increased with consistently high involvement with one's child over time. As salience increases, so does the likelihood that early fatherhood provides a turning point for men that pushes them to adopt other roles associated with adulthood. These include greater civic and labor participation (Knoester & Eggebeen, 2006), increased earnings (Lerman & Sorensen, 2000), additional sense of meaningful identity (Palkovitz, Copes & Woolfolk, 2001), better long-term health outcomes (Bartlett, 2004), decreased deviant and criminal activity (Laub, Nagin & Sampson, 1998), and reports of greater life satisfaction and deeper connections with friends and kin (Eggebeen & Knoester, 2001).

In these ways, involved fatherhood may prompt men to become more integrated, productive, and generative citizens. These types of benefits for fathers should in turn bring benefits for social institutions and society at large. Efforts to engage fathers early on in the daily lives of their children may therefore bring cumulative dividends for both fathers and children through his continued involvement over time, even – and perhaps especially – when fathers do not live with the children.

8. REFERENCES

- Acock, A. (2013). *Discovering structural equation modeling using Stata*. Revised Edition. Stata Press Publication.
- Acock, A. (2005). Working with missing values. *Journal of Marriage and Family*, *67*, 1012-1028.
- Alexander, K. L., Entwisle, D. R., & Horsey, C. (1997). From first grade forward: Early foundations of high school dropout. *Sociology of Education*, *70*, 87-107.
- Amato, P. R., & Rivera, F. (1999). Paternal involvement and children's behavior problems. *Journal of Marriage and Family*, *61*, 375-384.
- Anderson, L. M., Shinn, C., Fullilove, M. T., Scrimshaw, S. C., Fielding, J. E., Normand, J., & Carande-Kulis, V. G. (2003). The effectiveness of early childhood development programs: A systematic review. *American Journal of Preventive Medicine*, *24*, 34-46.
- Barnett, M., & Fagan, J. (2003). The relationship between maternal gatekeeping, paternal competence, mothers' attitudes about the father role, and father involvement. *Journal of Family Issues*, *24*, 1020-1043. doi:10.1177/0192513X03256397
- Bartlett, E. (2004). The effects of fatherhood on the health of men: A review of the literature. *Journal of Men's Health and Gender*, *1*, 159-169. doi:10.1016/j.jmhg.2004.06.004
- Beals, D. E. (1997). Sources of support for learning words in conversations: Evidence from mealtimes. *Journal of Child Language*, *24*, 673-694.
- Bennett, K. K., Weigel, D. J., & Martin, S. S. (2002). Children's acquisition of early literacy skills: Examining family contributions. *Early Childhood Research Quarterly*, *17*, 295-317. doi:10.1016/S0885-2006(02)00166-7

- Blair, C., Raver, C. C., & Berry, D. J. (2014). Two approaches to estimating the effect of parenting on the development of executive function in early childhood. *Developmental Psychology, 50*, 554-565.
- Bronfenbrenner U., & Morris, P. A.(2006). The bioecological model of human development. In W. Damon & R. M. Lerner (Series Eds.) & R. M. Lerner (Vol. Ed.), *Handbook on child psychology: Vol. 1. Theoretical models of human development* (6th ed., chapter 14; pp. 793-828). New York: Wiley.
- Bronfenbrenner, U., & Ceci, S. J. (1994). Nature–nurture recon- ceptualized in developmental perspective: A bioecological model. *Psychological Review, 101*, 568–586.
- Bruch, S. K., Ferree, M. M., & Soss, J. (2010). From policy to polity: Democracy, paternalism, and the incorporation of disadvantaged citizens. *American Sociological Review, 75*, 205 – 226.
- Burger, K. (2010). How does early childhood care and education affect cognitive development? An international review of the effects of early interventions for children from different social backgrounds. *Early Childhood Research Quarterly, 25*, 140-65.
- Cabrera, N. J., Fagan, J., & Farrie, D. (2008). Explaining the long reach of fathers' prenatal involvement on later paternal engagement. *Journal of Marriage and Family, 70*, 1094-1107. doi:10.1111/j.1741-3737.2008.00551.x
- Cabrera, N. J., Ryan, R. M., Shannon, J. D., Brooks-Gunn, J., Vogel, C., Raikes, H., et al. (2004). Low-income fathers' involvement in their toddlers' lives: Biological fathers from the Early Head Start Research and Evaluation Study. *Fathering, 2*, 5-30.
- Cain, L. D. (1964). Life course and social structure. In R. E. Faris (Ed.), *Handbook of Sociology* (pp.272-309). Chicago: Rand-McNally.

- Carlson, M. J., McLanahan, S. S., & Brooks-Gunn, J. (2008). Coparenting and nonresident fathers' involvement with young children after a nonmarital birth. *Demography*, *45*, 461-488. doi:10.1353/dem.0.0007
- Castillo, J., Welch, G., & Sarver, C. (2011). Fathering: The relationship between fathers' residence, fathers' sociodemographic characteristics, and father involvement. *Maternal and Child Health Journal*, *15*, 1342-1349. doi:10.1007/s10995-010-0684-6
- Cheadle, J. E., Amato, P. R., & King, V. (2010). Patterns of nonresident father contact. *Demography*, *47*, 205-225.
- Coley, R. L. (2001). (In)visible men: Emerging research on low-income, unmarried, and minority fathers. *American Psychologist*, *56*, 743-753. doi:10.1037/0003-066X.56.9.743
- Coley, R. L. & Chase-Lansdale, P. L. (1999). Stability and change in paternal involvement among urban african american fathers. *Journal of Family Psychology*, *13*, 416-435. doi:10.1037/0893-3200.13.3.416
- Coley, R. L., & Morris, J. E. (2002). Comparing father and mother reports of father involvement among low-income minority families. *Journal of Marriage and Family*, *64*, 982 – 997.
- Cook, G., & Roggman, L. (2011). Fathers' support of children's development: How early and for how long does it matter? *Infant Mental Health Journal*, *32*, 140-140.
- Cooksey, E. C., & Craig, P. H. (1998). Parenting from a distance: The effects of paternal characteristics on contact between nonresidential fathers and their children. *Demography*, *35*, 187-200. doi:10.2307/3004051
- Dannefer, D. (2003). Cumulative advantage/disadvantage and the life course: Cross-fertilizing age and social science theory. *Journal of Gerontology: Social Sciences*, *58B*, S327-37.

- Davis-Kean, P. (2005). The influence of parent education and family income on child achievement: The indirect role of parent expectations and the home environment. *Journal of Family Psychology, 19*, 294–304.
- Dew, J., & Eggebeen, D. J. (2010). Beyond the wage premium: Fatherhood and asset accumulation. *Research in Human Development, 7*, 140-158.
- DiPrete, T. A., & Eirich, G.M. (2006). Cumulative advantage as a mechanism for inequality: A review of theoretical and empirical developments. *Annual Review of Sociology, 32*, 271-297.
- Eggebeen, D. J., & Knoester, C. (2001). Does fatherhood matter for men? *Journal of Marriage and the Family, 63*, 381–393.
- Elder, G. H., & Shanahan, M. J. (2006). The life course and human development. In W. Damon & R. M. Lerner (Series Eds.), & R. M. Lerner (Vol. Ed.), *Handbook on child psychology: Vol. 1. Theoretical models of human development* (pp. 665-715). Hoboken, NY: John Wiley & Sons Inc.
- Elder, G.H., Jr., Shanahan, M.J., & Jennings, J. A. (Forthcoming). Human development in time and place. In T. Leventhal and M. Bornstein (Eds.), *Handbook of Child Psychology and Developmental Science: Ecological Settings and Processes in Developmental Systems*, Vol. 4, 7th edition (Chapter 1). New York: Wiley & Sons.
- Ertas, N. & Shields, S. (2012). Child care subsidies and care arrangements of low-income parents. *Children and Youth Services Review, 34*, 179-185.
- Fagan, J., & Lee, Y. (2012). Effects of fathers' early risk and resilience on paternal engagement with 5 year olds. *Family Relations, 61*, 878-892. doi:10.1111/j.1741-3729.2012.00741.x

- Fagan, J., & Lee, Y. (2011). Do coparenting and social support have a greater effect on adolescent fathers than adult fathers? *Family Relations*, *60*, 247-258. doi:10.1111/j.1741-3729.2011.00651.x
- 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.
- Fantuzzo, J., Tighe, E., & Childs, S. (2000). Family Involvement Questionnaire: A multivariate assessment of family participation in early childhood education. *Journal of Educational Psychology*, *92*, 367-376. doi: 10.1037/0022-0663.92.2.367
- Gelber, A., & Isen, A. (2013). Children's schooling and parents' behavior: Evidence from the Head Start Impact Study. *Journal of Public Economics*, *101*, 25-38.
- Giallo, R., Treyvaud, K., Cooklin, A., & Wade, C. (2013). Mothers' and Fathers' involvement in home activities with their children: psychosocial factors and the role of parental self-efficacy. *Early Child Development and Care*, *183*, 343-359.
- Gorvine, B. J. (2010). Head Start fathers' involvement with their children. *Journal of Marriage and Family*, *31*, 90-112.
- Greenberg, J. (2011). The impact of maternal education on children's enrollment in early childhood education and care. *Children and Youth Services Review*, *33*, 1049-1057.
- Halfon, N., Larson, K., Lu, M., Tullis, E., & Russ, S. (2014). Lifecourse health development: Past, present and future. *Maternal and Child Health Journal*, *18*, 344-365.
doi:10.1007/s10995-013-1346-2
- Hao, L. (1996). Family structure, private transfers, and the economic well-being of families with children. *Social Forces*, *75*, 269-292.

- Hawkins, D. N., Amato, P. R., & King, V. (2006). Parent-adolescent involvement: The relative influence of parent gender and residence. *Journal of Marriage and Family*, 68, 125–136.
- Hillemeier, M., Morgan, P., Farkas, G. & Maczuga, S. (2013). Quality disparities in child care for at-risk children: Comparing Head Start and non- Head Start settings. *Maternal Child Health Journal*, 17, 180-188.
- Hindman, A., & Morrison, F. (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
- Hindman, A. H., Skibbe, L. E., & Foster, T. D. (2014). Exploring the variety of parental talk during shared book reading and its contributions to preschool language and literacy: Evidence from the early childhood longitudinal study-birth cohort. *Reading and Writing*, 27, 287-313. doi:10.1007/s11145-013-9445-4
- Hindman, A. H., Skibbe, L. E., Miller, A., & Zimmerman, M. (2010). Ecological contexts and early learning: Contributions of child, family, and classroom factors during head start, to literacy and mathematics growth through first grade. *Early Childhood Research Quarterly*, 25, 235-250. doi:10.1016/j.ecresq.2009.11.003
- Improving Head Start for School Readiness Act of 2007, Pub. L. No. 110 – 134, 121 STAT. 1363 (2007).
- Johnson, A., Martin, A., & Brooks-Gunn, J. (2011). Who uses child care subsidies? Comparing recipients to eligible non-recipients on family background characteristics and child care preferences. *Children and Youth Services Review*, 33, 1072-1083.

- Kim, J., & Fram, M. S. (2009). Profiles of choice: Parents' patterns of priority in child care decision-making. *Early Childhood Research Quarterly, 24*, 77-91.
- Knoester, C., & Eggebeen, D. J. (2006). The effects of the transition to parenthood and subsequent children on men's well-being and social participation. *Journal of Family Issues, 27*, 1532–1560.
- Lamb, Michael E. (2010). *The Role of the Father in Child Development, 5th Edition*. Wiley Publications.
- Laub, J. H., Nagin, D. S., & Sampson, R. J. (1998). Trajectories of change in criminal offending: Good marriages and the desistance process. *American Sociological Review, 63*, 225-238.
- Laughlin, L. (2010). Who's minding the kids? Child care arrangements: Spring 2005 and Summer 2006. *Current Population Reports* (pp. 70–121). Washington, DC: U.S. Census Bureau.
- Lerman, R., & Sorensen, E. (2000). Father involvement with their nonmarital children: Patterns, determinants, and effects on their earnings. *Marriage and Family Review, 29*, 137-158.
- Manning, W. D., & Smock, P. J. (1999). New families and nonresident father-child visitation. *Social Forces, 78*, 87-116. doi:10.1093/sf/78.1.87
- Martin, A., Ryan, R. M., & Brooks-Gunn, J. (2010). When fathers' supportiveness matters most: Maternal and paternal parenting and children's school readiness. *Journal of Family Psychology, 24*, 145 – 155.
- Masten, A. S., & Gewirtz, A. H. (2006). Vulnerability and resilience in early child development. In K. McCartney & D. Phillips (Eds.). *Blackwell handbook of early childhood development*. (Ch. 2, p. 22-43). Malden, MA: Blackwell Publishing.

- Masten, A., & Wright, M. O. (2009). Resilience over the lifespan: Developmental perspectives on resistance, recovery, and transformation. In J. W. Reich (Ed.), *Handbook of Adult Resilience* (pp. 213–237). New York: Guilford.
- McHale, J., Waller, M. R., & Pearson, J. (2012). Coparenting interventions for fragile families: What do we know and where do we need to go next? *Family Process, 51*, 284-306. doi:10.1111/j.1545-5300.2012.01402.x
- Melhuish, E., Phan, M., Sylva, K., 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.
- Mikelson, K. S. (2008). He said, she said: Comparing mother and father reports of father involvement. *Journal of Marriage and Family, 70*, 613-624. doi:10.1111/j.1741-3737.2008.00509.x
- Neville, H. J., Stevens, C., Pakulak, E., Bell, T. A., Fanning, J., Klein, S., & Isbell, E. (2013). Family-based training program improves brain function, cognition, and behavior in lower socioeconomic status preschoolers. *Proceedings of the National Academy of Sciences of the United States of America, 110*, 121-138. doi:10.1073/pnas.1304437110
- Palkovitz, R. J. (2002). *Involved fathering and men's adult development: Provisional balances*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Palkovitz, R., Copes, M. A., & Woolfolk, T. N. (2001). “It’s like. . . You discover a new sense of being”: Involved fathering as an evoker of adult development. *Men and Masculinities, 4*, 49–69.

- Puma, M., Bell, S., Cook, R., Heid, C., Broene, P., Jenkins, F., Mashburn, A. & Downer, J. (2012). Head Start Impact Study final report: Third grade follow-up. Office of Planning, Research and Evaluation. Administration for Children and Families.
- Reichman, N., Teitler, J., Garfinkel, I., & McLanahan, S. S. (2001). Fragile Families: Sample and design. *Children and Youth Services Review, 23*, 303-326.
- Richards, L. N., Zvonkovic, A. M., & Sano, Y. (2008). Are mothers really "gatekeepers" of children? Rural mothers' perceptions of nonresident fathers' involvement in low-income families. *Journal of Family Issues, 29*, 1701-1723. doi:10.1177/0192513X08321543
- Roggman, L. A., Boyce, L. K., Cook, G. A., & Cook, J. (2002). Getting dads involved: Predictors of father involvement in Early Head Start and with their children. *Infant Mental Health Journal, 23*, 62-78.
- Roy, K., Vesely, C. K., Fitzgerald, M., & Buckmiller Jones, N. (2010). Young fathers at work: the influence of parental closeness and contact on employment. *Research in Human Development, 7*, 123-139.
- Ryan, R. M., Kalil, A., & Ziol-Guest, K. M. (2008). Longitudinal patterns of nonresident fathers' involvement: The role of resources and relations. *Journal of Marriage and Family, 70*, 962-977.
- Sarkadi, A., Kristiansson, Oberklaid, F., & Bremberg (2007). Fathers' involvement and children's developmental outcomes: a systematic review of longitudinal studies. *Acta Paediatrica, 97*, 153-158.
- Settersten, R. A., Jr., & Cancel-Tirado, D. (2010). Fatherhood as a hidden variable in men's development and life courses. *Research in Human Development, 7*, 83-102.

- Settersten, R. A., Jr., Day, J. K., Cancel-Tirado, D. & Driscoll, D. M. (2014). Fathers' accounts of struggle and growth in early adulthood: An exploratory study of disadvantaged men. In K. Roy & N. Jones (Eds.), *Pathways to adulthood for disconnected young men in low-income communities. New Directions in Child and Adolescent Development, 143*, 73-89.
- Settersten, R. A., Jr., & Gannon, L. (2005). Structure, agency, and the space between: On the challenges and contradictions of a blended view of the life course. In R. Levy, P. Ghisletta, J. M. Le Goff, D. Spini, & E. Widmer (Eds.), *Towards an Interdisciplinary Perspective on the Life Course. Advances in Life-Course Research, 10*, 35-55.
- Settersten, R. A., Jr. (2003). Age structuring and the rhythm of the life course. In J. Mortimer & M. Shanahan (Eds.), *Handbook of the Life Course* (pp. 81-98). New York: Springer.
- Smock, P. J., & Manning, W. D. (1997). Nonresident parents' characteristics and child support. *Journal of Marriage and the Family, 59*, 798-808.
- Sobolewski, J.M. & King, V. (2005). The importance of the coparental relationship for nonresident fathers' ties to children. *Journal of Marriage and Family, 67*, 1196-212.
- Sullivan, M. (1993). Culture and class as determinants of out-of-wedlock childbearing and poverty during late adolescence. *Journal of Research on Adolescence, 3*, 295-316.
- Sylva, K., Melhuish, E., Sammons, P., Siraj-Blatchford, I. & Taggart, B. (2004). The effective provision of preschool education project. Thomson, E., & McLanahan, S. S. (2012). Reflections on "family structure and child well-being: Economic resources vs. parental socialization". *Social Forces, 91*, 45-53. doi:10.1093/sf/sos119
- Tekin, A. K. (2011). Parent involvement revisited: background, theories, and models. *International Journal of Applied Educational Studies, 11*, 1-13.

- Thullen, M., Henly, J., & Hans, S. (2012). Domain-specific trajectories of involvement of fathers of children born to low-income African American mothers. *Journal of the Society for Social Work and Research, 3*, 129-144.
- Waller, M. R. (2012). Cooperation, conflict, or disengagement? Coparenting styles and father involvement in fragile families. *Family Process, 51*, 325-342. doi:10.1111/j.1545-5300.2012.01403.x
- Wasik, B. A. & Hindman, A. H. (2010). Understanding the home literacy environments of Head Start families: Testing the Family Literacy Survey and interpreting its findings. *NHSA Dialogue, 13*, 71-91.
- Wright, C. M. (1959). *The Sociological Imagination*. New York: Oxford Press.
- Yesil-Dagli, U. (2011). Center-based childcare use by Hispanic families: Reasons and predictors. *Children and Youth Services Review, 33*, 1298-1308.
- Zhai, F., Waldfogel, J., & Brooks-Gunn (2013). Estimating the effects of Head Start on parenting and child maltreatment. *Children and Youth Services Review, 35*, 1119-1129.
- Zhai, F., Brooks-Gunn, J., Waldfogel, J. (2011). Head Start and urban children's school readiness: A birth cohort study in 18 cities. *Developmental Psychology, 47*, 134 – 152.
- Zigler, E., & Styfco, S. J. (2010). *The hidden history of Head Start*. Oxford University Press.

9. APPENDICES

9.1. APPENDIX A

Parent Involvement Scale at Year 1

How many days per week do you....

1. Play games like peek-a-boo or gotcha with child?
2. Sing songs or nursery rhymes to child?
3. Read stories to child?
4. Tell stories to child?
5. Play inside with toys such as blocks or legos with child?
6. Hug or show physical affection to child?
7. Put child to bed?

Parent Involvement Scale at Year 3

How many days per week do you....

1. Play imaginary games with him/her?
2. Sing songs or nursery rhymes to child?
3. Read stories to child?
4. Tell stories to child?
5. Play inside with toys such as blocks or legos with child?
6. Hug or show physical affection to child?
7. Put child to bed?
8. Tell child you appreciate something he/she did?
9. Let child help you with simple chores?
10. Tell child that you love him/her?

Parent Involvement Scale at Year 5

How many days per week do you....

1. Sing songs or nursery rhymes to child?
2. Read stories to child?
3. Tell stories to child?
4. Play inside with toys such as blocks or legos with child?
5. Play outside in the yard, park or playground?
6. Take child on an outing or special activity?
7. Tell child you appreciate something he/she did?

9.2. APPENDIX B: FIGURES

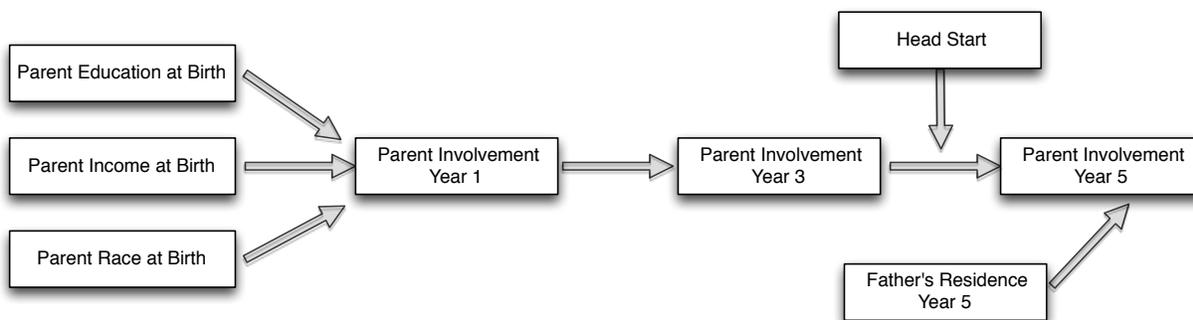


Figure 1. Conceptual model: Head Start participation and at-home parent-child involvement.

Models for mothers and fathers run separately.

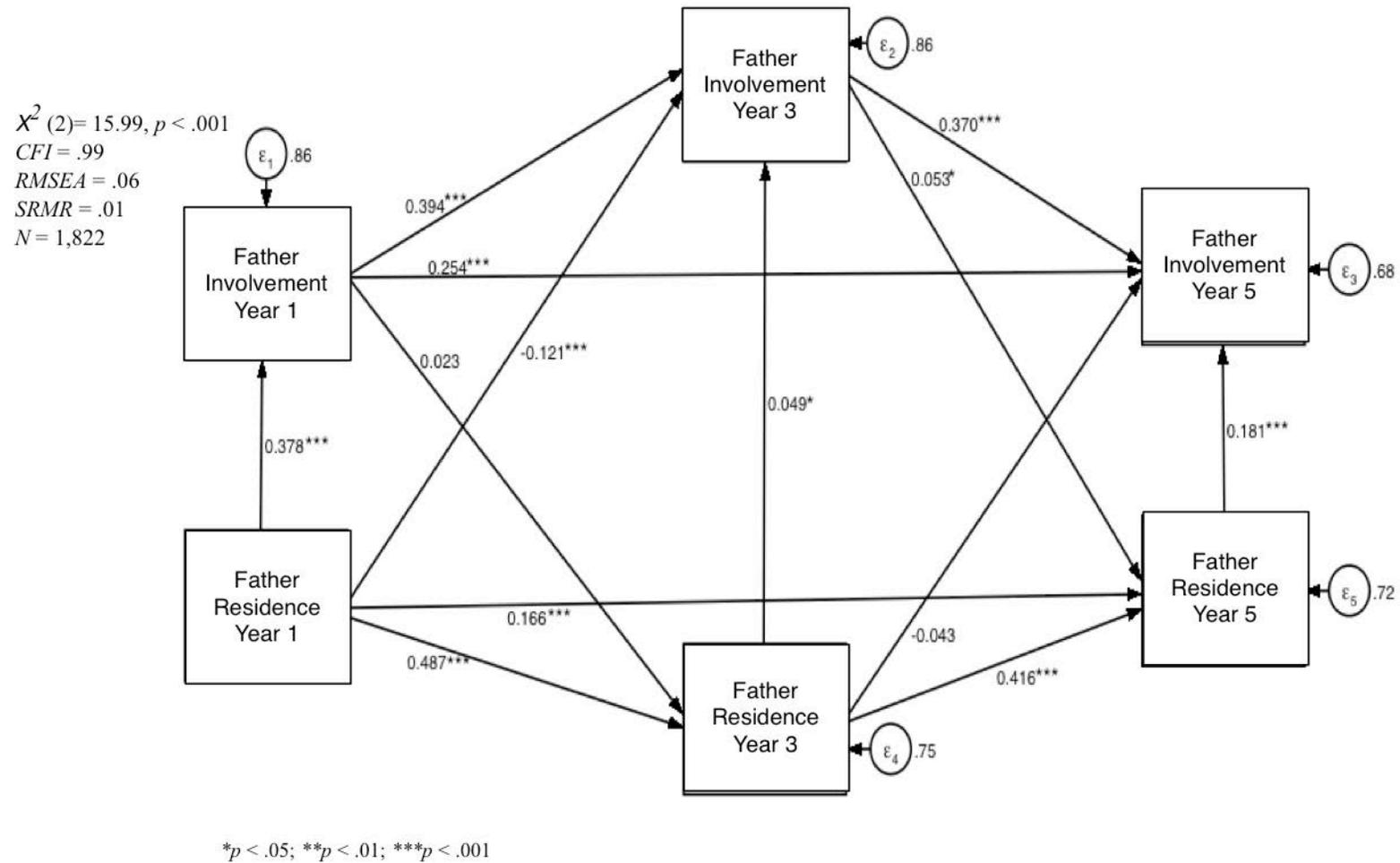


Figure 2. Relationship between father involvement and number of days per week father resides with child. Background characteristics not shown in this model were education, race/ethnicity and income.

9.3. APPENDIX C: TABLES**Table 1***Mother and Father Involvement Scale Alphas*

	<u>Year 1</u>	<u>Year 3</u>	<u>Year 5</u>
Alphas	.81	.80	.77
Mothers	.67	.73	.70
Fathers	.84	.81	.80
Number of items	7	10	7

Table 2
Mother and Father Involvement by Childcare Setting

	<u>Year 1</u>					<u>Year 3</u>					<u>Year 5</u>				
	HS ^a	PC ^b	DC ^c	PK ^d	PS ^e	HS ^a	PC ^b	DC ^c	PK ^d	PS ^e	HS ^a	PC ^b	DC ^c	PK ^d	PS ^e
Fathers															
<i>n</i>	329	392	282	628	633	371	462	342	792	775	249	354	241	529	519
<i>M (SD)</i>	4.6 (1.7)	4.9 (1.6)	4.7 (1.7)	4.7 (1.7)	4.7 (1.6)	4.8 (1.5)	4.9 (1.5)	5 (1.5)	4.8 (1.5)	4.9 (1.5)	3.5 (1.4)	3.7 (1.5)	3.5 (1.4)	3.6 (1.4)	3.6 (1.5)
Median	4.9	5	5	4.9	5	5	5.1	5.2	5	5	3.6	3.7	3.4	3.6	3.6
Mothers															
<i>n</i>	480	535	419	850	969	471	535	414	966	917	503	588	447	1023	981
<i>M (SD)</i>	5.6 (1.1)	5.6 (1.1)	5.5 (1.1)	5.4 (1)	5.6 (1.1)	5.6 (1.1)	5.8 (1)	5.7 (1.0)	5.7 (1)	5.8 (1)	4.5 (1.2)	4.7 (1.3)	4.4 (1.3)	4.6 (1.2)	4.6 (1.2)
Median	5.7	5.7	5.6	5.5	5.7	5.8	6	5.8	5.9	6	4.7	4.7	4.4	4.6	4.7

Notes:

^a HS is Head Start.

^b PC is parent care.

^c DC is daycare.

^d PK is pre-kindergarten.

^e PS is preschool.

Table 3
Description of Mothers

	<u>Childcare Setting at 5 Years</u>				
	<u>Head Start</u>	<u>Parent</u>	<u>Daycare</u>	<u>Pre-K</u>	<u>Preschool</u>
<i>N</i>	503	588	447	1023	981
Age at birth of focal child, <i>m (sd)</i>	24 (5)	26.3 (6)	24.8 (6)	25 (6)	26.5 (6.5)
Income at birth of focal child, <i>m (sd)</i>	21,616 (20,623)	24,981 (24,655)	29,115 (27,558)	33,999 (32,114)	45,258 (39,165)
<i>Education at birth of focal child, %</i>					
less than high school	40.4	41.7	39.2	38.6	37.4
completed high school	28.8	26.7	26.9	24.6	23.7
completed some college or training	22.1	23.5	25.3	24.4	25.3
completed college	8.2	8.2	8.7	12.2	13.6
<i>Race or ethnicity, %</i>					
Black	52.5	46.6	52.4	48.1	47.6
Hispanic/Latino	25.5	27.2	26.0	26.8	26.9
White	16.7	22.5	17.7	20.7	22.1
Other race or ethnicity not listed	4.8	3.2	3.8	4.3	3.3
Worked in last week, %	51.5	40.1	53.0	54.6	54.3
Hours worked in usual job, <i>m (sd)</i>	37.5 (12)	36.1 (13)	37.8 (10)	37.4 (11)	35.5 (12)
Hours child in program: <i>m (sd)</i>	29 (10)	0	35.6 (11)	29 (11)	26.6 (13)

Table 4

Summary of OLS Regression Analysis for Variables Predicting Mother's Involvement at Year 5

Variable	Model 2 ^a			Model 3			Model 4		
	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β
<i>Mother involvement</i>									
Year 1	.43***	.02	.42***	.21***	.02	.21***	.21***	.02	.20***
Year 3				.45***	.02	.44***	.45***	.02	.44***
<i>Care setting</i>									
Daycare							-.08*	.05	-.03*
Preschool							.01	.04	.00
Pre-Kindergarten							.01	.04	.01
Parent care							.12*	.05	.04*
R^2		.18			.32			.33	
F for change in R^2		768.03***			761.55***			3.30*	

* $p < .05$; ** $p < .01$; *** $p < .001$

Notes:

^a Model 1 included the following background characteristics: education, race/ethnicity, income, and father residency.

^b Head Start was left out of the models in order to serve as the baseline group.

Table 5
Description of Fathers

	<u>Childcare Setting at 5 Years</u>				
	<u>Head Start</u>	<u>Parent</u>	<u>Daycare</u>	<u>Pre-K</u>	<u>Preschool</u>
<i>N</i>	503	588	447	1023	981
Age of father at birth of focal child, <i>m(sd)</i>	27.5 (7)	28.6 (7)	28 (7)	27.7 (7)	28 (7)
Income at birth of focal child, <i>m(sd)</i>	33,220 (30,782)	36,892 (34,060)	36,228 (30,098)	36,471 (34,700)	42,055 (38,567)
<i>Education at birth of focal child, %</i>					
less than high school	32.6	32.0	29.3	31.3	30.2
completed high school	36.6	33.7	38.3	34.2	34.3
completed some college or training school	18.3	20.4	21.9	20.3	19.4
completed college	7.4	8.2	6.9	10.8	12.3
<i>Race or ethnicity, %</i>					
Black	53.5	49.6	56.6	49.4	48.7
Hispanic/Latino	26.6	27.2	25.1	27.5	26.3
White	14.7	18.7	13.2	18.3	20.1
Other race or ethnicity not listed	4.0	3.9	5.2	4.3	4.6
<i>Co-residence with child</i>					
Lives with child all of the time at 1 year	48.5	52.2	48.6	51.9	51.6
Lives with child all of the time at 3 years	43.9	49.3	45.6	48.3	48.5
Lives with child all of the time at 5 years	36.8	42.5	39.8	40.4	40.7

Table 6
Summary of OLS Regression Analysis for Variables Predicting Father's Involvement at Year 5

Variable	Model 2 ^a			Model 3			Model 4			Model 5		
	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β
<i>Father involvement</i>												
Year 1	.43***	.02	.39***	.31***	.02	.28***	.30***	.02	.28***	.28***	.02	.25***
Year 3				.36***	.02	.34***	.36***	.02	.34***	.36***	.02	.33***
<i>Care setting^b</i>												
Daycare							-.11	.07	-.03	-.08	.07	-.02
Preschool							.02	.06	.01	.03	.05	.01
Pre-Kindergarten							-.02	.05	-.01	-.02	.05	-.01
Parent care							.04	.06	.01	.03	.06	.01
Father residence with child										.11***	.01	.17***
<i>R</i> ²		.17			.27			.27			.30	
<i>F</i> for change in <i>R</i> ²		326.2***			252.2***			0.93			68.60***	

* $p < .05$; ** $p < .01$; *** $p < .001$

Notes:

^a Model 1 included the following background characteristics: education, race/ethnicity, and income.

^b Head Start was left out of the models in order to serve as the baseline group.

Table 7

Summary of Unstandardized Estimates, Standardized Estimates and Standard Errors of Paths in the Structural Equation Model

Path ^a	Standardized	Unstandardized	Standard Error	<i>p</i> value
Father inv. Yr 1 → Father inv. Yr 3	.394	.394	.024	.000
Father inv. Yr 1 → Father inv. Yr 5	.253	.253	.022	.000
Father inv. Yr 3 → Father inv. Yr 5	.370	.370	.021	.000
Father inv. Yr 1 → Father residence Yr 3	.023	.041	.040	.306
Father inv. Yr 3 → Father residence Yr 5	.053	.089	.04	.011
Father residence Yr 1 → Father involvement Yr 1	.378	.211	.013	.000
Father residence Yr 1 → Father involvement Yr 3	-.121	-.067	.015	.000
Father residence Yr 3 → Father involvement Yr 3	.049	.028	.015	.050
Father residence Yr 3 → Father involvement Yr 5	-.043	-.027	.014	.066
Father residence Yr 5 → Father involvement Yr 5	.181	.115	.015	.000
Father residence Yr 1 → Father residence Yr 3	.487	.478	.022	.000
Father residence Yr 1 → Father residence Yr 5	.166	.156	.022	.000
Father residence Yr 3 → Father residence Yr 5	.416	.400	.022	.000

$\chi^2(15) = 15.99, p < .001; CFI = .99; RMSEA = .06; SRMR = .01; N = 1,822$

Note: ^a This model controlled the following background characteristics: education, race/ethnicity, and income.