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IRVINE

Child Care and Community Services: Characteristics of Service Use and Effects on Parenting and the Home Environment

DISSERTATION

submitted in partial satisfaction of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

in Education

by

Anamarie Auger

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2014

DEDICATION

To:

My parents for their unwavering support and encouragement

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ACKNOWLEDGMENTS

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Auger, A., Jenkins, J. M., & Burchinal, M. R. "Do Curricula Make a Difference? Comparing General Versus Content-Specific Curricula During Preschool". Presented at the Association of Public Policy Analysis and Management in Albuquerque, NM, November, 2014.

Auger, A., Jenkins, J. M., Burchinal, M., Farkas, G., Duncan, G. J., & Vandell, D. L. "The Instructional Match Between Children's Preschool Curriculum and School Readiness". Presented at the Head Start Research Conference in Washington DC, July, 2014.

Auger, A., "Early Childhood Programs and Parental Characteristics of Service and Support Utilization". Presented at the Annual Welfare Research And Evaluation Conference, in Washington DC, May, 2014.

Auger, A., Vandell, D. L., Pierce, K. M. "Early Child Care Experiences and Out-of-School Activity Participation in Middle Childhood in Relation to Adolescent Adjustment". Presented at SRCD Special Topic Meeting Strengthening Connections among Child and Family Research, Policy and Practice in Alexandria, VA, April, 2014.

Burchinal, M. R., Zaslow, M., Tarullo, L., Xue, Y., & **Auger, A**. "Quality Thresholds, Features and Dosage in Early Care and Education: Secondary Data Analyses of Child Outcomes". Presented at Society for Research on Educational Effectiveness in Washington, D.C., March 2014.

Auger, A. "Parents, Child Care, and Community Services: Who Uses Services and What Services Do They Use". Presented at the Association of Public Policy Analysis and Management in Washington D.C., November, 2013.

Auger, A., Pierce, K. M., & Vandell, D. L. "Narrowing the Achievement Gap: Consistency and Intensity of Structured Activities During Elementary School". Presented at the Society for Research in Child Development in Seattle, WA, April, 2013.

Auger, A., Pierce, K. M., & Vandell, D. L. "Participation in Out-of-School Settings and Student Academic and Behavioral Outcomes". Presented at the American Educational Research Association in San Francisco, CA, April, 2013.

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Auger, A., Li, W., Farkas, G., Duncan, G. J., Burchinal, M., & Vandell, D. L. "Process Dimensions of Child Care Quality and Academic Achievement: An Instrumental Variables Analysis". Presented at Society for Research on Educational Effectiveness in Washington, D.C., March 2012.

Reich, S. M., Bickman, L. Duncan, G., Penner, E. K, **Auger, A.,** Saville, B., Alvarez, J., Andrade, A., & Albarrán. A. "Using Baby Books to Increase Knowledge, Improve Maternal Attitudes, Beliefs, and Practices, and Promote Child Health". Presented at the Meeting of the Pediatric Academic Society, Denver, CO, May, 2011.

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Xue, Y., Burchinal, M., **Auger, A**., Tien, H., & Tarullo, L. "Dosage Effects in Early Intervention and Child Care Quality: Evidence from Secondary Data Analysis". Presented at the Society for Research in Child Development in Montreal, QC Canada. March 2011.

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ABSTRACT OF THE DISSERTATION

Child Care and Community Services: Characteristics of Service Use and Effects on Parenting and the Home Environment

By

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Doctor of Philosophy in Education

University of California, Irvine

Distinguished Professor Greg J. Duncan, Chair

High-quality early childhood environments are important for children's school success and their socio-emotional development. Center-based early childhood programs improve child outcomes through high-quality care while children are in the care environment, but also have effects that reach beyond the classroom. Large-scale evaluations of early childhood programs, such as Head Start and Early Head Start, show a positive effect on parenting and the home environment. These programs offer many services that can support the home environment such as volunteer opportunities for parents and referrals to services and supports in the community. However, little is known about the mechanisms through which center-based early childhood programs influence the home environment. Similarly, little is known about the characteristics of people who use services and what specific services they use.

This dissertation aims to improve our understanding of how parents interact with center-based early childhood programs, and the role these programs play in shaping the home environment. The first study investigates parent uptake of services associated with center-based care, and the characteristics of parents who are using such services and supports. Findings from this study indicate parents are using services, and that the most disadvantaged families are

utilizing services related to their well-being, such as education and employment services. Study two examines characteristics of parents that participate in volunteer or (other types) of parent engagement activities, and whether parental involvement is associated with improved parenting practices and child development outcomes. In general, parents *are* participating in children's center-based early childhood programs. In contrast to the findings from the first study, parents who are most disadvantaged are less likely to participate; however, low-income parents who participate in their child's schooling gained the most from parental involvement activities. The third study examines the benefits of various services, such as parenting-related and family well-being supports, and finds that take-up of services and supports has a positive effect on the quality of the home learning environment.

Taken together, the findings from the three studies included in this dissertation demonstrate that parents are utilizing services and are becoming involved in their child's center-based early childhood program, and that doing so benefits the home environment and parenting practices. Early childhood programs and policies should work to further incorporate parents into programming and provide parents with services and supports.

Chapter 1: Introduction

Introduction

Recently, early childhood education programs have gained significant national and state attention (Collins, 2014; Pérez-Peña & Rich, 2014). For example, early learning initiatives, including infant/toddler and preschool programs, played a prominent part in President Obama's State of the Union addresses in 2013 and 2014. The increased attention rests in part on a robust body of research literature that repeatedly demonstrates the importance of early childhood experiences and skill development for children's later academic, socio-emotional, and life outcomes (Bradley, Corwyn, Burchinal, McAdoo, & García Coll, 2001; Campbell, Shaw, & Gilliom, 2000; Duncan, Ziol□Guest, & Kalil, 2010; Heckman, 2006; Ludwig & Miller, 2005; Vandell, Belsky, Burchinal, Steinberg, & Vandergrift, 2010; Yoshikawa, 1995).

In the early years of life, children's school readiness is highly influenced by the frequency and quality of interactions with parents and caregivers, and access to developmentally appropriate activities and materials (e.g., Brooks-Gunn & Markman, 2005; Burchinal, Kainz, & Cai, 2011; Linver, Brooks-Gunn & Kohen, 2002; McLoyd, 1998). The home environment has a strong association with children's development (NICHD Early Child Care Research Network, 2006); however parenting interventions, such as the majority of home visiting programs, show small to no effects on children's development (Brooks-Gunn, Berlin, & Fuligni, 2000; Sweet & Appelbaum, 2004). The majority of children are in center-based care prior to kindergarten entry (Pianta, Barnett, Burchinal, & Thornburg, 2009), and one way to serve parents and potentially impact the home environment is by providing services and supports, along with volunteer opportunities in center-based early childhood programs.

Two federal programs Head Start, and the newer program Early Head Start, have provided parents with such volunteer opportunities and comprehensive services since their inception (Duch, 2005; Love et al., 2005; Zigler & Valentine, 1979). Similarly, other state and local early child care and education programs focus on enhancing the interactions between parents and children, and improving the quality of the home learning environments (ACF, 2002; Love et al., 2005; Puma, Bell, Cook, & Heid, 2010; Reid, Webster-Stratton & Baydar, 2004). Programs that serve both children and parents are referred to as two-generation programs. Evaluations of several of these programs including the Comprehensive Child Development Program (CCDP; Goodson, Layzer, St. Pierre, Bernstein, & Lopez, 2000; Layzer & St. Pierre, 1996) have yielded small effects on parenting practices and families' well-being (Goodson et al., 2000). However, older definitions of two-generation programs did not emphasize that programs must provide high-quality care *and* parental services and supports (Chase-Lansdale & Brooks-Gunn, 2014). A renewed focus on two-generation programs, along with recent state policies aimed at improving the quality of child care, underscore the importance of parental involvement and comprehensive services in early education through new definitions of two-generation programs, and specific quality rating systems that feature a parent component aspect (Chase-Lansdale & Brooks-Gunn, 2014; Haskins, Garfinkel, & McLanahan, 2014; Yoshikawa et al., 2013; Zellman & Perlman, 2008).

Although much research has focused on the effect of center-based early childhood programs on the home environment, few studies have examined the pathways through which center-based care can improve the home environment and parent-child relationship (e.g., Gelber & Isen, 2011; Love et al., 2005; McCartney, Dearing, Taylor & Bub, 2007; Puma et al., 2010). In order to best serve parents, child care program designers need to understand the mechanisms

through which programs can influence home environments and parenting practices, such as by parent involvement in the early childhood care setting and/or providing parents with access to services and support for their own education, employment, and well-being. Programs that better understand characteristics of parents that are related to take-up of services and supports can better work to recruit parents to participate in services and provide services that the most likely to be utilized. Also, knowing the effectiveness of services and supports and parental involvement on the home environment and child development will help guide policymakers and program directors on how best to utilize early learning funding and where to direct program resources.

My dissertation provides three independent studies that, taken together, examine the different mechanisms through which the center-based care environment interacts with parents to provide services and parental involvement activities, and how comprehensive parent components impact the home environment or are associated with child development. The specific research questions answered in this dissertation are:

(1) *To what extent are parents utilizing services and supports offered or referred by center-based early childhood programs?*

(2) *What characteristics of parents predict usage of supports and services offered through center-based early childhood programs and the community?*

(3) *What characteristics of parents predict parental involvement in children's center-based early childhood programs?*

(4) *To what extent is parental involvement in center-based early childhood programs associated with children's school readiness skills and later development?*

(5) *To what extent is parents' participation in center-based early childhood programs associated with parenting practices?*

(6) *To what extent do the services and supports provided or referred to parents from center-based early childhood programs affect the home environment and parenting practices?*

Theoretical Framework

Two main theoretical frameworks guide my dissertation. The first, and overarching framework, is Bronfenbrenner's bioecological theory of development (Bronfenbrenner & Morris, 2006; Bronfenbrenner, 1979). Bioecological theories of development posit that multiple environments affect development, and that environments can interact with and be informed by each other. Also included in the model are outside forces that the child is not directly in contact with but shape the environments they spend time in, such as child care policies or welfare programs that may impact the home environment. In this theory, the environments that are most proximal to the child – the home and child care setting – have the greatest impact on children's development. These environments are part of the microsystem, and are the settings in which children spend the most time, so providing high-quality experiences in these settings is especially important for positive development (Bronfenbrenner, 1986).

The second layer of the model is the mesosystem, and this system is where environments in the microsystem interact. In this dissertation, I focus on both the micro- and mesosystems explicitly to examine how the early child care and home environment interact with one another in several ways. I focus not only on how the early child care environment can provide services and supports to the parents, but also on how parents can become involved in the early care environment as an active participant. The last part of the model that is not directly examined in this dissertation, but informs the settings that children are in, is the exosystem. This system

focuses on distal processes such as policies at the local, state, and federal level that influence the environments children spend large amounts of time in.

The second guiding framework, which is situated within the bioecological theory of development, is the social causation perspective (Conger, Rueter, & Conger, 2000; Conger & Donnellan, 2007). Within this framework, theorists focus on two pathways—parental investments and family stress—through which life situations, specifically poverty, affects child development (McLoyd, Mistry, & Hardaway, 2013, p. 111). My dissertation examines both of these pathways as a way to understand why parents participate in their child's schooling and why they may or may not utilize services offered to them. Parental investments include both physical inputs (e.g., learning materials) and parenting practices (e.g., time spent reading or taking trips to the zoo or museum). The family stress model instead argues that child development is most affected by the stress parents are under due to their life situation (Mistry, Lowe, & Benner, 2008). Both the family stress and parental investment models have been empirically tested (Conger & Donnellan, 2007; McLoyd et al., 2013; Yeung, Linver, & Brooks–Gunn, 2002), and evidence supports both pathways, with parental investments seeming to matter most for children's academic outcomes and family stress being most related to children's socio-emotional development (McLoyd, Mistry, & Hardaway, 2013).

My dissertation uses the social causation perspective to understand characteristics of parents that are related to take-up of services and supports, and parental involvement in center-based early childhood programs. Specifically, I use this framework to hypothesize reasons as to why parents become involved in the care setting or why they take-up services. Also, this framework, specifically the parental investments portion, is used as a rationale for why parental services or involvement should be related to parenting practices and child development. Taken

together, both the bioecological model of development and the social causation perspective provide the foundation for the three studies included in this dissertation.

Data

Three data sets are used to answer my research questions. Two of the data sets, the National Evaluation of Early Head Start and the Head Start Impact Study, randomly assigned low-income children and their families to services. The third data set, NICHD Study of Early Child Care and Youth Development, is a non-experimental study and draws its data from a more economically diverse sample, with families ranging from below the poverty line to well above the poverty line. Below each of the data sets are described generally, and the individual chapters contain detailed information on the specific samples used in the studies.

National Evaluation of Early Head Start (EHS). The EHS study began in 1996 with data collection focusing on the implementation of EHS services. A total of 3,001 families applied and were selected to participate in EHS services at 17 different sites around the nation. Half of the families were randomly assigned to receive EHS services including home-based visits, center-based care or a mixture of both. Children and families were followed from birth (or age at random assignment – no older than 12 months of age) to when children were in fifth grade. Parents and children in both the treatment and control groups were followed and asked questions regarding their usage of community services and supports at 6, 15, and 26 months after random assignment. Measures of parenting and the home environment in the form of questionnaires and observations were also collected throughout participation in the program. My dissertation focuses on only children who were in center-based care or received a mixture of home and center-based care.

Head Start Impact Study (HSIS). In 1998, congress mandated that the Department of Health and Human Services measure the impact of Head Start services on the children and parents it serves (Puma et al., 2010). Two cohorts—a 3-year old and 4-year old cohort—of low-income parents and children were recruited to participate in the study in the spring and summer of 2002 from a random selection of over-prescribed Head Start centers located throughout the country in both rural and urban areas. A total of 383 Head Start centers generated a waitlist where on average 25 children from each center were randomly assigned to the treatment or control condition, with random assignment being conducted separately for the 3- and 4-year old cohorts. The HSIS began data collection in 2002 and followed the children and their families through their third grade in elementary school, with the final data collection time point occurring in the late 2000's. The proposed research study uses data from the first year of Head Start services (Fall 2002 – Spring 2003), because both cohorts of children were eligible to be enrolled in Head Start during the 2002-2003 program year.

NICHD Study of Early Child Care and Youth Development (SECCYD). Recruitment for NICHD SECCYD began in 1991 and lasted throughout the year. Mothers over the age of 18, who spoke English as their first language and gave birth to healthy babies were recruited to participate in the study. Babies born in designated 24-hour periods in 10 geographically diverse locations around the United States were eligible to be part of the recruitment sample if they met certain requirements. Participants were selected from the recruited sample based on the following conditions: mothers did not have any serious health condition, did not plan to have the child adopted, and did not plan to move in the next year. Participants also must have resided within an hour of a study site. The study sample is diverse both economically and ethnically;

however, due to the sampling and goals of the study, a nationally representative sample was not recruited.

Data on the child, family, child care setting, and school were collected at many time points throughout the child's life, beginning at birth and the most recent data being collected at the end of their high school year. Rich observational and survey data on family processes, the home environment, parenting, and child care centers were collected. My dissertation includes children who were in center-based child care at 54-months for at least 10 hours a month. Data from phase I (ages 0-3), and II (ages 4 ½ to first grade year in elementary school) of data collection are used.

Overview of Studies

Study 1: Families and Early Childhood Education: The impact of participation and demographic predictors of additional service utilization. One goal of many early childhood interventions, including Head Start and Early Head Start, is to promote child development through the provision of high-quality child care and preschool. Another goal of some programs is to improve children's developmental outcomes by changing parenting practices and the home environment (e.g., Brooks-Gunn, Berlin & Fuligni, 2000; Love et al., 2005; McGroder & Hyra, 2009; Puma et al., 2010). Many programs provide comprehensive services to parents (e.g., Brooks-Gunn et al., 2000; McGroder & Hyra, 2009); however, little is known about who uses services and supports offered or referred by child care programs and which specific services and supports are utilized. Research examining take-up of program services from a welfare-to-work intervention finds that usage of services is not universal and that a multitude of factors are associated with take-up (Gibson & Weisner, 2002). Few studies extend this work to examine which specific characteristics of participants are related to program service usage and the types

of services or supports used. Additionally, much of this work is with volunteer or community samples, and little of it has been replicated across multiple data sets.

This chapter addresses the gap in the literature by examining two national data sets that span across the income spectrum, to answer three research questions: (1) To what extent are parents utilizing services and supports provided or referred by center-based early childhood programs, (2) Which characteristics of parents are related to usage of services, and (3) What types of services do families use? Answers to these questions further the field's understanding of the needs of families whose child is enrolled in center-based care.

Study 2: Parental Involvement in Preschool: Effects of Head Start on Participation and Associations with Parenting Practices and Child Development. Parental involvement in children's schooling is thought to play an important part in their academic and social development (Hoover-Dempsey & Sander, 1995; Hoover-Dempsey & Sandler, 1997). Involvement is categorized as either passive or active (Epstein, 1992). Active involvement, which is the focus of the chapter, includes parents attending field trips, volunteering in classrooms, or participating in parent education courses. Prior research focuses almost exclusively on involvement in the elementary school years, and little is known about parental involvement in children's preschool education at a time when it is thought to matter most. Similarly, few studies examine the predictors of parent involvement. The few studies that have examined predictors of involvement find that demographic predictors such as single parent status, parent education, and poverty are related to whether parents participate in their child's education (e.g., Kohl, Lengua, McMahon, & Conduct Problems Prevention Research Group, 2000; Lareau, 2000; Waanders, Mendez, & Downer, 2007).

Parental involvement in the elementary and middle school grades is linked with children's academic development and to a lesser extent socio-emotional development (El Nokali, Bachman, & Votruba-Drzal, 2010; Fan & Chen, 2001; McWayne, Hampton, Fantuzzo, Cohen, & Sekino, 2004; Wilder, 2014). However, it is not yet known how preschool involvement is related to children's development using a national sample, nor how parental participation in centers relates to changes in the home environment or parenting practices.

This chapter uses two data sets, the HSIS and SECCYD, to answer two research questions: (1) What characteristics of parents predict involvement in their child's center-based early childhood program, and (2) To what extent is parental involvement related to parenting practices, and child academic and socio-emotional development at the end of the preschool period and into first grade? Also, the chapter is the first to my knowledge to empirically test whether the offer of Head Start participation is causally related to parental involvement in preschool settings, which is a stated goal of Head Start programs (Zigler & Valentine, 1979).

Study 3: Two-Generation Programs and Parenting Practices: The effect of services and supports on parenting and the home environment. Research examining the impacts of family services on parenting find that increased knowledge of parenting and higher levels of education and income are related to a more stimulating home environment and higher-quality parent-child interactions (e.g., Brooks-Gunn et al., 2000; Duch, 2005; Magnuson, Sexton, Davis-Kean, Huston, 2009; Votruba-Drzal, 2003). Additionally, evaluations of early interventions including Head Start and Early Head Start find a significant effect on parenting and the home environment, yet pathways through which this change occurs are rarely examined (e.g., Brooks-Gunn et al., 2000; Brooks-Gunn & Markman, 2005; Love et al., 2005; Puma et al., 2010).

Most past studies examining the relationship between large-scale early childhood programs, services offered to parents, and changes in parenting and the home environment have relied on observational or survey data (e.g., Brooks-Gunn et al., 2000; Zigler, Pfannenstiel, & Seitz, 2008). A handful has taken advantage of random assignment (e.g., the Goodson et al., 2000 evaluation of the CCDP; St. Pierre, Ricciuti & Rimdzius, 2005). However, program implementation problems plagued the largest of the random assignment studies (e.g., McCall, Ryan & Plemons, 2003). McCall and colleagues (2003) note one reason evaluations of programs, particularly the CCDP, may have failed to produce significant results is the lack of time between implementation and evaluation. Evaluating the effectiveness of services may yield much different results if programs are given time to be implemented. Other evaluations of non-randomly assigned programs lack adequate control groups or rigorous methods and therefore are unable to draw causal conclusions about the effectiveness of parent programs on changing parenting (Brooks-Gunn et al., 2000).

This study uses a rigorous methodological tool, instrumental variables, to further the field's understanding of the relationship between child care, community services, and changes in parenting (Gennetian, Magnuson & Morris, 2008). This methodological tool allows researchers to draw causal inference within this context by using only the exogenous variation produced by treatment status. In effect, it asks whether program sites with the largest experimental impacts on community services were also the sites that most improved parenting. This study answers the research question of whether take-up of services is causally related to positive parenting practices and the home environment.

Significance

Although strong evidence indicates the importance of the home environment, and that the center-based early childhood environment can impact the home environment, the *mechanisms* through which the child care environment influences the home are largely unknown. The results of the study will help inform practice and policy related to center-based early childhood programs. Specifically, the findings will help programs understand the characteristics of parents whom become involved in centers and who utilize services and supports offered. Program directors and policymakers can also use the results to determine how best to allocate their resources such as funding and personnel when serving parents.

Addressing these questions is important for future research and considering how best to design center-based early childhood programs so that they meet the needs of diverse populations and improve family processes that are crucial to children's development. The final chapter of the dissertation describes in detail the significance of the results of the three studies for future research and early child care and education policy.

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Chapter 2: Families and Early Childhood Education: The impact of participation and demographic predictors of additional service utilization

Abstract

Two-generation programs are designed to provide services to children and their parents; however it is not yet known the extent to which parents are utilizing family services. The present study using data from the Head Start Impact Study (n = 3,696) and the National Evaluation of Early Head Start (n = 1,609) examined the effect of center-based early childhood education on parents' utilization of parenting and family well-being services. Demographic characteristics of parents were also examined in relation to service use. Results indicate that participation in federally funded early childhood programs has a positive significant impact on parental service utilization. Parents with more risk (e.g., teen mother, single parent, not employed, and/or less than a high school degree), regardless of early childhood participation, were more likely to use services related to their families' well-being. Policy implications for early childhood education programs and future directions are discussed.

Keywords: Two-Generation Programs, Parent Service Use

Families and Early Childhood Education:
The impact of participation and demographic predictors of additional service utilization

Recently, much attention has been paid to whether publicly funded programs for low-income families are effective at promoting children's development. Two federal programs, Head Start (HS) and Early Head Start (EHS), seek to serve not only children, but also the families of the children enrolled (Love et al., 2005; Puma, Bell, Cook, Heid, & Broene, 2012; Puma, Bell, Cook, & Heid, 2010; Vogel, Brooks-Gunn, Martin, & Klute, 2013). Evidence from evaluations of these programs indicates little to no impact on children's development into the early elementary school years, but the programs were effective at improving parenting practices (Gelber & Isen, 2013; Love et al., 2005; Vogel et al., 2013). Because of this, and the large body of research indicating the importance of parenting during the early years of children's lives (e.g., Auger & Burchinal, 2013; Brooks-Gunn, Berlin, & Fuligni, 2000), it is important to understand how these programs may improve parenting practices and home environments.

This paper seeks to understand if parents whose children are involved in HS or EHS take up other services and supports, such as parenting classes, support groups, employment and job training, and education courses, at a higher rate than parents whose children are not enrolled in HS or EHS. The second goal of the paper is to understand what characteristics of parents are related to service utilization in order to better promote recruitment efforts of centers or organizations aiming to enroll parents in services.

The present study is grounded in ecological theories of development (Bronfenbrenner & Morris, 2006; Bronfenbrenner, 1979) as well as the social causation perspective (e.g., Gershoff, Mistry, & Crosby, 2013). These two perspectives suggest that multiple influences are involved in a persons' life that lead to their development. The ecological systems theory focuses on relationships or interactions the child has starting from proximal relationships, such as parents, to

distal forces like media or public policy (Bronfenbrenner, 1979). These systems can interact with each other (e.g., parents with child care or early education centers) to affect a child's development. As parents interact with the child care environment, outside forces, such as the psychological stressors associated with living in poverty including unstable housing, job instability, or crime ridden neighborhoods (Conger, Conger, & Martin, 2010; Conger & Elder, 1994; McLoyd, 1998; Mistry, Lowe, & Benner, 2008; Mistry, Vandewater, Huston, & McLoyd, 2002), or the inability to purchase educational materials (Lareau, 2011; Yeung, Linver, & Brooks–Gunn, 2002) act as barriers to parents wanting to provide a high-quality home environment and positive parenting practices. Early care and education environments can help break these barriers by also serving the parents of the children enrolled through offering the parents services and supports either directly through the center/care environment or by referring them to community providers.

Two-Generation Programs

Although the concept of serving both parents and children in one program is not new (Goodson, Layzer, St. Pierre, Bernstein, & Lopez, 2000; Layzer & St. Peirre, 1996, Smith, 1995), recent research has sparked a renewed interest in these programs – commonly called two-generation programs (Haskins, Garfinkel, & McLanahan, 2014). A two-generation program is defined as a program that provides high-quality care or education to children *as well* as employment, education, parenting services, or other services to parents (Chase-Lansdale & Brooks-Gunn, 2014; St. Pierre, Layzer, & Barnes, 1996).

The current study focuses on participants in HS or EHS where center-based care was offered, and various types of services and supports were made available to parents. These programs offer two distinct types of services to families (Layzer & St. Pierre, 1996). The first

type involves services aimed at increasing parental knowledge of child development, or direct instruction on effective parenting practices. The second type of services focus on indirectly affecting parenting through services that increase parental educational attainment or income, or provide housing assistance, family counseling and other mental health services.

Although past research has considered HS (and to some extent EHS) a two-generation program (e.g., Layzer & St. Pierre, 1996), a review of two-generation programs and the components of these program, (Chase-Lansdale & Brooks-Gunn, 2014) notes that the current implementations of these programs are not consistent with the new definition (i.e., a program must provide equal services to children and parents), but with some modifications both HS and EHS could be considered part of the "two-generation 2.0" programs. However, little to no evidence exists (apart from the final report of the EHS evaluation) regarding take-up of services offered through federal programs like HS or EHS (Administration for Children and Families, 2002; Puma et al., 2010), and what characteristics of parents are related to taking up services and supports available within a community. Before programs such as HS and EHS work to implement services for parents that equal those for children in resources expended, it is important to understand first if service use is actually increased by receiving HS and EHS services, and who uses what types of services, so that recruitment efforts can be better targeted to incorporate families who are not currently participating.

Parental Characteristics of Service Use

Research in the developmental field on parental characteristics related to examining individual characteristics related to take-up of services is sparse. Evidence on characteristics of service use comes mainly from studies examining take-up of social benefits or health-related services (Currie, 2004; Leventhal, Brooks-Gunn, McCormick, & McCarton, 2000; Spielberger &

Lyons, 2009). One of the most consistent and negative predictors of service usage is family income (Leventhal et al., 2000; Newacheck, 1992); however because the current study examines service usage among low-income parents the review of literature focuses on other characteristics of parents that are predictive of service utilization.

Speilberger and Lyons (2009) examined characteristics of low-income parents who take up community and government services. The authors found that the majority of the parents in their sample utilized at least two services (health care and food), and that distinct categories of service users were identified in their data. Mothers who were more highly educated, employed, or living with a partner were significantly less likely to be high service users. Similarly, Leventhal and colleagues (2000) examined parental and child correlates of services for children and found that mothers with higher educational attainment were significantly less likely to be in the low service use category than mothers with lower levels of education. Maternal education is also found to be an important predictor of dosage of physician services (Newacheck, 1992), indicating that maternal education may be a particularly powerful determinant of parents/caregivers take-up of services. Research on dropout from early childhood programs found similar results, with parents with more risk characteristics, particularly being a single mother, being significantly more likely to drop out of programs (Roggman, Cook, Peterson, & Raikes, 2008).

Cumulative risk. Several scholars have noted the differential involvement of parents in early childhood or human capital interventions by varying risk levels (Barlow, Kirkpatrick, Stewart-Brown, & Davis, 2005; Bronfenbrenner, 1974; Gibson & Weisner, 2002). In the mid-1970's Bronfenbrenner reviewed the existing literature on home-based and preschool interventions and concluded "…At the most deprived levels, families are so overburdened with

the task of survival that they have neither the energy nor the psychological resources necessary to participate in an intervention program involving the regular visit of a stranger to the home" (pg. 17, Bronfenbrenner, 1974). This conclusion has been supported when examining service take-up in an intervention that provided participants with a host of different supports and subsidies aimed to move low-income families from welfare to work (Gibson & Weisner, 2002) and in home visiting programs (Barlow et al., 2005). Research on the welfare to work intervention, using an ethnographic approach, found four categorizations of people that could be identified in relation to their take-up of services. One of the groups that did not use services were identified as having a disrupted life style and instability that prevented them from fully taking advantage of the services offered. Similarly Barlow et al., in their interviews, noted that "A number of women interviewed, seemed unable to conceptualize the service as a source of potential support through current difficult experiences. They perceived it, instead, as an added burden" (pg. 203).

In the recent evaluations of HS and EHS a risk index was created to capture the cumulative risk of parents in the studies. The risk index was composed of five factors - " [being] a single parent, receiving public assistance, being neither employed nor in school or job training, being a teenage parent and lacking a high school diploma or GED" (pg. 9, Love et al., 2005). The authors in the EHS study found that families, mainly in the domain of parenting practices who had moderate levels of risk (3 out of 5 factors) benefitted more from Early Head Start services both during the treatment period and three years later than those with high or low levels of risk (Love et al., 2005; Raikes, Vogel, & Love, 2013). However, in the Head Start Impact Study (HSIS), few results were found for families with varying risk levels using the same risk index. The one notable exception was for children from families with high levels of risk (4+

factors) in the 3-year old HS cohort, who showed larger gains on academic and cognitive outcomes than children in the control condition during their HS year and into 1st grade (Puma et al., 2010), and for some outcomes in 3rd grade (Puma et al., 2012). For children in the other risk categories or in the 4-year old cohort, there were few significant results, and coefficients were inconsistent in direction (Puma et al., 2010; 2012). These results are for the impacts of the intervention and not specifically the findings for service take up on children's development.

Although some evidence is available on usage of services and participant characteristics, more work is needed to understand who utilizes services. Understanding who uses services and what services families use, can help centers/programs in their recruitment efforts, and also determine how to better allocate funding given the likelihood of families utilizing various services.

Present Study

The present study has two goals. First, it seeks to understand whether assignment to the treatment condition in the national evaluation of EHS (center-based program delivery only) or the HSIS results in increased usage of parental services and supports. Secondly, the study seeks to answer whether parents with more risk or certain types of characteristics are more likely to use services, regardless of whether they were assigned to the treatment condition in the two national evaluations. It is hypothesized that the results from the final report of the EHS national evaluation will be replicated and new results from the HSIS will show that parents who were randomly assigned to the treatment condition use services at a higher rate than parents who were assigned to the control conditions (ACF, 2002). It is also expected that parents with more risk will utilize services more than parents with minimal risk factors, given that it is a goal of both EHS and HS to serve the neediest families (Zigler & Styfco, 2010).

Method

Data

Head Start Impact Study (HSIS). In 1998, congress mandated that the Department of Health and Human Services measure the impact of Head Start services on the children and parents it serves (Puma et al., 2010). Two cohorts – a 3-year old and 4-year old cohort – of low-income parents and children were recruited to participate in the study in the spring and summer of 2002 from a random selection of over prescribed Head Start centers located throughout the country in both rural and urban areas. A total of 383 Head Start centers generated a waitlist where on average 25 children from each center were randomly assigned to the treatment or control condition, with random assignment being conducted separately for the 3- and 4-year old cohorts. Participation in the study was high; with relatively low levels of participants deciding not to take-up Head Start services (15% for the 3 year old cohort, and 20% of the 4 year old cohort). The HSIS began data collection in the fall of 2002 and followed the children and their families into the children's first few years of elementary school.

The present study used data from the first year of Head Start services (Fall 2002 – Spring 2003), because both cohorts of children were enrolled in Head Start during the 2002-2003 program year, and parents were asked questions regarding their service and support use. The present study used a final sample of approximately 3,696 because that was the number of parents that completed the Spring 2003 survey.

National Evaluation of Early Head Start (EHS). The EHS study began in 1996 with data collection focusing on the implementation of EHS services. A total of 3,001 families applied and were selected to participate in EHS services at 17 different sites around the United States. Half of the families were randomly assigned to receive EHS services including home-based visits, center-based care, or a mixture of both. Children and families were followed from

birth (or age at random assignment – no older than 12 months of age) to when children were in fifth grade. Parents in both the treatment and control group were followed and asked questions regarding their usage of community services and supports at 6, 15, and 26 months after random assignment. The present study focused only on children who were in center-based care or received a mixture of home and center-based care ("mixed approach services"). A final sample of 1,609 was used in the study.

Measures

Services and supports. In the EHS study and the HSIS parents were asked to report on their use of services. In both studies parents in the treatment and control conditions were asked to report service use regardless of where or how the service was received. In the HSIS, several questions regarding service take up were asked of parents in the Spring of 2003, which was approximately nine months after the start of the Head Start operating year. Parents were asked to report on their usage of services since September 2002. Similar questions on service use are present in the EHS data set. However, in the EHS data set, parents were asked to report on services used on a structured interview, the Parent Services Follow-Up Interview (ACF, 2002), at 6, 15, and 26 months after random assignment. Data from all three time-points were used and pooled together to determine if at any time during the study period parents utilized supports or services. A complete list of the available services and supports for each data set is presented in Table 2.1.

{Insert Table 2.1}

To examine the various types of services, an overall service variable and service composites were created. The overall service variable is a dichotomous indicator coded 1 (otherwise 0) if parents utilized any type of service or support. To measure services aimed to

address parenting practices and parental knowledge of child development a parent service composite was created indicating if parents utilized any type of parenting related service (1 = yes, 0 = no). The EHS data set contained detailed information on parenting service take up by participants and those in the control group. Such questions addressed whether the parent received parenting information from their case manager, whether she attended parent support classes, and whether she received parent education. The HSIS dataset is more limited than the EHS in the information provided on parenting specific services; however, questions regarding parent education courses and goal setting are available.

The second type of service indicator created consisted of services hypothesized to have an indirect effect on parenting through increasing family well-being. Each of the data sets contained similar information regarding this type of service utilization. However, because most of the families in the EHS reported receiving some sort of service aimed at increasing the families well-being, such as nutritional, income, housing or health services (94%), two well-being composite variables were created – a family well-being indicator (mental health, housing, and transportation assistance), and an employment/education indicator (education or job training, and employment services). The HSIS contains only limited variation on these variables, so one indicator of well-being service utilization was created. Consistent with the other service indicator, these variables were dichotomous, with 1= service(s) were used, and 0 = no service used. Finally, a count of the number of services (both parenting and well-being services) parents utilized during the study was created.

Parental characteristics. To examine what types of parents used services or supports several parental characteristics were examined. Demographic characteristics included as predictors were maternal education (less than a high school degree, high school degree or GED,

some college), whether the mother was not married/cohabiting/single, not working, and whether a teen mom. These characteristics were chosen based on prior literature (ACF, 2002; Raikes et al., 2013; Love et al., 2005; Leventhal et al., 2000). Along with examining these characteristics individually, a demographic risk composite was created using the factors listed above to examine the association between having varying risk levels with utilizing services and supports. The risk index ranged from zero to four, and maternal education was categorized in the composite as less than a high school degree, which is the same as the final reports from both the HS and EHS evaluation (ACF, 2002; Puma et al., 2010). In both data sets, parents reported on these characteristics during structured interviews at baseline.

Covariates. Several demographic and background characteristics were included in the analyses. Child and parent characteristics that were similar across both data sets included treatment status, child gender, race, number of kids in the household, whether the primary language spoken in the home was English, and receipt of service prior to random assignment. Demographic characteristics in both data sets were obtained through parent report. Several additional covariates were available in the EHS data set; including whether the child was first born and whether the family had previously participated in the early childhood program services. Covariates unique to the HSIS included whether the child was in the age 4 cohort, child pre-academic skills, and problem behavior and social skills. In the HSIS, children were administered the Woodcock-Johnson Psychometric Tests of Achievement III (Woodcock, McGrew, & Mather, 2001) in the fall of 2002 as a measure of pre-academic skills. Also in the fall of 2002 parents reported on their child's social skills and problem behaviors. Descriptive information on these variables is presented in Table 2.2.

Site. To account for differences that may be associated with location specific characteristics, site fixed effects were used in the analyses. In the EHS, there were a total of 17 sites that participated in the study; however because the sample was limited to centers that provided center-based or mixed approach services, a total of 11 site dummies were included in the analyses. These 11 sites were used in the fixed effects models. In the HSIS, site was defined at the grantee level. Because several HS center locations included a small sample of children, and the data from those children would be lost if fixed effects were used at the center level, site was operationalized as being the grantee/program. A total of 83 HS grantee/programs participated in the HSIS and approximately 80 (number varies slightly by analysis) were retained in the final analysis sample.

Analytic Strategy

Prior to conducting substantive analyses, descriptive statistics, were computed. First, descriptive statistics on the service and support variables, the parental characteristics and risk index, and the control variables were computed for the full sample and by treatment and control conditions for each of the two data sets. Secondly, t-tests were conducted to determine if significant differences existed between the treatment and control conditions.

Several sets of substantive analyses were conducted. The first research question asked whether assignment to the treatment condition resulted in increased service and support use. To replicate the findings from the National Evaluation of the Early Head Start (ACF, 2002) and to test for treatment effects not previously examined in the HSIS, ordinary least squares (OLS) and logit regressions were used to examine the impact of assignment to the treatment condition on usage of services and supports offered through HS or EHS, or the community. The second research question sought to answer what types of parents utilize services and supports. In order

to answer this research question a risk composite and individual characteristics of parents were used as predictors of service and support use. In the first set of analyses, the risk index was entered as the primary predictor of the two composites (parenting and well-being services – and education/job training in the EHS study), and number of services received. The second set of analyses consisted of individual characteristics of parents, which included maternal education (college degree was reference category), not married/cohabitating/single, not working, and whether a teen mother, predicting the usage of the various service categories.

In both sets of analyses a treatment indicator and control variables were included. Because the vast majority of families in both the evaluations received some service during the span of data collection (89% in the HSIS, and 95% in EHS) logit regressions were not run on overall service use. Also, because the present study did not seek to address age-related service questions, the 3- and 4-year old cohort were pooled together in the HSIS; however an indicator for cohort was included in the analyses as a control variable. Missing data on the control variables were handled using dummy variables (1= missing, 0 = missing). Missing values on the control variables were then set to zero. The missing dummies were then entered into the logit or OLS regressions. This method has been noted as an effective way to handle missing data in randomized controlled trials (Puma, Olsen, Bell, & Price, 2009).

Results

Descriptive Analyses

Examining the full sample descriptive statistics presented in Table 2.2 in both HSIS and EHS, approximately half of the participants received some sort of parenting service, and three fourths of families received at least one well-being service. However, a large difference in the number of services was found between families in the HSIS and EHS; parents in the HSIS used

on average 1.8 services compared with parents in the EHS who on average used 3.8 services. Turning to the parental characteristics, the EHS study contained a much larger percentage of single mothers (56% HSIS; 78% EHS) and teen mothers (17% HSIS; 41% EHS); the two studies were similar in maternal education (except for less than high school degree (38% HSIS; 47% EHS)), and whether the mother was not currently employed. Because of the difference in the single and teen mothers, the EHS participants on average have 2.16 risk factors compared with 1.49 factors in the HSIS. Few differences on the demographic and background characteristics existed between the two data sets, except for the primary language spoken at home being English (30% HSIS; 83% EHS).

{Insert Table 2.2}

The t-tests from both the EHS and HSIS samples indicate that on average participants who were assigned to the treatment condition in HSIS or EHS reported receiving significantly more services compared with those assigned to the control group. Similarly, in both samples participants in the treatment condition reported receiving a greater number of services. When examining the services by type, parenting services and services aimed at increasing the families' overall well-being, differences in the two samples emerged. For both the HSIS and EHS samples, participants in the treatment condition reported receiving parenting services at a higher rate than participants in the control condition, and only in the EHS sample did participants report receiving more services related to their own well-being. No significant differences emerged on the key predictors of interest or covariates, except that in the HSIS the treatment group had significantly fewer single mothers than the control group. See Table 2.2 for descriptive statistics of service use, parental characteristics, and background and demographic control variables.

Substantive Analyses

The results of logit and OLS regressions are presented in Table 2.3. Along with estimating the coefficients, marginal effects (ME) were estimated (not shown in the table) from each analysis to show the change in probability of taking up a service or support when moving from the control to treatment condition (or from moving from working to not working, not being a teen mother to being a teen mother, etc.). Odds ratios were computed for the continuous variable – risk index – as these are preferred when computing a ratio for continuous predictors (Scott, Mason, & Chapman, 1999). Turning to the treatment effect first, the results indicate that the participants assigned to the treatment condition were significantly more likely, 9% in the HSIS and 36% in the EHS, to take up services directly related to parenting services, and a greater number of services compared with participants in the control conditions. In the EHS, parents in the treatment condition were 9% more likely to use family well-being services and 12% more likely to use education/employment services; however, in the HSIS this finding was not replicated.

{Insert Table 2.3}

Examining the risk composite results next (column 1 of each data set under the service categories), findings indicate that parents with more risk characteristics were significantly more likely to take-up services indirectly related to their parenting practices (odds ratio (HS = 1.40; EHS =1.09)). In the EHS study this held true only for family well-being services and not those related to education or employments services.

Next, to determine if specific parental characteristics were related to usage of services and supports, individual characteristics were entered into the analyses simultaneously. Results were largely mixed, and no definitive conclusions can be drawn across the data sets regarding

characteristics related to parenting services or number of services used. However, for the services hypothesized to have an indirect effect on parenting practices and the home environment, both being a teen mom and not being married or cohabitating were consistent predictors of service use in the HSIS and EHS study. The one consistent predictor of the number of services used in the HSIS was whether the primary caregiver was not currently employed. Other characteristics such as having less than a high school degree and not working were predictive of some service use in one or both of the data sets, but no pattern was found across outcomes or data sets. Although the service and support composites were the principal focus of this paper, descriptive statistics were computed and analyses were run on each of the individual services, and these results are presented in Appendix Tables 2.1, 2.2, and 2.3.

Finally, to determine if HS and EHS did a significantly better job of connecting families with various risk characteristics to services and supports, an interaction between the treatment dummy and the risk index was added to the model, and this was used to predict take up of each of the individual activities. The one notable result from this analysis came from the HSIS, where parents with increasing risk factors were significantly less likely to utilize parenting services. Findings from the other analyses were largely null and inconsistent across data sets.

Discussion

The two goals of the study were to understand whether HS and EHS are effective at increasing service utilization, and to understand characteristics of families/parents that are related to service use. Results from the study indicate that center-based federally funded early childhood education programs – Head Start and Early Head Start – were effective at connecting families with various services and supports. Most notably, HS and EHS were effective at increasing parents usage of parenting related services and the total number of services

used. EHS in particular was able to connect parents to various services related to their own well-being and education/employment needs. The findings from these analyses provide new evidence on the effectiveness of HS at connecting families to services within their communities and confirm the results from the final report of the EHS evaluation (ACF, 2002). As there is renewed interest in two-generation programs (Chase-Lansdale, & Brooks-Gunn, 2014; Haskins et al., 2014), determining whether parents are even utilizing services offered or referred to them is an important question and the results from this study indicate that families' participation in HS or EHS positively impacts their service use.

However, it is not yet known how parents are accessing these services. One of the possibilities is that these programs are referring parents to services through the teachers, center directors or other personnel. In HS, many centers have family service managers who work directly with families to determine their various needs and connect them with resources in the community. Another possibility is that through HS and EHS centers parents form relationships with other parents, which leads to an informal network of support (Small, 2009; Small, Jacobs, & Massengill, 2008). Small (2009), in an in-depth study of mothers at child care centers, found that mothers formed new friendships and created a network of support that led to lower depression levels. Small calls these early childhood centers "hubs of the community", where connections can be formed and parents can find out about various community resources through their interactions with other parents. A future direction for research is to understand why Head Start and Early Head Start centers, but not other types of center-based care, may create an environment where parents form relationships. Unfortunately, the data available in the HSIS and EHS are not clear as to how parents were referred to or offered services. The HSIS does ask

parents about who helped them access the service, but the information is limited and it is unclear whether the question measures referral or actual service delivery.

Parent Characteristics of Service Use

The second goal of the present study was to understand what demographic characteristics of parents were related to service take-up. This study appears to be the first to examine the relation of these demographic characteristics with service use across multiple, national data sets. In general, the results from the study confirm previous research that parents with less education, who were teen mothers, and who were single, were more likely to take up family well-being/education or employment services, and parents with more "risk" were more likely to use family well-being services (Leventhal et al., 2000; Spielberger & Lyons, 2009). These findings indicate that parents who have more risk are receiving some sort of service related to their personal or family's well-being, but that the most in need parents are not taking up parenting-related services such as parent education courses or parent support groups (results shown in Appendix Tables 2.2 and 2.3). One possible explanation for this finding is that parents who have more risk factors such as having less than a high school education or being a single parent are too stressed to take advantage of these types of services, instead they are focused on meeting their basic needs (Bronfenbrenner, 1974).

In order to better recruit parents with the most need to participate in services designed to promote better parenting practices, it is necessary for practitioners and researchers to understand why people are not utilizing services. Past research has noted that participants may not even see services as a source of support, but instead as an added burden (Barlow et al., 2005). Participants may not be taking up parenting services because they perceive it as too cumbersome or the service is not convenient because of work/child care schedules. This study was not able to

address this aspect of service delivery, but in order to better serve low-income families, particularly ones with young children, it is necessary to understand barriers to service use and determine ways to alleviate these barriers.

A surprising result was the inconsistency of findings across the two data sets. For example, parents who were not employed who took part in the HSIS (regardless of their experimental condition) were significantly more likely to take up all types of services; however this was not the case for parents in the EHS. Similarly, unique results were found for participants in the EHS study. Several possible reasons exist for these differences across the two datasets. One of the most likely reasons for differences is that the age of the focal child differed between the two studies. The HSIS focused specifically on families who had preschool-aged children (3 and 4 years of age), whereas EHS included families where mothers could have been their third trimester of pregnancy to having an infant less than 12 months of age. The age of the child may have determined parents' availability (e.g., child care schedules) to use services, particularly those services related to their education/employment or family well-being. A second possibility is the mode of service delivery and recruitment strategies. Although both programs are focused on providing services to the whole family, EHS is much more focused on service delivery for parents (Love et al., 2005). This difference in focus may be what led to being part of the treatment condition in the HSIS not being significantly related to parents using family well-being services.

Limitations and Future Directions

Even with the strong research design of random assignment, limitations remain. The data for the present study were drawn from low-income samples around the country, and the EHS sample was limited to families that participated in center-based care (the typical mode of EHS

service delivery is home-based care). Because of these reasons the results are not generalizable to the general population, but the results from the HSIS are representative of the HS population. Also, it should be noted that the data used in the present study come from parents who willingly participated in a random assignment study to understand the effect of HS or EHS services on children and their families; so potentially these parents were already primed or were more motivated to take-up services compared with the general population.

Although the present study examined demographic characteristics that are commonly found to be predictive of service and support utilization, there was limited information regarding parents' motivation or need for taking up certain services or support. By further understanding motivations for service use, programs will be better able to target their services and to survey their participants to better determine need and understand where funding for various services should be allocated. Future research should investigate whether parent's perceived need and motivation for utilizing services differ by demographic characteristics. Also, the present study relied on self-reports of service use – including administrative data as an additional report of service use could strengthen future studies.

Conclusion

The present study sought to understand whether center-based early childhood education programs targeted at low-income families promoted parental service use, and to examine whether specific demographic characteristics of parents are related to take-up of services. With the increased attention on two-generation programs (e.g., Chase-Lansdale & Brooks-Gunn, 2014), the results provide evidence that families' participation in early childhood programs positively impacts their service use. Less clear however, is the relation of specific demographic characteristics to service usage. In general parents with more risk were more likely to use family

well-being services, but were less likely to use parenting services. Early childhood programs and service providers can use these findings to improve their recruitment strategies or investigate further factors that are related to service use.

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Table 2.1.

Services and supports in the HSIS and EHS data sets.

Service Name	**Data Set**		
Parenting Services	**HSIS**	**EHS**	
Parent Education Course	X	X	
Parent Group Socialization		X	
Parent Support Group		X	
Set Goals for Family	X		
Family Well-Being/Parent Employment and Education Services	**HSIS**	**EHS**	**Notes**
Housing Assistance	X	X	In the EHS data set this was part of the family well-being composite.
Education/Job Training	X	X	In the EHS data set this was part of the education/employment composite.
Mental Health Assistance	X	X	In the HSIS this was part of the counseling service composite
Family Violence Assistance	X		In the HSIS this was part of the counseling service composite
Drug/Alcohol Abuse Treatment	X		In the HSIS this was part of the counseling service composite
Employment Services		X	In the EHS data set this was part of the education/employment composite.
Transportation Assistance		X	In the EHS data set this was part of the family well-being composite.
Income Assistance	X		
Food/Nutrition Assistance	X		
Utility Assistance	X		

Note. Service information was collected through parent interviews in the Spring of 2003 in the HSIS, and three times during study duration in the EHS study. All the family well-being services/Parent Employment and Education Services were combined in the HSIS.

Table 2.2.

Descriptive statistics of the outcomes, predictors, and covariates for the full sample, and treatment and control conditions.

	Head Start Impact Study									Early Head Start								
	Full Sample			Treatment			Control				Full Sample			Treatment			Control			
Outcomes	**N**	**Mean**	**SD**	**N**	**Mean**	**SD**	**N**	**Mean**	**SD**	**P-Value**	**N**	**Mean**	**SD**	**N**	**Mean**	**SD**	**N**	**Mean**	**SD**	**P-Value**
Receive Any Service Since RA	3445	0.89		2198	0.88		1247	0.89		0.32	1131	0.95		585	0.98		546	0.92		0.00
Any Parenting Service	2812	0.54		2021	0.57	0.50	791	0.46		0.00	1134	0.54		586	0.69		548	0.37		0.00
Indirect Service Use	3685	0.73		2279	0.73		1406	0.73			1119	0.94		580	0.97		539	0.90		0.00
Family Well-Being											1139	0.68		585	0.72		554	0.65		0.02
Education/Employment Use											1081	0.87		573	0.94		508	0.80		0.00
Total Number of Services	3690	1.86	1.46	2282	2.00	1.50	1408	1.63	1.35	0.00	1107	3.80	2.18	578	4.60	2.03	529	2.93	2.01	0.00
Predictors																				
Less Than High School Degree	4442	0.38		2646	0.37		1796	0.39		0.29	1571	0.47		787	0.47		784	0.46		0.70
High School Degree	4442	0.33		2646	0.33		1796	0.34		0.49	1571	0.29		787	0.27		784	0.31		0.09
Not Married/Single	4438	0.56		2643	0.56		1795	0.55		0.61	1604	0.78		803	0.79		801	0.78		0.65
Not Working	3396	0.51		2139	0.51		1257	0.51		0.92	1580	0.51		793	0.50		787	0.51		0.76
Teen Mom	4442	0.17		2646	0.16		1796	0.18		0.03	1606	0.41		800	0.41		806	0.42		0.63
Risk Total	4442	1.49	0.97	2646	1.50	0.98	1796	1.48	0.97	0.42	1558	2.16	1.02	779	2.16	1.01	779	2.16	1.04	1.00
Covariates																				
Age 4 Cohort/Child Age in Months*	4442	0.45		2646	0.45		1796	0.45			1609	3.02	4.74	803	3.11	4.77	806	2.93	4.71	0.44
Child - Male	4442	0.50		2646	0.50		1796	0.51		0.68	1598	0.51		798	0.51		800	0.51		0.88
Child First Born											1600	0.64		795	0.62		805	0.66		0.20
Child Race																				
White	4442	0.32		2646	0.31		1796	0.33		0.27	1593	0.34		799	0.34		794	0.34		0.95
Black	4442	0.31		2646	0.31		1796	0.30		0.67	1593	0.40		799	0.40		794	0.41		0.72
Hispanic	4442	0.38		2646	0.38		1796	0.37		0.52	1593	0.20		799	0.21		794	0.20		0.46
Primary Language English	4442	0.30		2646	0.30		1796	0.29		0.34	1577	0.83		796	0.84		781	0.83		0.52
Pre Academic Skills	2476	90.83	13.13	1576	91.16	13.21	900	90.26	12.96	0.10										
Pre Problem Behavior	4442	6.15	3.65	2646	6.11	3.63	1796	6.21	3.68	0.35										
Pre Social Skills	4442	12.25	1.79	2646	12.25	1.80	1796	12.25	1.77	0.91										
Number of Kids in the Home	3560	2.64	1.30	2241	2.64	1.32	1319	2.65	1.29	0.88	1609	1.04	1.15	803	1.08	1.15	806	0.99	1.15	0.13
Mother Pregnant at RA											1609	0.25		803	0.25		806	0.25		0.81
Income to Needs Ratio											1249	67.15	56.21	630	66.73	60.06	619	67.59	52.04	0.79
Previously in HS or Child Dev Program											1564	0.17		782	0.17		782	0.17		0.95
Receipt of Service Prior To RA	4442	0.54		2238	0.53		1316	0.55		0.16	1526	0.50		766	0.50		760	0.49		0.51

Note. *Age 4 cohort is for the Head Start Impact Study, and child age in months is for the Early Head Start data set. The outcomes were collected at the end of treatment - for Head Start, this was at the end of the preschool school year. In the Early Head Start Evaluation, the outcomes were collected throughout program participation (3 years), and averaged to determine whether at any time throughout the program years the parents utilized any services. All covariates were collected at the beginning of the evaluations. RA = random assignment.

Table 2.3.

Risk index and individual characteristics predicting receipt of service during the programming year(s) for Head Start and Early Head Start.

	Logit Regressions										**OLS Regressions**			
	Direct Parent Service				**Indirect Service**		**Family Well-Being**		**Educ/Employment Service**		**Number of Services**			
	HS		EHS		HS		EHS		EHS		HS		EHS	
	(1)	(2)	(1)	(2)	(1)	(2)			(1)	(2)	(1)	(2)	(1)	(2)
Treatment	0.47***	0.49***	1.47***	1.47***	0.10	0.10	0.45*	0.46*	1.46***	1.47***	0.40***	0.38***	1.70***	1.70***
	(0.09)	(0.10)	(0.18)	(0.18)	(0.09)	(0.10)	(0.19)	(0.20)	(0.29)	(0.30)	(0.04)	(0.05)	(0.20)	(0.20)
Risk Total	0.04		-0.16		0.34***		0.09*		0.24		0.15***		0.03	
	(0.04)		(0.09)		(0.05)		(0.04)		(0.16)		(0.02)		(0.06)	
Less than HS		-0.14		-0.55*		0.01		0.28		-0.44		-0.17**		-0.29
		(0.11)		(0.27)		(0.13)		(0.26)		(0.25)		(0.06)		(0.24)
High School Degree		0.02		-0.31		0.19		0.49*		-0.87**		0.12		-0.12
		(0.11)		(0.19)		(0.12)		(0.21)		(0.31)		(0.06)		(0.19)
Not Married		-0.09		-0.06		0.30**		0.33		0.59*		0.23***		0.37
		(0.10)		(0.14)		(0.11)		(0.22)		(0.28)		(0.05)		(0.18)
Not Working		0.35***		-0.06		0.59***		-0.00		-0.17		0.37***		0.03
		(0.09)		(0.17)		(0.10)		(0.15)		(0.21)		(0.05)		(0.15)
Teen Mom		-0.02		0.03		0.33*		0.03		0.66*		-0.01		0.14
		(0.12)		(0.25)		(0.15)		(0.21)		(0.31)		(0.06)		(0.21)
N	2810	2448	1101	1101	3654	3152	1107	1107	1033	1033	3690	3185	1076	1076

Note. Standard errors in parantheses. All models include covariates. The risk index is composed of 4 factors - primary caregiver education less than a high school degree, not married (indicator for single parent), not currently employed, and not whether the mother was a teen mom. The omitted category for the education is some college.
+ $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

Appendix Table 2.1.

Descriptive statistics for the complete list of services measured in the Head Start Impact Study and the National Evaluation of Early Head Start.

	Head Start Impact Study							Early Head Start						
	Full Sample		Treatment		Control			Full Sample		Treatment		Control		
	N	% of Sample	N	% of Sample	N	% of Sample	P-Value	N	% of Sample	N	% of Sample	N	% of Sample	P-Value
Parent Services														
Set goals for family	3686	0.23	2279	0.28	1407	0.15	0.00							
Parent education class	2678	0.37	1972	0.41	706	0.27	0.00	1142	0.46	587	0.61	555	0.29	0.00
Parent group socialization								1128	0.28	581	0.39	547	0.15	0.00
Parent support group								1139	0.15	585	0.20	554	0.09	0.00
Family Well-Being/Parent Employment and Education Services														
Income assistance	3683	0.27	2277	0.27	1406	0.27	0.79							
Food/nutrition assistance	3686	0.65	2279	0.65	1407	0.64	0.61							
Housing assistance	3680	0.15	2276	0.15	1404	0.15	0.98	1134	0.52	581	0.53	553	0.52	0.80
Utility assistance	3680	0.12	2276	0.12	1404	0.12	0.63							
Educ/job training	3686	0.07	2279	0.08	1407	0.07	0.31	993	0.63	544	0.77	449	0.47	0.00
Family counseling	3684	0.08	2278	0.09	1406	0.07	0.03	1145	0.76	588	0.87	557	0.63	0.84
Employment services								993	0.63	544	0.77	449	0.47	0.00
Transportation assistance								1145	0.28	588	0.34	557	0.22	0.00

Note. The service use information was collected at the end of treatment - for Head Start, this was at the end of the preschool school year. In the Early Head Start Evaluation, the outcomes were collected throughout program participation (3 years), and averaged to determine whether at any time throughout the program years the parents utilized any services. Counseling in the Head Start impact study is a composite of whether the family received drug assistance, mental health assistance or family violence assistance. These services were combined because of their low prevalence.

Appendix Table 2.2.

Risk index and individual characteristics predicting parenting services during the programming year(s) for Head Start and Early Head Start (all services).

	Parenting Services - Logit Regressions									
	Parent Education Course				**Set Goals**		**Parent Group Socialization**		**Parent Support Group**	
	HS		EHS		HS		EHS		EHS	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Treatment	0.69***	0.71***	1.47***	1.47***	0.90***	0.99***	1.31***	1.31***	1.08***	1.09***
	(0.10)	(0.11)	(0.24)	(0.24)	(0.09)	(0.10)	(0.20)	(0.21)	(0.22)	(0.22)
Risk Total	-0.06		-0.07		0.02		-0.15**		-0.22**	
	(0.05)		(0.07)		(0.05)		(0.05)		(0.08)	
Less than HS		-0.15		-0.32		-0.37**		-0.48**		-0.67**
		(0.12)		(0.24)		(0.12)		(0.17)		(0.24)
High School Degree		-0.02		-0.15		0.01		-0.26		-0.74**
		(0.12)		(0.22)		(0.12)		(0.15)		(0.23)
Not Married		-0.35***		0.11		0.28**		-0.08		0.05
		(0.10)		(0.17)		(0.10)		(0.18)		(0.21)
Not Working		0.33***		-0.09		0.10		0.08		0.02
		(0.10)		(0.16)		(0.10)		(0.14)		(0.27)
Teen Mom		-0.16		0.04		0.09		-0.10		-0.42
		(0.13)		(0.21)		(0.12)		(0.18)		(0.30)
N	2671	2321	1109	1109	3681	3172	1090	1090	1101	1101

Note. Standard errors in parantheses. All models include covariates. The risk index is composed of 4 factors - primary caregiver education less than a high school degree, not married (indicator for single parent), not currently employed, and not whether the mother was a teen mom. The omitted category for the education is some college.

+ $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

Appendix Table 2.3.

Risk index and individual characteristics predicting family well-being, and parent services during the programming year(s) for Head Start and Early Head Start (all services).

	Housing Assistance				**Education/Job Training**				**Family Counseling**			
	HS		EHS		HS		EHS		HS		EHS	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Treatment	0.02	-0.06	0.12	0.14	0.19	0.13	1.57***	1.59***	0.38**	0.33*	0.02	0.02
	(0.10)	(0.11)	(0.15)	(0.15)	(0.14)	(0.15)	(0.28)	(0.26)	(0.14)	(0.15)	(0.21)	(0.22)
Risk Total	0.23***		0.09*		0.12		0.27*		0.07		-0.01	
	(0.05)		(0.05)		(0.07)		(0.11)		(0.07)		(0.09)	
Less than HS		0.04		0.54*		-0.22		0.12		0.11		-0.12
		(0.13)		(0.25)		(0.18)		(0.26)		(0.18)		(0.21)
High School Degree		0.11		0.56**		0.00		-0.49		-0.25		0.11
		(0.14)		(0.19)		(0.18)		(0.27)		(0.18)		(0.12)
Not Married		0.74***		0.27		0.14		0.33		0.28		0.41
		(0.13)		(0.15)		(0.17)		(0.27)		(0.16)		(0.22)
Not Working		0.11		0.04		0.52***		-0.35**		0.60***		0.10
		(0.12)		(0.15)		(0.15)		(0.13)		(0.15)		(0.15)
Teen Mom		0.06		-0.22		-0.10		0.65*		-0.89***		-0.15
		(0.14)		(0.20)		(0.19)		(0.33)		(0.23)		(0.28)
N	3595	3081	1101	1101	3399	2887	1112	1112	3519	3018	1106	1106

	Income Assistance		**Food/Nutrition Assistance**		**Utility Assistance**		**Employment Assistance**		**Transportation Assistance**	
	HS		HS		HS		EHS		EHS	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Treatment	0.04	-0.03	0.11	0.08	-0.04	-0.13	1.54***	1.55***	0.73***	0.73***
	(0.08)	(0.09)	(0.08)	(0.09)	(0.11)	(0.12)	(0.24)	(0.25)	(0.16)	(0.16)
Risk Total	0.32***		0.35***		0.00		0.22*		0.10	
	(0.04)		(0.04)		(0.06)		(0.09)		(0.09)	
Less than HS		-0.10		-0.01		-0.50***		-0.17		-0.10
		(0.11)		(0.11)		(0.15)		(0.21)		(0.27)
High School Degree		0.34**		0.25*		0.22		-0.10		0.23
		(0.12)		(0.11)		(0.15)		(0.28)		(0.22)

Appendix Table 2.3 (continued).

	Income Assistance		**Food/Nutrition Assistance**		**Utility Assistance**		**Employment Assistance**		**Transportation Assistance**	
	HS		HS		HS		EHS		EHS	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Not Married		0.40***		0.27**		0.20		0.72***		0.34
		(0.11)		(0.10)		(0.14)		(0.17)		(0.23)
Not Working		0.67***		0.58***		0.16		0.19		-0.04
		(0.10)		(0.09)		(0.12)		(0.17)		(0.18)
Teen Mom		0.03		0.37**		0.10		0.35		0.47
		(0.12)		(0.13)		(0.16)		(0.25)		(0.30)
N	3681	3176	3684	3179	3365	2794	964	964	1102	1102

Note. Logit regression results are displayed and standard errors are in parantheses. All models include covariates. The risk index is composed of 4 factors - primary caregiver education less than a high school degree, not married (indicator for single parent), not currently employed, and not whether the mother was a teen mom. The omitted category for the education is some college. Counseling in the Head Start impact study is a composite of whether the family received drug assistance, mental health assistance or family violence assistance. These services were combined because of their low prevalence. For the Head Start Impact study - only job training was offered, not education and job training.
+ $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

Chapter 3: Parental Involvement in Early Education: Effects of Head Start on Participation and Associations with Parenting Practices and Child Development

Abstract

Parental involvement in children's schooling is thought to provide a home-school connection that improves child academic and socio-emotional outcomes. Yet, to date, little work has focused on the predictors of parental involvement in early childhood education (ECE) and the child outcomes associated with participation. The present study uses two national data sets (Head Start Impact Study (HSIS) and NICHD Study of Early Child Care and Youth Development (SECCYD)) to examine demographic and background characteristics, as well as Head Start enrollment, as predictors of parent involvement. Second, the study investigates the relation of parental involvement in ECE with parenting behaviors and child development outcomes. Results indicate background characteristics such as the home environment are strong predictors of parent involvement, as is enrollment in Head Start. Parental involvement is moderately related to parenting practices in the HSIS and has a small association with children's academic achievement. Policy and practice implications are discussed.

Parental Involvement in Early Education: Effects of Head Start on Participation and Associations with Parenting Practices and Child Development

Parental involvement in children's schooling is thought to play an important role in children's academic and social development. Parent participation in preschools, particularly preschools serving low-income children, is common (e.g., Hindman, Miller, Froyen, & Skibbe, 2012) and Head Start, a federally funded early childhood education program for low-income families, has a goal of increasing parental involvement in the preschool setting (Castro, Bryant, Peisner-Feinberg, & Skinner, 2004; Gelber & Isen, 2013; Henrich & Gadaire, 2008). However, the majority of studies examining parental involvement have utilized small samples from intensive early childhood education programs (Miedel & Reynolds, 1999), and it is not yet known on a national level if Head Start has an effect on parent involvement in preschool. Similarly, few studies have examined the association between parental involvement and child development and parenting practices using large, national non-experimental samples.

Much research has supported the involvement of parents in preschools and elementary schools as a way to engage parents in children's learning and to forge a partnership between the home and school environments (e.g., Fan & Chen, 2001; Wilder, 2014). Epstein (1992) proposes a framework of six steps regarding parent involvement, and several of the pillars of Epstein's model include direct interactions between parents and the school environment. Parental involvement includes several dimensions of participation (Epstein, 1992; Lareau, 2000) including active involvement in care settings such as volunteering, attending special events, or conferences, or at home such as assisting with projects or expanding on activities that the child participated in during the school day. More passive involvement is exemplified by receiving newsletters or phone calls regarding children's activities or progress in school. Although several studies have examined the association between passive involvement and parenting behaviors and

feelings of self-efficacy (Bogenschneider & Stone, 1997), the majority of research, as well as the present study, focus on active involvement in the classroom or home.

This study is grounded in ecological frameworks and theories of development (Bronfenbrenner, 1979, 1986) that suggest parental involvement in children's educational settings will lead to better developmental outcomes for children and improved parenting practices (Hoover-Dempsey & Sander, 1995; Hoover-Dempsey & Sandler, 1997). Bronfenbrenner (1986) posits that child development occurs in the various contexts children are in, and not in isolation. One of the more influential systems is the mesosystem, where two environments interact with each other. When environments interact with each other, for instance parental involvement in preschool settings, the environments are theorized to inform practice in each setting. Through this interaction parents become aligned with the educational environment and in turn it is expected that children develop a sense of efficacy towards school and are exposed to parenting practices that "model [skills and behaviors], reinforcement, and direct instruction" (Hoover-Dempsey & Sander, 1995, p. 319) that are present in the school environment. However, as researchers have discussed at length, it is important for parents to also have a say in the school or care setting, and to feel invited and welcome in the environment in order for parental involvement to have a positive impact on children's development and the home environment (Comer & Haynes, 1991; Hoover-Dempsey & Sandler, 1997).

Predictors of Parent Involvement

Previous research notes several factors that contribute to parent participation or act as barriers to parent involvement in children's schooling or care environments. These include parents' belief about their role in their child's education, socioeconomic status (SES), whether a single parent, and parent education level (Hoover-Dempsey & Sandler, 1997; Hoover-Dempsey

et al., 2005; Kohl, Lengua, McMahon, & Conduct Problems Prevention Research Group, 2000; Lareau, 2000; Waanders, Mendez, & Downer, 2007). The most notable correlate is SES, with parents that scored high on an economic stress measure and/or neighborhood disorder having preschool teachers report having a poor parent-teacher relationship (Waanders et al., 2007). Other studies have found single parent households being significantly less likely to participate in children's preschool education (Arnold, Zeljo, Doctoroff, & Ortiz, 2008; Fantuzzo, Tighe, & Childs, 2000), which is consistent with models of parental involvement that suggest families' needs and environmental factors influence parent participation. Past studies have focused almost exclusively on demographic predictors of involvement in low-income samples, and little is known about characteristics related to parental involvement across a diverse income range.

Research has also noted that child care type (e.g., Head Start compared with Pre-K) is associated with whether parents become involved in their child's early education center. Fantuzzo and colleagues (2000) find that Head Start centers promote parent involvement at a higher rate than other types of care. This is not surprising given the mandate of Head Start to serve the whole family (Castro et al., 2004; Zigler & Valentine, 1979); however it is not yet known if Head Start has a causal effect on parental involvement or if parents who are more motivated to volunteer are also those more likely to enroll their child in Head Start.

Parent Involvement and Child Development

Parent involvement in children's educational settings has long been believed to play an important role in children's development (Bronfenbrenner, 1974; Hoover-Dempsey & Sandler, 1997); however, empirical evidence on the associations between involvement and children's development are mixed (El Nokali, Bachman, & Votruba-Drzal, 2010; White, Taylor, & Moss, 1992; Wilder, 2014). Most studies indicate that the relationship between parental involvement in

children's schooling and children's academic achievement and social development is modest and dependent on the type of instrument used to assess development (Fan & Chen, 2001; Wilder, 2014). Surprisingly little research has examined whether parental involvement in children's school settings is related to changes in the home environment or parenting practices. One possibility for this dearth of research is that several studies, including a meta-analysis by Fan and Chen (2001) define parental involvement as parenting practices in the home or parental expectations about their child's schooling, and few, if any, separate active parental involvement in a school setting to examine what changes result in the home environment.

Academic achievement. Parent involvement in children's schooling either in the form of direct school contact (e.g., volunteering, attending conferences) or participating in home-based activities (e.g., homework help) is thought to promote children's academic achievement (Eccles & Harold, 1996; Hill & Taylor, 2004; Hoover-Dempsey & Sander, 1995; Hoover-Dempsey & Sandler, 1997). A large body of research has focused on this relationship and while the results are mixed (El Nokali et al., 2010; White et al., 1992), the majority of studies indicate that there is a small, positive association between parental involvement in children's schooling and children's academic achievement (Fan & Chen, 2001; Fantuzzo et al., 2000; Wilder, 2014). Previous studies have tended to focus on elementary school age or older children (Cheung & Pomerantz, 2012; Fan & Chen, 2001; Galindo & Sheldon, 2012; Sui-Chu & Willms, 1996), and few have examined parental involvement in early childhood education. Studies that have focused on this age period find that there is a positive association between parent involvement and children's achievement (Arnold et al., 2008), and that there is a lasting relationship between early parent involvement and children's outcomes (Barnard, 2004; Miedel & Reynolds, 1999).

Socio-emotional development. In contrast to the extensive research on the relation between children's academic achievement and parental involvement in schools, little research has focused on how parents' participation in their child's schooling may influence children's socio-emotional development. The few studies that do address this topic find limited evidence that parental involvement leads to increased socio-emotional development (El Nokali et al., 2010; McWayne, Hampton, Fantuzzo, Cohen, & Sekino, 2004; Rimm-Kaufman, Pianta, & Cox, 2003; Sheridan, Knoche, & Edwards, 2010). El Nokali and colleagues (2010) using the NICHD Study of Early Child Care and Youth Development (SECCYD) find parental involvement in elementary school was not a predictor of academic achievement, but was negatively related to children's problem behavior and positively related to social competence. In contrast, Rimm-Kaufman et al. (2003), using a subsample of the SECCYD, find no relation between teacher-reported involvement activities and children's social competence. Both of the aforementioned studies focus on children in the elementary school period and even less is known about how parental involvement in preschool is associated with children's social development. In addition, interventions such as the Incredible Years seek to promote parent involvement and are demonstrating significant gains in children's prosocial behavior and decreases in problem behavior (Webster□Stratton & Rinaldi, 2011), suggesting parental involvement may also help children who are at-risk behaviorally.

Present Study

I draw on data from the Head Start Impact Study (HSIS; Puma et al., 2010; 2012), a national random assignment evaluation of Head Start (HS) to examine the effect of being assigned to the HS treatment group on parental involvement, such as volunteering, participating in parent education courses, and attending conferences. Also, using another large-scale data set,

the SECCYD, and the HSIS, I examine the characteristics of parents that are predictive of involvement, and the associations between participation in the care setting and parenting practices and child development. The present study extends prior literature by examining the longitudinal relationship between parental involvement and parenting practices, and child development outcomes. Specifically, the present study seeks to answer three research questions regarding parental involvement in children's preschool settings. First, does the offer of Head Start have an impact on parental involvement in the early education or care setting? Second, what is the relation between individual characteristics of parents and cumulative risk indices, and parental involvement? Finally, to what extent is parental involvement in early education or care associated with parenting practices, and children's academic and behavioral development?

Method

Data

Head Start Impact Study. In 1998, Congress commissioned a random assignment study to be conducted on a nationally representative sample of Head Start programs. The Head Start Impact Study (HSIS) began in 2002, with over 380 centers participating in the study. Centers that were overprescribed were recruited to participate and children (n = 4,442) from the waitlists were randomly assigned to participate in Head Start programming at that particular center or to the control condition. Children in the control condition were prohibited from attending the particular Head Start center; however the child was allowed to attend any other type of care or to attend a different Head Start center. Two cohorts of children - a 3 and 4 year old cohort - took part in the study and were followed from their first year of Head Start (2002) until their third grade year (2007/2008). Information on the children, families, and care and school arrangements were collected at various time points throughout the study. The present study used data from the

fall and spring of the first year of the study. Details on the random assignment procedure, data collection, and impact results are presented in Puma et al. (2010; 2012).

NICHD SECCYD. The second data set used in the present study was the NICHD SECCYD, which is a ten site prospective study that followed children from birth through the end of high school. Data collection began in 1991, and extensive information was collected on the study children and their families. Mothers were recruited in 24-hour periods at the hospital following the birth of their child. Requirements to be included in the sample were mother must have been at least 18 years of age, spoke English as a primary language and did not plan to move more than an hour from the study site. A total of 1,364 mothers and their children were recruited to be part of the study and completed the first interview at the one-month time point. The study was specifically designed to understand the child care arrangements, and various aspects of the arrangements, during the children's early childhood period (birth to kindergarten entry).

The present study focused on the preschool time point (54 months) and used a subsample of children from the SECCYD that were in center-based care during the 54-month data collection period. Data on children and the parents from the entire early childhood period and into first grade were used in the study. For more information on the data collected in the SECCYD see NICHD ECCRN (2002) and Vandell et al. (2010).

Measures

Parent involvement. Both data sets contain measures of parental involvement in the preschool setting. In the HSIS, mother/primary caregivers in the treatment and control condition were asked during the spring of 2003 (the end of the Head Start program year) to report on their involvement and participation in activities in their child's care setting. Specifically parents/caregivers reported on their level of involvement (1 = not yet; 5 = at least once a week)

in parent education courses, conferences, field trips, and whether they volunteered in the setting. The NICHD SECCYD similarly has reports on parental involvement in the center-based care setting when children were 54 months of age. Both the parents and center directors/caregiver completed a survey regarding the types of parent involvement activities parents' participated in or types of involvement activities that were offered in the center on a seven-point scale (1 = never; 7 = almost every day). Both the parent and caregiver/center director survey were designed for the study; however the parent version is a slightly modified version used in the FAST TRACK project (Conduct Problems Prevention Research Group, 1991). Types of involvement included whether there was a home participation component of the child care setting, parent education programs, special events (e.g., child performances, book fairs), and sessions describing the program to the parents. Parental responses were only included in the study if the center directors/caregiver reported that the specific type of involvement activity (e.g., parent education courses) was offered at the center.

Because the interest of the study was on what characteristics of parents predict involvement in center-based child care/preschool settings, and for lack of variation among the amount of time parents participated in activities at home or in the center, all the parental involvement variables in both data sets were dichotomized with 1 being parent participated, and 0 being did not participate. Similarly in both data sets, a count of the number of parent involvement activities parents participated in was created, as was a dichotomous variable indicating whether the parent participated in any activity during the preschool year. In the SECCYD data set most parents whose child was in a center-based setting that offered some sort of special event, caregiver description of the program, or home participation participated in those activities (range 80-90%). Because of this, only parent education participation (53% of parents

who had parent education courses took up the offer) and the count of the number of activities parents participated in were used as measures of parent involvement in the SECCYD.

Demographic characteristics. Several demographic and personal characteristics were used in the present study to understand their relation with parental involvement in preschool centers. Demographic characteristics that are comparable across the two data sets include maternal education level, whether employed (full- or part- time), and whether living as single. Demographic characteristics unique to the SECCYD include whether receiving public assistance, and whether at 180% of the poverty line or below. Data on these characteristics were collected during parent interviews when study children were 1 month of age (maternal education level in years and categorized to be less than high school degree, high school degree or GED, some college (reference category)). All other characteristics came from interviews when children were 36 and 54 months old (items were averaged across the two time points to form a composite of the preschool years). Characteristics in the HSIS were measured during parent interviews at baseline (Fall of 2002), which was prior to the Head Start school year. Unique to the HSIS are treatment status (assigned to Head Start = 1), and whether teen mom. Variables from the HSIS were scaled the same way as those in the SECCYD in order to compare findings across the two data sets.

Personal background characteristics. In addition to demographic characteristics, personal, background characteristics were included in the present study. Both data sets contain measures of parenting and maternal depression; however, the SECCYD contains more recognized and established measures of parenting practices and the home environment. Maternal depression is consistent across the two data sets - both contain depression rated by the Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977). The HSIS data set contains a marker for whether the mother reported no, mild, moderate, or severe depressive symptoms

during the fall of 2002. In the present study mothers were coded as depressed if they were categorized as displaying moderate or severe depressive symptoms. Depression in the SECCYD was also measured using the CES-D when children were 36 and 54 months, which were averaged together to create a depression composite; however, the scale was continuous instead of categorical. The SECCYD also contains a measure of maternal neuroticism from the NEO Personality Inventory (Costa & McCrae, 1985) after the birth of their child (6 month parent interview). This index measures a mother's nervousness, distress, and worry on 12 items (5 point scale - Strongly Disagree to Strongly Agree), which were summed together to create the scale (Cronbach alpha = .84).

Parenting practices in the HSIS were measured at baseline using parent self-report of the academic activities (7 activities) they participated in at home with their child, such as help with letters, words, and numbers, practiced rhyming words, and counted things that you can see. Parents were asked to report whether they participated in these activities with their child (1 = yes). A scale to represent academic stimulation in the home environment was created from averaging the 7 activities together to form a composite for the academic stimulation provided in the home environment. These items have been used in previous studies examining parenting practices of families in the HSIS (e.g., Miller, Farkas, Vandell, & Duncan, 2014). A second measure of the home environment was the amount of cultural activities (5 activities) the parents participated in with their child such as gone to the movies or the museum. A total count of activities ranging from 0 to 5 was used in the present study. For a full list of the academic stimulation and cultural activities see Appendix Table 3.1.

The SECCYD contains two widely used measures of parenting when children were 36 and 54 months old. The most commonly used of these measures is the Home Observation for

Measurement of the Environment (HOME; Bradley & Caldwell, 1979). The early childhood (EC) version of the HOME was administered by trained observers in the home environment. The 55 Items in the EC-HOME measure are all dichotomous (1 = yes) and focus on the emotional support, cognitive stimulation, and physical environment, including safety, of the home environment. At both time points in the early childhood period the total home score was standardized and then averaged together to form a composite measure of the home environment (36 month alpha = .87; 54 month alpha = .82). Maternal sensitivity was the second measure of parenting available in SECCYD data set. Mother-child dyads were video taped working together on tasks that gradually increased with difficulty, and trained researchers coded the interactions on a 7-point scale (1 = very low; 7 = very high). The sensitivity composite was created by summing ratings on supportive presence, respect for autonomy and hostility (reverse coded). In the present study, maternal sensitivity at the 36 and 54 month data collection points were averaged together to form a composite of maternal sensitivity during the early childhood period. See Table 3.1 for descriptive statistics of these characteristics for both data sets.

Demographic and personal characteristic risk Indices. To test whether associations between the demographic and background characteristics, and parental involvement were stronger or weaker for people considered at risk, variables were created to measure whether the person was at risk on a certain characteristic. The cut point used for all characteristics was being in the lowest 25% of the sample (or highest 25% for neuroticism and depression), with the exception of income, where a variable with a meaningful policy cut at 180% of the poverty line was created. Appendix Table 3.2 displays the values for the cut points used to create the “at-risk” variables.

In addition to the individual risk variables, risk indices were created to understand if cumulative risk was predictive of parental involvement in center-based care. Two types of cumulative risk indices were created in each data set - demographic and personal. The demographic risk index in the SECCYD was created by summing whether the family income was at or below the poverty line, whether the mother was not employed, whether single parent and whether the mother/primary guardian had less than a high school degree. In the HSIS the demographic risk index was composed of the same characteristics with the exception of whether below the poverty line (most if not all HS participants were below the poverty line), and the addition of whether a teen mom. The personal risk index varied more between the two data sets. The SECCYD personal risk index was a count of whether the mother reported high levels of depressive symptoms, whether low HOME score, whether low maternal sensitivity, and whether reported high neuroticism. In the HSIS the personal risk index was a sum of whether mother reported moderate or severe depressive symptoms, whether provided low levels of academic stimulation, and whether low levels of cultural activities. Again, these variables were decided by taking the highest or lowest 25% (depending on the characteristic) of the sample.

Parenting practices. Parenting practices from the end of the preschool period and into children's first grade year were used to understand the association between parental involvement in preschool and the later home environment and parenting outcomes. At the end of the HS year (spring of 2003), parenting practices were assessed again during the parent interview by the amount of academic stimulating activities (21 activities) the parents participated in with their child. Similar to the activity questions asked in the fall of 2002, parents were asked to report whether they participated in a certain academic activity such as practice sound of letters, play math-related games, and talk about calendar or days, on a six-point scale (1 = never, 6 =

everyday). These activities were then averaged together to form an academic stimulation composite. Cultural activities (5 activities) were also assessed again at the end of the preschool year, and again these items were summed to form a composite of the number of cultural activities the families participated in during the school year. A complete list of these activities can be found in Appendix Table 3.1.

Because parenting in the SECCYD was measured at the same time as the parental involvement questions and were used as predictors of involvement, parenting outcomes were examined when children were in first grade. Maternal sensitivity and maternal stimulation were assessed by trained researchers through a video taped observation of mother-child dyads completing three structured tasks that increased in difficulty in a laboratory setting on a seven-point scale (1 = very low; 7 = very high). Maternal sensitivity (alpha = .83) created by summing the total scores from supportive presences, respect for autonomy, and hostility (reverse coded), and maternal stimulation (alpha = .85) was created by summing maternal stimulation of cognitive development and mother's quality of assistance. The task was created specifically for the SECCYD. The HOME was not assessed when children were in first grade.

Child developmental outcomes. Several child development outcomes were available in both data sets. In the HSIS all outcomes were measured in the spring of 2003 (end of HS year), and in the SECCYD outcomes were available when the child was 54 months of age and when they were in first grade. Academic outcomes were measured by the Woodcock-Johnson Tests of Achievement and Cognitive Development (WJ; Woodcock, McGrew, & Mather, 2001) and Peabody Picture Vocabulary Test (PPVT; Dunn, Dunn, & Service, 1981). Two subtests from the WJ were consistent across the two data sets - Applied Problems, and Letter Word. The Applied Problems test assesses children's ability to solve mathematical problems that increase with

difficulty and cover various topics including number concepts, subtraction and addition, and others. The Letter Word assessment requires the child to identify individual letters and words that are not in context. The SECCYD also contains the Picture Vocabulary subtest of the WJ, which measures a child's skill level of being able to match a picture to the word spoken to them by a trained researcher. In the spring of 2003, children in the HSIS were administered the two subtests described above, and two additional subtests - Oral Comprehension, which measures a child's ability to comprehend words/sentences, and supply the missing word in the sentence or phrase, and Spelling, which requires children to write letters or spell correctly the words spoken to them by a trained researcher. Vocabulary was measured in the HSIS by the PPVT, which is similar to the WJ Picture Vocabulary assessment in that children point to the appropriate picture that represents the word spoken to them. All assessments take approximately 5-10 minutes each to administer and all are nationally standardized, according to the child's age, to have a mean of 100 and standard deviation of 15. An academic composite in both data sets was created to examine academic achievement on average by standardizing each measure to have a mean of zero and standard deviation of one, and then averaging them together.

Problem behaviors were also assessed in each of the data sets. In the SECCYD children's externalizing and internalizing behavior problems were assessed at 54 months and first grade using the Teacher Report Form (TRF; Achenbach, 1991). The primary caregiver/teacher in the center-based care or school setting rated the study child's behavior on approximately 100 items that focused on such topics like aggressive behavior, thought problems, and withdrawnness on a three-point scale (0 = not true of the child; 2 = very true of the child). At both time points the total behavior problems T-score was used, which has a normed mean of 50 and standard deviation of 10. A higher score indicates more problem behavior.

In the HSIS problem behavior was rated by the preschool teachers/primary caregiver using the Adjustment Scales for Preschool Intervention (ASPI; Lutz, Fantuzzo, & McDermott, 2002). The teacher/caregiver reported on 24 questions from a list of typical and problem behavior, which fit the focal child's behavior in the last two months. Categories measured were aggressive, withdrawn, attention problems, oppositional and shy. This measure was administered in the spring of 2003. To form a total a total behavior problems composite, each of the subscale T-scores (mean of 50, approximate standard deviation of 10) were standardized to have a mean of zero and standard deviation of one, and then averaged together to form one scale.

Covariates. Each data set contained child and family background characteristics that were used as covariates in the present study. Both data sets contained a measure of child gender (1 = male), race (white, black, Hispanic, and other (only in the SECCYD)), baseline problem behavior/social skills, and academic skills. In the SECCYD problem behavior was measured by maternal report on children's internalizing and externalizing behavior at 36 months from the CBCL, and in the HSIS, problem behavior was parent report in September of 2002 of children's behavior on 14 items on a three-point scale (0 = not true, 2 = very true) about aggressive, hyperactive, and withdrawn behavior. The total score is the sum of all items. Social skills in the HSIS were parent report from the Social Competencies Checklist (ACF, 2002). Parents reported on 12 items related to their child's social development on whether the child exhibited that behavior ("does regularly") or does not ("rarely or not at all"). The total score is a sum of all questions, with higher scores indicating higher social competence. Academic skills in the SECCYD were measured by the Bracken Basic Concepts Scale (Bracken, 1984) when children were 36 months of age. In the HSIS, baseline academic skills were assessed in the fall of 2002 using the WJ Spelling, Letter Word, Oral Comprehension, and Applied Problems, and the PPVT.

To create a composite of pre-academic skills, the five academic scores were standardized to have a mean of zero and standard deviation of one, and averaged together to form one measure. Covariates unique to the SECCYD included maternal age at birth, child birth order, and maternal PPVT score (administered when children were 36 months of age). Child and family characteristics from the HSIS included whether the child was in the age four cohort (1 = yes), number of children in the home, whether the primary language in the home was English (1 = yes), and whether the family received some public service/support prior to random assignment (1 = yes).

Research or random assignment site. Because both studies were multi-site studies, it is necessary to take into consideration the site at which data collection occurred. In the SECCYD, there were ten data collection sites, and dummy variables were created for each site and entered in the analyses as control variables. The HSIS had a total of 383 centers that were part of random assignment; however because some centers contained a small number of children, program site ID (n = 83) was used as a fixed-effect in the analyses. Site fixed effects were used to account for any differences between parents or children that may be site specific.

Analytic Strategy

The present study sought to answer several research questions related to parental involvement in children's preschool settings. First, what characteristics of parents are predictive of parental involvement in child care or preschool, and second, does being randomly assigned to Head Start positively impact parental involvement? To answer the research questions parallel analyses were conducted using the HSIS and SECCYD data sets. Logistic regressions were estimated to understand the association between the dichotomous (e.g., parent education courses, volunteering) parental involvement factors and parental characteristics, with the primary

outcomes being types of parental involvement, and the predictors of interest being parental demographic and background characteristics. Ordinary Least Squares (OLS) regressions were estimated to understand the association between the number of involvement activities the parents participated in and parental characteristics. In the HSIS analyses, a treatment variable was included in the analyses to estimate the impact of HS on parent involvement. In the first set of analyses all descriptive characteristics were entered into a single regression. Next, the dummy variables for each of the continuous characteristics representing high risk on that characteristic were entered into the regressions, and the continuous variables were omitted. Variables that were dichotomous, such as whether not employed or level of education, were retained in the analysis. Finally, the third set of regressions estimated the association between cumulative risk and parental involvement. In these regressions the risk index of interest, either demographic and background/personal, was entered along with individual characteristics not included in the risk index. For example, when the demographic risk index was included in a regression, so was the home environment/cultural activities, maternal depression, and other personal characteristics. All analyses included an extensive set of controls variables such as child characteristics, baseline academic skills, and problem behavior, and research site or random assignment location/program as fixed effects.

The second part of the present study aimed to understand the extent to which parental involvement in preschool or child care is associated with parenting practices and child development. Again parallel analyses were conducted using the SECCYD and HSIS data sets. OLS regressions were used to estimate these associations. The independent variable of interest was type of parental involvement, or number of parental involvement activities participated in, and the dependent variables of interest were parenting outcomes and child academic and problem

behavior at the end of the preschool year and during first grade in the SECCYD. In these regressions, all parental characteristics used as predictors in the first part of the analyses, were entered into the regressions as covariates, along with the same set of child characteristics and baseline achievement and behavior control variables. In the HSIS a treatment indicator was also included to account for whether the child was part of the experimental or control condition. Similar to the first set of regression, research site or random assignment program ID were included in the regressions as fixed effects. All parent and child outcomes were standardized to have a mean of zero and standard deviation of one, so results can be interpreted as effect sizes. Also, in all analyses using the HSIS, standard errors were clustered at the random assignment center level using Huber-White sandwich estimators (Huber, 1967).

Because of the sampling design in the HSIS, sampling weights were used in the regressions. Weights were decided based on the outcome of interest, which is the suggested procedure in the HSIS Technical Report (Puma et al., 2010). For example, if parent reports of involvement were being examined, the parent spring 2003 weight was used, but if child outcomes were the dependent variable the child assessment spring 2003 weight was used. Analyses were conducted with and without the sampling weights and results are consistent; however, in order to draw conclusions regarding the national population of Head Start results with the sampling weights are presented.

Missing data. The analytic sample from each data set was composed of families whose parents completed questions regarding demographic or personal characteristics, parental involvement during preschool/child care (SECCYD = 54 month data collection; HSIS = spring 2003), and had data available on the child assessments and parenting practices (SECCYD = 54 month, and 1st grade data collection points; HSIS = spring 2003). Data on participants from the

SECCYD were limited to those in center-based care at 54 months because the parental involvement survey was only administered to parents whose child was involved in a formal, center-based care setting. Also, the sample was limited to participants in care settings that reported providing parental involvement activities. Missing data on the covariates were handled by dummy variable adjustments (1 = missing), and then setting the missing equal to the mean of the covariate. The missing dummies for the covariates were entered into all regressions, depending on the outcome of interest. For the first set analyses, missing dummies on child and family characteristics that were only used as control variables were included, whereas in the second set of analyses, missing dummies were included for all child and family characteristics, including those that had been used as predictors in the previous analyses.

Results

Descriptive results

Prior to the substantive analyses, descriptive statistics of participants in the HSIS and SECCYD were computed. Table 3.1 presents the counts, means, and standard deviations for parent involvement variables and demographic and background characteristics. Examining the parental involvement characteristics, the vast majority of parents in the HSIS (both treatment and control condition) and SECCYD participated, in some form, in their child's preschool center (HSIS - Treatment: 92%, Control: 79%; SECCYD: 95%). The most common form of involvement was attending a conference (HSIS - Treatment: 81%, Control: 60%) or caregiver description of the child care/preschool program (SECCYD: 80%). The least common was parent education courses (HSIS - Treatment: 41%, Control: 27%; SECCYD: 53%). For all parent involvement measures, families in the Head Start treatment condition participated in significantly more ($p < .01$) parent involvement activities compared with families in the control condition.

{Insert Table 3.1}

Turning to the demographic characteristics, there were large differences between the HSIS and SECCYD. Approximately half of the families in the HSIS were single parent households (Treatment: 56%, Control: 55%), whereas in the SECCYD only 10% were single parent families. Families in the HSIS were also more disadvantaged in terms of their educational levels (Less than a high school degree: HSIS - Treatment: 37%, Control: 39%; SECCYD: 5%) and whether they were employed (HSIS - Treatment: 51%, Control: 51%; SECCYD: 19%). Children in the HSIS were more diverse in terms of race/ethnicities, where in the SECCYD the majority of the children were white (SECCYD: 81%).

Table 3.2 presents the descriptive statistics for the academic achievement, social and emotional development, and parenting practices at the end of preschool, and first grade for children in the SECCYD[1]. Parenting practices were not assessed with the same instruments in both data sets, so no comparisons can be made. Examining the child development characteristics, at the end of the preschool year children in the SECCYD scored higher on average on the WJ tests of achievement than children in the HSIS. Children in the HSIS, in both the treatment and control condition, scored below the national mean of 100, on all the assessments examined in the study. The behavioral scales used in the HSIS and SECCYD, differed; however, children in both data sets were scoring on average at the mean (nationally normed mean of 50). In first grade, children in the SECCYD were scoring slightly above the nationally normed mean on Picture Vocabulary, and almost a standard deviation higher on Letter Word and Applied Problems.

[1] First grade outcomes were not examined in the HSIS because of the potential of the age 3 cohort to receive an additional year of Head Start/center-based care. Because of this there could possibly be a dosage effect of participation on child outcomes and the goal of the study was not to examine dosage, nor is there a way to experimentally test the effect with the HSIS data set.

Children continued to score approximately at the mean for teacher-rated internalizing and externalizing behavior problems.

{Insert Table 3.2}

Demographic and Background Predictors of Parental Involvement

The first set of research questions sought to understand what types of characteristics are related to parental involvement in center-based child care or preschool. Table 3.3 presents the results from the logistic and OLS regressions for the individual parent characteristics. All characteristics were entered simultaneously into the regressions. Results indicate that for all parent involvement activities, being in the Head Start treatment condition has a positive significant effect on parental involvement ($p < .001$). Consistent with prior literature, single parent household was the demographic characteristic in both data sets that was most consistently (negatively) associated with parental involvement. Other demographic characteristics of parents were not as consistently related to involvement. In the HSIS, parent education was significantly ($p < .01$) negatively associated with the number of involvement activities, whether volunteered in setting, and whether involved at all. In contrast, whether the parent was employed was a positive significant predictor ($p < .01$) of involvement for families in the HSIS.

{Insert Table 3.3}

In the same type of models, background characteristics in the preschool year such as the quality of the home environment, parenting practices including cultural activities, and maternal depression were examined as predictors of involvement. The quality of the home environment in both data sets, and cultural activities in the HSIS was consistently positively associated with parental involvement activities ($p < .05$). The relation of these background characteristics

demonstrates that the home environment and parenting may be a more reliable predictor of parental involvement than demographic characteristics.

The next set of analyses examined whether being at risk on the background characteristics and risk composites predicted parental involvement. The first set of rows in Table 3.4 presents the results from regressions examining the relationship between being low/high on personal risk characteristics and the multiple parent participation measures. Results are very similar to the continuous predictors, with being low on the home environment or not providing many cultural activities being associated with low parent involvement. Being above the threshold for depression was not consistently related to parent participation. The second part of the table presents regressions that examined whether more demographic risk characteristics (e.g., less than a high school degree, single parent, not employed) was related to parent's involvement in their child's preschool setting. No consistent significant results were found - more demographic risk predicted parent education ($p < .05$) in the SECCYD data set, but no other outcome. The same analysis was run with a personal characteristic risk index, and consistent with the results from the previous analyses, being low on multiple background characteristics was significantly negatively associated with ($p < .05$) parental involvement, with the exception of parent education in the SECCYD.

{Insert Table 3.4}

Parent involvement and Parent and Child Outcomes

The second goal of the study was to test whether parental involvement in preschool is associated with parenting practices and children's development, both concurrently and longitudinally. Table 3.5 contains the results from these analyses, with the parent involvement (independent variables in these analyses) listed in rows. Turning first to the child outcomes, in

the HSIS, parent education and attending conferences were positively associated with the academic composite, and no associations were found with behavioral problem measures. No significant relations between the parent involvement measures and the child outcome composites - academic or behavioral - were found in the SECCYD. When first grade outcomes were examined in the SECCYD, parent education was a significant, negative predictor ($p < .05$) of behavioral problems, however that is the only association found in first grade and caution should be used when interpreting the finding as the relation may be spurious. Appendix Tables 3.3 and 3.4 present the results from individual academic and behavioral measures.

{Insert Table 3.5}

Next examining the parent outcomes, parent involvement activities were significantly ($p < .05$) related to parenting practices in the HSIS. This pattern held for both academic activities in the home and cultural activities parents participated in with their children. No significant associations were found between the parent involvement activities and parenting practices in the SECCYD data set in first grade.

Discussion

The present study, using two large-scale data sets, examined the determinants of parental involvement in preschool settings, and the relation of parental involvement to child development and parenting outcomes both at the end of the preschool year and into first grade. Results indicate that being a single parent was the biggest demographic barrier to involvement and not being employed was most consistently related to parents participating in preschool settings. However, overall the biggest barrier, when examining predictors of parental involvement, was having a lower quality home environment or not participating in cultural activities. These findings are consistent with ecological theories of development, which argue that parents will not

be able to take on another responsibility or commitment such as volunteering if their home life is too stressful (Bronfenbrenner, 1974; Conger & Donnellan, 2007). In contrast, parents that provided more emotional support, cognitive stimulation, and participated in cultural activities were the most likely to volunteer, participate in parent-teacher conferences, and in general participate in more activities. This result was replicated in both data sets and underscores the importance of the early childhood home environment.

The second part of the study examined whether parent involvement is related to child development outcomes and parenting practices. Prior research tends to find no association between academic outcomes and a small, but significant association with children's socio-emotional development (El Nokali et al., 2010; Rimm-Kaufman et al., 2003). The results from the present study are mixed, with children in the HSIS having a positive association between parental involvement and academic outcomes, whereas participants in the NICHD SECCYD show no such association, but do have lower problem behavior in first grade. Parenting practices, both academic activities in the home and cultural activities outside the home, in the HSIS were consistently associated with parental involvement; however this was not replicated in the SECCYD when children were in first grade. Several reasons for the differences between the two data sets are possible. First, participant characteristics differed substantially between the two datasets - the HSIS by design only includes low-income families, whereas the participants in the SECCYD tended to be more affluent, and highly educated. Second, limited information on what the parental involvement activities consisted of is available, and it is possible that parents were much more involved in academic activities in the HSIS classrooms than in the SECCYD classrooms given that it is likely the types of preschool children attended differed between the two samples.

An encouraging finding from the present study is that Head Start significantly increases parental involvement in all categories examined (e.g., parent education classes, conference attendance, volunteer on field trips). Head Start aims to involve parents (Zigler & Valentine, 1979) and the results of the study clearly indicate that Head Start is meeting it's goal of increasing parental participation in children's early education. Given the increase in academic and cultural activities that is associated with parental involvement, this may be a promising way to effectively promote positive parenting practices. A recent study found Head Start has a significant effect on parenting practices; however, the mechanism through which the effect works is still unclear (Gelber & Isen, 2013). Future work should examine the causal effect of parental participation on parenting practices and determine if other publicly funded preschool programs should work to incorporate parental involvement into their programming goals.

Despite the examination of several demographic and background characteristics and their relation with multiple parental involvement activities, other factors could not be considered. Hoover-Dempsey and colleagues (1995; 1997) note that parental beliefs are important to take into account when considering why parents become involved with their child's schooling. Parents may not believe it is their role to be an active participant (e.g., help with homework, contacting the teacher), so it should not be expected that all parents engage in their child's education in a way that was captured by the measures used in the present study. Future work should investigate the role of parent motivation and beliefs about school involvement play in parental involvement in preschool. Prior work in this area has focused almost exclusively on elementary school or older children (Fan & Chen, 2001; Wilder, 2014), and little is known about how parental beliefs shape involvement in the early years of a child's life.

Similarly, Eccles and Harold (1996) note that the match between schools, or in this case child care and preschool centers, and parents is important in the facilitation of parental involvement. Parents want more opportunities to become involved, and need assurance to know that they can make a difference in their child's education. Schools, for the most part, want parents to be involved, and the strategies that teachers and schools use are important factors in promoting parental involvement (Eccles & Harold, 1996). This study was unable to examine this "match" between families and schools and future work should attempt to understand how preschools or child care centers are encouraging involvement and how parents are perceiving this outreach. This information will help programs and centers better understand in what ways parents want to be involved, and will hopefully lead to strategies that can be used to help promote parental involvement in a meaningful way.

Although the present study examined many factors that may contribute to parental selection into school participation, no causal conclusions can be drawn about the impact of parental involvement on parenting practices or child development outcomes. Future work should attempt to understand if a causal relationship exists among parent involvement in the preschool years and children's concurrent and long-term development. Another important future research direction is to investigate the components of parent participation. The benefit of the two large national data sets is the ability to examine predictors of parental involvement on a large scale; however, a major limitation is the lack of information on the activities. It is not clear what happened when parents participated or how long they were present in the classroom during the volunteer/participation session. Similarly, dosage of parental involvement could not be examined because few parents reported participating in the classrooms more than a couple of times per school year. Last, although most research is in support of parental involvement in children's

schooling, it is important to note several scholars have theorized and examined potential pitfalls (e.g., cultural barriers) of participation (de Carvalho, 2014; Pomerantz & Moorman, 2007; White et al., 1992). Future research should take this into consideration and determine if there are negative associations with parental involvement during the preschool years, and if so, do they outweigh the benefits of participation.

Conclusion

The present study had two goals - to examine the predictors of parental involvement in children's early education, and the relation of parental involvement to parenting practices in the home environment and child development outcomes. Using two large national data sets, the results indicate background characteristics (e.g., the home environment) are strong significant predictors of parental participation in the child's early learning setting. Also, in the HSIS there was a significant treatment effect, indicating that Head Start programs are more effective at incorporating parents into programming through activities such field trips and parent education classes. No consistent evidence between the two data sets was found that supported a relation between parental involvement and children's development or parenting practices. Findings from the HSIS suggest that parental involvement is related to children's academic achievement and parenting practices. Findings suggest early care programs that serve low-income children should work to incorporate parents into their programming; however more research is needed to understand how programs are currently promoting involvement, and the most effective ways to incorporate parents into early learning centers and programs.

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Table 3.1.

Descriptive statistics for parent involvement predictors, early childhood demographics and background characteristics, and child/parent characteristics.

	Head Start Impact Study										NICHD SECCYD		
	Full Sample			Treatment Condition			Control Condition						
	N	%/Mean	SD	N	%/Mean	SD	N	%/Mean	SD	p-value	N	%/Mean	SD
Parent Education	2678	0.37		1972	0.41		706	0.27		0.00	370	0.53	
Volunteer	2696	0.66		1974	0.71		722	0.54		0.00			
Special Event/Fieldtrip	2680	0.51		1972	0.55		708	0.41		0.00	571	0.90	
Caregiver Desc. of Program/Conference	2679	0.75		1973	0.81		706	0.60		0.00	534	0.80	
Home participation											553	0.90	
Involved at all	2693	0.88		1976	0.92		717	0.79		0.00	550	0.95	
Involvement Levels	2693	1.92	1.03	1976	2.06	0.97	717	1.54	1.08	0.00	617	2.64	1.06
Early Childhood Predictors													
Public assistance											707	0.10	
Less than HS Degree	4442	0.38		2646	0.37		1796	0.39		0.29	715	0.05	
HS Degree/GED	4442	0.71		2646	0.71		1796	0.72		0.67	715	0.17	
Not married/cohabitating	4438	0.56		2643	0.56		1795	0.55		0.61	711	0.11	
Not employed	3396	0.51		2139	0.51		1257	0.51		0.92	711	0.19	
Teen mother	4442	0.17		2646	0.16		1796	0.18		0.03			
Income											701	4.15	3.23
180% of the poverty line											701	0.19	
Maternal depression	3577	0.22		2251	0.22		1326	0.22		0.71	708	9.1	7.15
Cultural activities	3576	1.98	1.14	2251	2.00	1.14	1325	1.94	1.12	0.09			
Home environment	3576	0.69	0.24	2251	0.71	0.24	1325	0.67	0.25	0.00	688	0.15	0.86
Maternal sensitivity											676	17.4	2.3
Neurotiscim											702	29.65	7.18
Demographic risk index	4442	1.49	0.97	2646	1.50	0.81	1796	1.48	0.97	0.42	701	0.63	1.05
Personal risk index	4442	0.70	0.81	2646	0.71		1796	0.68	0.82	0.09	655	0.25	0.58
Child/Parent Characteristics													
Child gender - male	4442	0.50		2646	0.50		1796	0.51		0.68	715	0.50	
Child race - white	4442	0.32		2646	0.31		1796	0.33		0.27	715	0.81	
Child race - Black	4442	0.30		2646	0.31		1796	0.30		0.67	715	0.11	
Child race/ethnicity - Hispanic	4442	0.38		2646	0.38		1796	0.37		0.52	715	0.04	
Child race - other											715	0.04	
Internalizing											706	50.87	9.49
Externalizing											706	50.99	8.53
Problem Behavior	4442	6.15	3.65	2646	6.11	1.80	1796	6.21	3.68	0.35			
Social skills	4442	12.25	1.79	2646	12.25	13.21	1796	12.25	1.77	0.91			
Academic skills	2476	90.83	13.13	1576	91.16	0.50	900	90.26	12.96	0.11	687	9.48	2.77
Birth order/age 4 cohort	4442	0.45	0.50	2646	0.45		1796	0.45	0.50	0.75	715	1.76	0.89
Maternal age at birth											715	29.10	5.44
Maternal PPVT											703	101.79	18.18
Number of kids in the home	3560	2.64	1.30	2241	2.64	1.31	1319	2.65	1.29	0.89			
Primary language English	4442	0.30		2646	0.30		1796	0.29		0.34			
Received public service prior to RA	3554	0.54		2238	0.53		1316	0.55		0.17			

Note. The sample in the SECCYD was limited to children that were in center-based care (all types) at 54 months. In the SECCYD types of parent involvement in the preschool setting came from the 54 month maternal interview, and in the HSIS, the primary caregiver was asked about different forms of participation during the Spring 2003 interview (end of the HS school year). Early childhood predictors from the SECCYD are composites from the 36 and 54 month time points, with the expection of public assistance (only available at 54 months), maternal education variables (1 month interview), and maternal neuroticism (6 month interview). The home environment predictor in the SECCYD is the HOME at 36 and 54 months, and in the HSIS the variable is a composite of academic activities the mother/primary caregiver reported taking part in prior to the start of the HS year. The academic composite in the HSIS ranges from 0-1 (1 = yes). Level involved is a count of the total activities that the parents participated in during the preschool year. Parent involved at all is a dichotomous variable indicating if the parent participated at all during the Head Start year, and in the SECCYD this variable represents whether the parent participated in a parent education course or special event. Demographic risk index in the SECCYD is a count of whether the mother had less than a high school degree, was a single parent, not employed, received public assistance, and was at or below 180% of the poverty line. In the HSIS, the demographic risk variable is composed of less than high school degree, not married/cohabiting, not employed, and whether teen mom. Personal risk index in the SECCYD is a count of whether the mother was in the highest 25% of the sample on the depression scale, and neuroticism, and the lowest 25% of the sample on the HOME and sensitivity. The HSIS personal risk index is a count of whether the mother was depressed, and was in the lowest 25% of the sample in academic activities in the home and cultural activities. SECCYD - Internalizing and Externalizing behaviors were measured with the child was 36 months using the CBCL, and academic skills was measured by the Bracken School Readiness assessment at 36 months. In the HSIS problem behavior and social skills were from parent report, and academic skills were measured using the WJ-Pre Academic measure in the Fall of 2002. Maternal PPVT score in the SECCYD was measured when children were 36 months of age.

Table 3.2.

Descriptive statistics of parent and child outcomes for the NICHD SECCYD and HSIS data sets.

	Head Start Impact Study										NICHD SECCYD		
	Full Sample			Treatment Condition			Control Condition						
	N	%/Mean	SD	N	%/Mean	SD	N	%/Mean	SD	p-value	N	%/Mean	SD
Parenting (Preschool Year)													
Academic stimulation	3695	3.74	1.06	2285	3.85	1.05	1410	3.58	1.06	0.00			
Cultural Activities	3694	2.27	1.19	2285	2.30	1.20	1409	2.20	1.17	0.01			
Child Outcomes (Preschool Year)													
Vocabulary	3680	92.04	9.41	2312	92.44	9.25	1368	91.36	9.64	0.00	695	102.09	14.67
WJ Letter Word	3687	92.49	17.58	2317	94.02	17.72	1370	89.89	17.05	0.00	693	100.78	13.46
WJ Applied Problems	3661	87.98	18.18	2304	88.87	17.51	1357	86.48	19.19	0.00	692	105.16	15.01
WJ Pre Academic	3645	90.46	13.59	2297	91.55	13.39	1348	88.59	13.73	0.00			
WJ Oral Comprehension	3623	91.37	13.81	2290	91.29	13.68	1333	91.52	14.05	0.62			
WJ Spelling	3695	92.36	12.20	2317	93.08	12.00	1378	91.15	12.45	0.00			
Academic Composite	3699	-0.00	1.00	2320	0.07	0.98	1379	-0.12	1.02	0.00	695	0.16	0.95
Internalizing											592	50.31	9.66
Externalizing											592	49.52	9.50
Aggressive Problems	2405	49.79	7.61	1908	49.76	7.65	497	49.87	7.47	0.78			
Attention Problems	2436	50.83	8.02	1930	50.75	8.11	506	51.12	7.66	0.35			
Withdrawn	2443	49.69	6.94	1937	49.66	6.92	506	49.79	7.02	0.72			
Oppositional	2435	49.59	7.77	1930	49.56	7.73	505	49.71	7.93	0.70			
Shy	2452	48.59	7.55	1943	48.80	7.63	509	47.78	7.20	0.01			
Total Behavior Problems	2459	0.00	1.00	1948	0.00	1.00	511	-0.01	0.99	0.72	592	49.80	9.84
Parenting (1st grade)													
Maternal Cognitive Stimulation											664	9.33	2.46
Maternal Sensitivity											664	17.12	2.98
Child Outcomes (1st grade)													
WJ Picture Vocabulary											665	106.67	15.47
WJ Letter Word											668	113.55	15.35
WJ Applied Problems											668	112.74	17.06
Academic Composite											668	0.12	0.97
Internalizing											667	48.90	9.34
Externalizing											667	50.50	8.87
Total Behavior Problems											667	49.57	9.38

Note. Parenting in the HSIS was measured from maternal/primary caregiver reports of the frequency of academic activites conducted in the home (1=never, 6 = everyday), and cultural activities/outings the families participated in during the Spring of 2003 (at the end of the HS school year). Child outcomes in the HSIS were measured at the end of the HS school year, and in the SECCYD the child outcomes were measured when the child was 54 months of age. The academic composite for both data sets is the average of the academic measures, and the total behavior composite in the HSIS is a composite of the behavior problems rated by the teacher at the end of the HS school year. Total behavior problems was measured by the CBCL (teacher rated) in the SECCYD. Parenting (1st grade measures) in the SECCYD were measured through video taped interactions between the mother and the child.

Table 3.3.

Individual risk variables predicting parent involvement in preschool

	Parent Education		Level of Involvement		Volunteer	Fieldtrip	Conference	Involved At All
	HSIS	SECCYD	HSIS	SECCYD	HSIS	HSIS	HSIS	HSIS
Treatment	0.74***		0.53***		0.82***	0.67***	1.34***	1.40***
	(0.17)		(0.07)		(0.15)	(0.16)	(0.15)	(0.18)
Less than HS Degree	-0.26	0.39	-0.19**	0.30	-0.50***	-0.31	-0.18	-0.70**
	(0.17)	(0.74)	(0.07)	(0.28)	(0.15)	(0.20)	(0.19)	(0.25)
HS Degree/GED	0.16	0.30	0.12	-0.02	0.27	0.10	0.22	0.54*
	(0.14)	(0.38)	(0.07)	(0.14)	(0.16)	(0.17)	(0.17)	(0.25)
Not married/cohabitating	-0.37*	-1.20*	-0.02	-0.49**	-0.07	0.13	-0.22	-0.56*
	(0.17)	(0.54)	(0.05)	(0.17)	(0.14)	(0.14)	(0.19)	(0.23)
Not employed	0.42**	0.55	0.18**	0.17	0.10	0.34*	0.56**	0.20
	(0.16)	(0.33)	(0.06)	(0.12)	(0.16)	(0.14)	(0.18)	(0.22)
Teen mother	-0.15		-0.15		-0.11	-0.24	-0.59**	-0.18
	(0.18)		(0.10)		(0.21)	(0.21)	(0.22)	(0.32)
Maternal depression		0.06*		0.01				
		(0.02)		(0.01)				
Home environment	0.51	0.75**	0.35*	0.21*	0.30	0.88**	0.81*	0.54
	(0.32)	(0.25)	(0.14)	(0.10)	(0.33)	(0.30)	(0.36)	(0.50)
Cultural activities	0.17**		0.06*		0.26***	0.03	0.03	0.21*
	(0.06)		(0.02)		(0.06)	(0.05)	(0.07)	(0.10)
Public assistance		0.54		0.64*				
		(0.72)		(0.27)				
Below 180% of the poverty line		0.94		0.10				
		(0.61)		(0.21)				
Maternal sensitivity		-0.01		0.05				
		(0.08)		(0.03)				
Neuroticism		0.01		-0.00				
		(0.03)		(0.01)				
N	2283	324	2315	540	2291	2301	2275	2141

Note. Site/grantee fixed effects were included in all analyses. All results come from logistic regressions and are log odds, with the exception of level involved coefficients, which were from OLS regressions. All analyses included family and child controls. The sample in the SECCYD was limited to children that were in center-based care at 54 months. Level involved is a count of the total activities that the parents participated in during the preschool year. Parent involved at all is a dichotomous variable indicating if the parent participated at all during the Head Start year. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 3.4.

Individual risk variables and risk indices predicting parent involvement in preschool

	Parent Education		Level of Involvement		Volunteer	Fieldtrip	Conference	Involved At All
	HSIS	SECCYD	HSIS	SECCYD	HSIS	HSIS	HSIS	HSIS
Regression 1								
High depression	0.24	0.34	-0.06	0.27	-0.34*	-0.14	0.11	0.05
	(0.15)	(0.49)	(0.08)	(0.19)	(0.17)	(0.17)	(0.21)	(0.25)
Low home environment	-0.20	-1.83**	-0.19**	-0.72**	-0.29	-0.39*	-0.36*	-0.19
	(0.17)	(0.63)	(0.07)	(0.25)	(0.17)	(0.16)	(0.17)	(0.25)
Low cultural activities	-0.30		-0.17**		-0.62***	-0.12	-0.18	-0.56*
	(0.16)		(0.06)		(0.14)	(0.14)	(0.16)	(0.22)
Low maternal sensitivity		-0.18		-0.49*				
		(0.59)		(0.21)				
high maternal neuroticism		0.48		-0.11				
		(0.33)		(0.12)				
Regression 2								
Demographic risk index	-0.02	0.37*	-0.01	0.13*	-0.09	0.02	0.02	-0.17
	(0.09)	-0.16	(0.03)	(0.07)	(0.08)	(0.08)	(0.09)	(0.10)
Regression 3								
Personal risk index	-0.12	-0.28	-0.15***	-0.25*	-0.44***	-0.21*	-0.15	-0.27*
	(0.09)	(0.29)	(0.04)	(0.12)	(0.09)	(0.08)	(0.09)	(0.12)
N	2283-2412	324	2291-2412	540-548	2291-2412	2301-2423	2275-2402	2141-2271

Note. Site/grantee fixed effects were included in all analyses. All results come from logistic regressions and are log odds, with the exception of level involved coefficients, which were from OLS regressions. Results from three analyses are displayed in the table: Regression 1) variables representing the low home/ high depression etc. were entered into the analysis with the other predictors of interest with the exception of the continuous variable that corresponded to the lower or high level variable; Regression 2) the demographic risk index was entered along with the personal characteristics; and Regression 3) the personal risk index was entered into the analysis with the demographic predictors of interest. All analyses included family and child controls. Demographic risk index in the SECCYD is a count of whether the mother had less than a high school degree, was a single parent, not employed, received public assistance, and was at or below 180% of the poverty line. In the HSIS, the demographic risk variable is composed of less than high school degree, not married/cohabiting, not employed, and whether teen mom. Personal risk index in the SECCYD is a count of whether the mother was in the highest 25% of the sample on the depression scale, and neuroticism, and the lowest 25% of the sample on the HOME and sensitivity. The HSIS personal risk index is a count of whether the mother was depressed, and was in the lowest 25% of the sample in academic activities in the home and cultural activities. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 3.5.

Parental involvement and its relation to parent and child outcomes.

	Preschool						First Grade			
	Academic Composite		Behavior Problems Composite		Academic Activities	Cultural Activities	Academic Composite	Behavior Problems Composite	Cognitive Stimulation	Maternal Sensitivity
	HSIS	SECCYD	HSIS	SECCYD	HSIS	HSIS	SECCYD	SECCYD	SECCYD	SECCYD
Parental Involvement Activities										
Parent Education	0.12**	-0.05	0.00	-0.22	0.32***	0.17**	-0.03	-0.24*	-0.10	0.04
	(0.04)	(0.07)	(0.06)	(0.11)	(0.05)	(0.05)	(0.09)	(0.11)	(0.09)	(0.09)
Involvement Levels	0.04	-0.02	-0.02	-0.04	0.15***	0.11***	0.00	-0.07	0.00	-0.00
	(0.02)	(0.03)	(0.03)	(0.04)	(0.03)	(0.03)	(0.03)	(0.04)	(0.03)	(0.03)
Volunteer	0.03		-0.05		0.24***	0.19***				
	(0.05)		(0.07)		(0.06)	(0.05)				
Field Trip	0.04		0.04		0.24***	0.17**				
	(0.04)		(0.05)		(0.06)	(0.05)				
Conference	0.13**		-0.12		0.24***	0.13*				
	(0.05)		(0.09)		(0.07)	(0.05)				
Involved at all	0.12		-0.11		0.29**	0.21*				
	(0.09)		(0.11)		(0.09)	(0.09)				
N	2272-2283	328-543	1915-1921	310-504	2302-2314	2302-2314	315-524	319-524	312-522	312-522

Note. Site/grantee fixed effects were included in all analyses. Each of the parent involvement variables was entered separately into OLS regressions. The parent involvement variables are dichotomous, with the exception of involvement level, which is a count of all parent involvement variables. Parenting in the HSIS was measured from maternal/primary caregiver reports of the frequency of academic activities conducted in the home (1=never, 6 = everyday), and cultural activities/outings the families participated in during the Spring of 2003 (at the end of the HS school year). Parenting (1st grade measures) in the SECCYD was measured through video taped interactions between the mother and the child. All outcomes were standardized to have a mean of 0, standard deviation of 1. The preschool outcomes come from the 54 month child assessment in the SECCYD, and the Spring 2003 (end of preschool year) assessment in the HSIS. The academic composite is the average of all the academic outcomes, and the behavior problems composite is the average of all the teacher-rated behavior problems from the HSIS, and in the SECCYD, the behavior problems composite is the total problem behavior from the CBCL (caregiver/teacher rated). All analyses included child and family demographic and background characteristics, including prior controls for academic skills and social skills/problem behaviors. * $p < .05$, ** $p < .01$, *** $p < .001$.

Appendix Table 3.1.

Parent questions from the HSIS used to create parent outcomes.

Baseline Academic Stimulation
Help with letters, words, numbers
Practiced writing the alphabet
Helped child with songs or music
Worked on arts/crafts with child
Practiced writing/spelling name
Practiced rhyming words cat, mat
Counted things that you can see
Spring 2003 Academic Stimulation
Number of times child is read to
Work on learning names of letters
Practice letters of the alphabet
Discuss new words
Have [child] tell you a story
Practice sound of letters
Listen to stories with print
Listen to stories not seeing print
Retell or make up stories
Show child how to read
Child practices writing/spelling name
Learn about rhyming words
Teach direction words such as over and up
Count out loud
Work with shape blocks
Count small things
Play math-related games
Music to understand math ideas
Use dance to practice math ideas
Work with rulers, measuring cups
Talk about calendar or days
Baseline and Spring 2003 Cultural Activities
Gone to a movie
Gone to a play or concert
Visited art gallery or museum
Visited playground or park
Attend event sponsor by community

Note. All items come from the parent interviews in the Fall of 2002 and Spring of 2003. Items were rated on a 6 point scale (1 = never; 6 = everyday), with the exception of "number of times child is read to", which was rated from 1-4 (1 = not at all; 4 = everyday), but the variable was transformed in the present study to have a range from 1-6 to match the other variables.

Appendix Table 3.2.

Values of cut points for continuous individual characteristics

	Values for Cut Points	
	HSIS	SECCYD
High depression		12.88
Low home environment	0.571	-.28
Low cultural activities	1	
Low maternal sensitivity		4.60
high maternal neuroticism		34

Appendix Table 3.3.

Parent involvement activities predicting individual child academic outcomes.

	Preschool								First Grade		
	Vocabulary		WJ AP		WJ LW		WJ OC	WJ Spelling	WJ PV	WJ AP	WJ LW
	HSIS	SECCYD	HSIS	SECCYD	HSIS	SECCYD	HSIS	HSIS	SECCYD	SECCYD	SECCYD
Parent Education	0.06	-0.06	0.08	-0.08	0.13**	0.00	0.08*	0.12*	0.01	-0.14	0.05
	(0.04)	(0.09)	(0.05)	(0.08)	(0.05)	(0.08)	(0.04)	(0.06)	(0.09)	(0.10)	(0.10)
Involvement Levels	0.05*	-0.05	0.01	0.01	0.03	-0.00	0.02	0.03	0.00	-0.02	0.02
	(0.02)	(0.03)	(0.03)	(0.03)	(0.02)	(0.03)	(0.02)	(0.03)	(0.03)	(0.03)	(0.04)
Volunteer	0.07		0.00		0.01		0.02	0.01			
	(0.04)		(0.06)		(0.06)		(0.05)	(0.06)			
Field Trip	0.07		-0.04		0.01		0.06	0.06			
	(0.04)		(0.05)		(0.04)		(0.04)	(0.05)			
Conference	0.11*		0.12*		0.11*		0.03	0.08			
	(0.05)		(0.06)		(0.06)		(0.05)	(0.08)			
Involved at all	0.08		0.14		0.17		0.03	-0.01			
	(0.07)		(0.10)		(0.09)		(0.07)	(0.12)			
N	2260-2271	328-543	2252-2263	327-541	2267-2278	327-541	2235-2246	2267-2278	314-522	315-524	315-524

Note. Site/grantee fixed effects were included in all analyses. Each of the parent involvement variables was entered separately into OLS regressions. The parent involvement variables are dichotomous, with the exception of involvement level, which is a count of all parent involvement variables. All outcomes were standardized to have a mean of 0, standard deviation of 1. The preschool outcomes come from the 54 month child assessment in the SECCYD, and the Spring 2003 (end of preschool year) assessment in the HSIS. All analyses included child and family demographic and background characteristics, including prior controls for academic skills and social skills/problem behaviors. * $p < .05$, ** $p < .01$, *** $p < .001$.

Appendix Table 3.4.

Parent involvement activities predicting individual child socio-emotional outcomes.

	Preschool							First Grade	
	Aggression Problems	Attention Problems	Withdrawn	Oppositional	Shy	Internalizing	Externalizing	Internalizing	Externalizing
	HSIS	HSIS	HSIS	HSIS	HSIS	SECCYD	SECCYD	SECCYD	SECCYD
Parent Education	0.07	-0.06	-0.03	-0.04	0.04	-0.26*	-0.12	-0.22	-0.13
	(0.06)	(0.06)	(0.07)	(0.06)	(0.06)	(0.12)	(0.11)	(0.12)	(0.11)
Involvement Levels	-0.02	-0.03	0.01	-0.06	0.03	-0.05	-0.03	-0.08	-0.06
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)
Volunteer	-0.07	-0.05	-0.01	-0.07	0.06				
	(0.06)	(0.07)	(0.07)	(0.07)	(0.06)				
Field Trip	0.02	0.04	0.05	-0.01	0.05				
	(0.06)	(0.06)	(0.06)	(0.06)	(0.05)				
Conference	-0.07	-0.17*	-0.01	-0.22**	0.04				
	(0.09)	(0.08)	(0.08)	(0.08)	(0.07)				
Involved at all	-0.03	-0.10	-0.07	-0.27*	0.06				
	(0.10)	(0.11)	(0.11)	(0.12)	(0.09)				
N	1875-1880	1898-1904	1904-1910	1896-1902	1911-1917	310-504	310-504	319-524	319-524

Note. Site/grantee fixed effects were included in all analyses. Each of the parent involvement variables was entered separately into OLS regressions. The parent involvement variables are dichotomous, with the exception of involvement level, which is a count of all parent involvement variables. All outcomes were standardized to have a mean of 0, standard deviation of 1. The preschool outcomes come from the 54 month child assessment in the SECCYD, and the Spring 2003 (end of preschool year) assessment in the HSIS. All analyses included child and family demographic and background characteristics, including prior controls for academic skills and social skills/problem behaviors. * $p < .05$, ** $p < .01$, *** $p < .001$.

Chapter 4: Two-Generation Programs and Parenting Practices: The effect of services and supports on parenting and the home environment

Abstract

Two-generation programs aim to serve parents and children by providing children with high-quality care, and parents with services and supports directed at positively affecting the families' well-being. However, little is known about the effectiveness of parent services in altering parenting practices and the home environment. The present study uses data from the National Early Head Start Research and Evaluation Project (N = 3,001) and two analytic approaches, including instrumental variables, to examine the impact of parent services and supports on parenting practices and the home environment. Results show that increased service use by parents has a positive effect on the home environment, particularly the warmth and emotional support provided to children. Policy implications for two-generation programs are discussed.

Keywords: Two-generation programs, parenting practices

Two-Generation Programs and Parenting Practices:
The effect of services and supports on parenting and the home environment

The home environment is the most influential setting in a child's life, and numerous interventions have attempted to positively promote beneficial parenting practices and the overall quality of the environment. Many interventions during the early childhood years have worked to incorporate parents into the programs by providing parenting courses, direct instruction on developmentally appropriate activities, or by involving parents in the education process as volunteers. One mechanism for reducing the stress and economic pressure experienced by low-income parents is through their child's care setting, which can offer parents services or referrals to community organizations that offer services. Several early childhood programs attempt do exactly this; however, most evaluations of the effectiveness of these programs have relied on observational or survey data (e.g., Brooks-Gunn, Berlin, & Fuligni, 2000; Zigler, Pfannenstiel, & Seitz, 2008), and the causal impact of services on the home environment has not been reliably established.

This study is grounded in two models of parenting - the family stress and the family investment model (McLoyd, Mistry, & Hardaway, 2014; McLoyd, 1998; Yeung, Linver, & Brooks–Gunn, 2002). These models postulate that when parental resources are increased, both economically and by providing knowledge of developmentally appropriate practices, parents will be able to provide their children with a more positive, emotionally supportive and cognitively stimulating home environment. The family stress model (Conger, Rueter, & Conger, 2000; Conger, Conger, & Martin, 2010; Conger & Elder, 1994) postulates that families with very limited economic resources bear a psychological burden of stress and anxiety, which in turn translates into increased marital/partner discord and less positive parenting practices, resulting in poor child outcomes (Conger & Donnellan, 2007). The family investment model instead argues

that resources (e.g., income or knowledge of appropriate practices) will lead to higher parental investments (McLoyd et al., 2014) in their child in the form of more time spent with them, increased educational materials available in the home, and more sensitive parenting practices, which will lead to positive child outcomes (Yeung et al., 2002). Both of the models have been empirically tested and evidence supports the theories (e.g., Mistry, Lowe, & Benner, 2008; Yeung et al., 2002).

The present study addresses both models by examining services and supports provided to parents that aim to increase their economic well-being through employment and education services, and by providing direct parenting services in the form of parenting education classes and parental support groups. Given the vast literature on the importance of the home environment for children's development (Anders et al., 2012; Bradley, Corwyn, Burchinal, McAdoo, & García Coll, 2001; Brooks-Gunn, Klebanov, & Duncan, 1996; Linver, Brooks-Gunn, & Kohen, 2002; Melhuish et al., 2008; Rodriguez & Tamis-LeMonda, 2011), understanding how services and supports either in the community or as part of their child's care setting influence parenting practices is of utmost policy importance. Using data from the National Evaluation of Early Head Start, the present study employs an econometric approach, instrumental variables (IV), to examine the causal impact of the number of services parents take-up on their parenting practices, including the amount of cognitive stimulation, and warmth and emotional support provided in the home environment.

Parenting Interventions

Arguably the most popular approach to changing parenting practices has been through home-visiting programs. Much research has been conducted on the effectiveness of home-visiting programs for parents of infants and toddlers (e.g., McGroder & Hyra, 2009; Sweet &

Appelbaum, 2004). These visits consist of providing parents with information on child development and appropriate parenting practices. In some interventions, lasting effects of home visitation programs have been noted (Olds, Sadler & Kitzman, 2007); however most studies show little to no lasting effect of home visitation (e.g., Layzer et al., 2001; Sweet & Appelbaum, 2004). Similar small or no effects on parenting have been found in studies of programs that provide parents with case managers who work to connect them with services, such as job training or assistance with educational degree attainment (Duch, 2005; Goodson, Layzer, St. Pierre, Bernstein & Lopez, 2000). Small, but significant effects are found on the home environment and parenting practices when parents are provided parenting group support or socialization groups, and direct access to job training and educational services (Duch, 2005; Halpern & Korfmacher 2004; Moore et al., 1995; Quint, Bos & Polit, 1997). Recently, two-generation programs have been used to incorporate parenting services and supports into programs that previously focused on providing services only to children.

Two-Generation Programs

Two-generation programs aim to positively influence a family's life by providing services in the form of center-based care to children, and by providing parents with services and supports that help to alleviate stressors in their lives (Chase-Lansdale & Brooks-Gunn 2014; Haskins, Garfinkel, & McLanahan, 2014; Layzer & St. Pierre, 1996). These programs typically provide supports or services through case managers, home visitors, or center-based parenting courses, and recent versions of two-generation programs stress that equal services must be provided to children *and* parents. Although high-quality child care alone has an immediate and lasting effect on children's academic achievement and life outcomes (Burchinal, Kainz & Cai, 2011; Howes et al., 2008; Mashburn et al., 2008; Vandell et al., 2010), research indicates that high levels of

cognitive stimulation in *both* the child care and home environment lead to the best academic outcomes for elementary school children (Crosnoe, Leventhal, Wirth, Pierce, & Pianta, 2010). The creation and implementation of two-generation programs has led to discussion on how best to target resources to the neediest children and families, which two-generation programs are most effective, and what components of these programs are responsible for this effectiveness (Chase-Lansdale & Brooks-Gunn, 2014).

Evaluations of programs such as Perry Preschool and Child-Parent Centers have reported that center-based care coupled with parenting services is positively related to children's long-term academic achievement and life outcomes (Heckman, Moon, Pinto, Savelyev & Yavitz, 2010; Reynolds, Ou, & Topitzes, 2004; Reynolds et al., 2007). In addition, programs such as Abecedarian and the Infant Health and Development Program are shown to also impact parenting processes, both early in the child's life and during adolescence (Bradley, Whiteside-Mansell, Casey & Barrett, 2010; Bradley, Whiteside, Mundfrom, Casey, Caldwell & Barrett, 1994; Campbell, Pungello, & Miller-Johnson, 2002). Some of the parenting processes altered through early childhood interventions, such as the Infant Health and Development Program, have been shown to mediate the effect of the intervention on child outcomes in early childhood and the beginning school years (Bradley et al., 1994).

Federally Funded Early Childhood Education and Parenting Practices

Publicly funded early childhood programs, such as Head Start and Early Head Start, also incorporate parental components into their services, and evaluations of these programs have found a positive relationship between participation and parenting quality (Love et al., 2005; Puma et al., 2010). Evidence from the National Evaluation of Early Head Start indicates that receiving Early Head Start services had a significant positive effect on parenting practices and

the home environment, with the strongest effect found on parenting for children who participated in a mixture of home and center-based care (Love et al., 2005). The recent evaluation of Head Start found parents whose children began Head Start when they were 3 years old provided more cognitive and learning stimulation at home, such as more time spent reading to their child (Puma et al., 2010). This finding did not replicate for the 4-year old cohort.

We do not yet have conclusive evidence regarding the pathways through which the home environment is affected by children's participation in center-based care. A recent study by Gelber and Isen (2013) examine parental involvement in children's schooling using the Head Start Impact Study. The authors find parents become more involved in their child's education, including providing a more cognitively stimulating home environment, once their child has increased cognitive functioning as a result of participation in Head Start. They examine many other pathways through which the change might occur, including parental involvement in Head Start, and find no other potential explanation for the increase in parental involvement. The study is thorough, but questions on pathways remain. Specifically, the authors did not focus on any parental community based services or supports that may have been utilized as a result of participating in Head Start programs and their effect on parental involvement.

Most past studies examining the relationship between large-scale early child care and education programs, services offered to parents, and changes in parenting and the home environment have relied on observational or survey data (e.g., Brooks-Gunn et al., 2000; Zigler, Pfannenstiel, Seitz, 2008). A few of these studies have employed random assignment (e.g., the Goodson et al., 2000 evaluation of the Comprehensive Child Development Program (CCDP); St. Pierre, Ricciuti & Rimdzius, 2005). However, program implementation problems plagued the largest of the random assignment studies (e.g., McCall, Ryan & Plemons, 2003). Other

evaluations of non-randomly assigned programs lack adequate control groups or rigorous methods and therefore are unable to draw causal conclusions about the effectiveness of parent programs on changing parenting behavior (Brooks-Gunn et al., 2000).

Understanding the effect of the services used as a result of participation in a two-generation program such as Early Head Start on the home and parenting has implications for child care and preschool programs in terms of how they allocate resources to providing parental education classes, or referring parents to services in the community. If services and supports are found to positively affect the home environment, it is likely that more child care and early education programs may be interested in providing services and supports to families.

Instrumental Variables

The present study uses an econometric technique, instrumental variables to estimate the effect of services on the home environment. IV is a research method that allows causal inference to be made by removing any "contaminated" variation (e.g., omitted variable bias) in the predictor variable (Angrist & Krueger, 2001; Auger, Farkas, Burchinal, Duncan, & Vandell, forthcoming; Gennetian et al., 2008). By removing this variation, all the variation that is used to estimate the independent variable is "pure", meaning free from selection bias or measurement error (Angrist & Krueger, 2001; Angrist & Pischke, 2008; Bloom, Zhu & Unlu, 2009**;** Gennetian et al., 2008). The method involves conducting a two-stage least squares regression where the first stage consists of generating a predicted value of the dependent variable, service usage, from the instrument(s) and covariates. The second stage regression uses the predicted value of the dependent variable from the first stage to estimate the impact of the variable on the outcome of interest. Both regressions contain the same covariates, with the only difference being in the second stage when the instruments are omitted.

For the present study, the instruments that were used to estimate parenting practices were a research site by treatment interaction (Kling, Liebman, & Katz, 2007). Site in this instance represents the research location at which random assignment occurred. A number of other studies using experimental data sets use similar interaction terms to instrument their predictor variable of interest and recently the method has been employed in developmental science to understand pathways of effects (e.g., Auger et al., forthcoming; Crosby, Dowsett, & Gennetian, 2010; Duncan, Morris, & Rodrigues, 2011; Gennetian, Magnuson, & Morris, 2008).

Present Study

The present study builds on prior research on Early Head Start (e.g., Love et al., 2005) and Head Start (Gelber & Isen, 2013) that demonstrates a positive impact on parenting practices and the home environment for participants of the programs, by examining the take-up of additional services and supports as a potential pathway of influence using a rigorous, econometric approach. In addition exploratory analyses will attempt to understand how different service types influence parenting practices. It is hypothesized that the number of services parents utilize will have a positive effect on parenting practices.

Method

Data

Data from the National Evaluation of Early Head Start (EHS) were used in the present study. The EHS study began in 1997 and was a randomized study of the effectiveness of EHS for low-income mothers who were pregnant or had a child less than 12 months old. A total of 17 EHS programs were evaluated across the country, with some of the programs being brand-new and others being more established. Programs served both parents and children, and service delivery options included home-based (7 programs), center-based (4 programs), and mixed-

approach (a combination of delivery methods; 6 programs), with each site independently deciding on their service delivery option. Approximately 3,000 families participated in the study (treatment = 1,513; control = 1,488), and 1,600 (treatment = 803; control = 806) participated in a site that was either a center-based or mixed approach program. The present study used only center-based and mixed approach programs to better understand how services provided to parents in a typical two-generation program (i.e., one that provides center-based child care) affects parenting and the home environment.

Children and parents were followed during their program participation (approximately 2 years; EHS serves children up to three years of age), and into their preschool and then elementary school years (Love et al., 2005; Vogel, Xue, Moiduddin, Kisker, & Carlson, 2010). Data were collected at various time points including when children were 14, 24, and 36 months old, and at 6, 14, 24 months after random assignment to determine the various services and supports that were being used by both the treatment and control families. More detailed accounts of specific data collection procedures can be found in Love and colleagues (2005) and Administration for Children and Families (1999). Data are publicly available for download through the Inter-university Consortium for Political and Social Research website. Restricted data (the research site variable) was obtained through the Henry A. Murray Research Archive.

Measures

Services and supports. During parent service interviews, which occurred 6, 15, and 24 months after random assignment and lasted approximately 15 minutes, parents in the treatment and control condition were interviewed regarding their service and support usage. Parents were asked to report at each time point whether they had attended a parenting class, parent group socialization, parent support group, education/job training, mental health assistance,

transportation assistance, or housing assistance, or used employment services. A variable for each of the services listed above addressed (1 = yes) whether by 26 months after random assignment had the parents participated in the particular service.

In the present study a total number of services composite was created, which was the sum at 26 months post random assignment of the number of services parents had utilized. To understand how different types of services were associated with parenting practices, two composite variables of services were created[2]. The first composite focused on parenting directed services and was created by summing the number of activities parents participated from this following list - parenting classes, parent group socialization, and parent support groups. The second composite was created by summing services related to parent self-sufficiency (employment services, and education/job training). Descriptive statistics for the individual and composite service variables are presented in Table 4.1.

Parenting practices. Parenting practices were measured when children were 36 months old, which was the age that children were no longer eligible for EHS services. Three measures were used in the present study. The first measure, the Home Observation Measurement of the Environment is a semi-structured interview and observational measure (HOME; Caldwell & Bradley, 1984). Parents were interviewed and observed in their home environment by trained researchers on multiple dimensions including warmth and sensitivity, support for language and cognitive development, harshness and the physical environment. A total of 37 dichotomous (1 = behavior/item present) items were included in the HOME scale used in the EHS study. The total score is the sum of all the items in the scale, with the negative items reverse coded, so a higher

[2] A third composite that summed services related to family well-being (mental health assistance, housing assistance, and transportation assistance) was also created; however, in the IV analysis the first stage failed (F-statistic was well below the recommended level of 10) and the variable was omitted from the analyses**,** which may have induced bias had it been included into the analyses.

score indicates a more supportive, cognitively stimulating, and safe environment. The HOME Support of Language and Learning (13 items; "Child is encouraged to learn colors, At least 10 books are visible in the apartment") and Warmth (3 items "Parent's voice conveys positive feeling to child, Parent caresses, kisses, or cuddles child during visit") scales were also used in the present study. For participants to have a score on any of the scales used, less than 25% of the item scores must not have been missing.

The second parenting measure came from the Three Bag Assessment (Brady-Smith, O'Brien, Berlin, Ware, & Fauth, 2000), parents and children were provided with three bags of toys and the parents were instructed to play with each toy in the order it was presented to them. The interaction between the parent and child was videotaped and trained researchers scored both the parent and child behavior during the play task. Trained observers rated parents behavior on four domains, intrusiveness, negative regard, detachment, and supportiveness. Parent supportiveness is a composite of parent sensitivity, cognitive stimulation and positive regard. Each domain was rated on a 7-point scale (1 = very low incidence of the behavior, and 7 = very high incidence of the behavior).

The final measure was the parent-child play index. The index is the average amount of time the parents spent interacting with their child through participating in activities with them (sing songs, dance, read stories) or taking them on outings (shopping, go to the park, religious event). Parents were asked to report on 11 activities on a 6-point scale (1 = more than once a day, 6 = not at all). Items were reverse coded, and then averaged together to form a composite of the average times per month parents participated in a "play" activity with their child. Similar to the HOME items, less than 25% of the items had not to be missing in order for a composite to be created.

Child and family characteristics. Prior to random assignment when families applied to participate in EHS, parent and child (if applicable) characteristics were collected. For mothers that had not yet given birth, child characteristics were collected after birth. Maternal characteristics included in the present study were whether pregnant at random assignment (1 = yes), whether primary language English (1 = yes), whether previously participated in child development program (1 = yes), the number of kids in the household, poverty ratio, prior service use (whether taken up foot stamps, social security income, and/or public housing assistance prior to random assignment), education level (some college (reference), high school degree/GED, less than high school degree), whether not employed (1 = yes), whether single parent (1 = yes), and whether teen mom (1 = yes). Child Characteristics included whether first born (1 = yes), gender (1 = male), race (white (reference), black, Hispanic, and other), and age in months (if not born negative number represent months left in utero). Child and family characteristics were used as control variables in all analyses. Descriptive statistics for parent and child characteristics are presented in Table 4.1.

Analytic Strategy

In this study, IV consisted of a two-stage least squares regression. In the two stage approach, parent service usage was predicted in the first stage and then the predicted value from the first stage was used as the main predictor of service use in the second stage. This method allows for causal claims to be made because the variation in the predictor of interest (service use) in the second stage is pure, meaning no endogenous variation is being used to predict the outcome of interest (parenting practices and the home environment). The instruments used to predict service use in the first stage were treatment and treatment by site interactions. In the second stage these variables were omitted.

Both stages of the two-least squares regression included child and family covariates. Site effects were partialed out of the estimation using the partial command in Stata, in order to take into consideration any site level differences that may be associated with parenting practices. This method is similar to including site fixed effects – it essentially eliminates the site related differences from the covariates and predictor of interest to obtain an unbiased estimate of the predictor on the outcome, in this case parenting practices. The following equations were used to generate estimates of the impact of services on the home environment or parenting practices.

First Stage: $ServiceUse_i = \mu_i + \pi Trt_i * Site_i + \beta_1 Trt_i + \beta_2 Site_i + \delta Cov_i + \varepsilon_i$

Second Stage: $Parenting_i = \alpha + \beta_1 \widehat{ServiceUse}_i + \beta_2 Site_i + \delta Cov_i + v_i$

In the first stage the treatment indicator and the treatment by site interactions function as the instruments, and were used to predict service use along with covariates (δ). The second stage used the predicted value of service use from the first stage (β_1), and covariates to predict parenting practices.

An assumption regarding instrumental variables is that the mediating variable is the only way through which the instrument(s) affect the outcome variable (e.g., Angrist & Krueger, 1991; Duncan et al., 2011). Because of this assumption I was unable to test multiple pathways[3] or to causally examine multiple service types (e.g., parenting directed or parent self-sufficiency services). However, exploratory analyses were conducted to determine if unique associations existed between the two service categories and parenting practices and the home environment. The same IV analyses were conducted, but causal conclusions from these analyses cannot be drawn.

[3] Because there were multiple instruments multiple pathways theoretically could have been examined (Crosby, Dowsett, & Gennetian, 2010); however, analytic problems including power issues, prevented testing multiple pathways.

Ordinary Least Squares (OLS) regressions were run as a comparison with the IV models. The OLS models included the same set of child and family controls as the IV models, along with site fixed effects. The main predictor of interest again was number of services used, and the outcomes were the three measures of parenting practices and the home environment. Similar to the IV analyses, OLS models were estimated for the two service composites.

The analytic sample was composed of families who were in a research site (n = 10 sites) that provided center-based or mixed approach services to parents. The sample was also limited to families providing data on service usage and parenting practices. Missing data on the child and family characteristics were handled using dummy variable adjustments. A variable for each covariate was created that indicated if the value was missing (1 = missing). Missing values were then set to zero. The missing dummies were included in all analyses. This method to account for missing data has been noted as being effective (Puma, Olsen, Bell, & Price, 2009); also multiple imputation techniques have yet to be incorporated into IV analyses.

Results

Descriptive Results

Table 4.1 presents the descriptive statistics of the child and family characteristics, services and supports, and parenting outcomes for the full analytic sample and for the treatment and control conditions**.** Approximately one third of the children in the sample were either white (overall = 34%; T = 34%; C = 34%) or Black (overall = 40%; T = 40%; C = 41%), and the majority of children in the sample were first born (overall = 65%; T = 62%; C = 65%). The majority of mothers in the sample spoke English as their primary language (overall = 83%; T = 84%; C = 82%), were single parents (overall = 78%; T = 79%; C = 78%), and a little less than half of the mothers had less than a high school degree (overall = 47%; T = 47%; C = 46%). T-

tests indicate that for the child and family characteristics no significant differences were found between treatment and control conditions.

{Insert Table 4.1}

Examining services and supports next, on average parents took up 3.80 services; however this significantly differed ($p < .05$) between the treatment and control conditions (T = 4.60; C = 2.93). For every service and support, the treatment condition was significantly ($p < .05$) more likely to take it up, with the exception of mental health assistance and housing assistance. Turning to the parenting practices and home environment, overall participants scored relatively medium to high on the HOME dimensions. However, for the HOME total score and the Warmth subscale, the treatment condition had significantly higher means ($p < .05$) on the measure (HOME Total: T = 26.9; C = 26.21; HOME Warmth: T = 2.46; C = 2.32). No significant mean differences were found for the dimensions of the Three Bag Task or Parent-Child Play. Descriptive statistics for the full sample (i.e., including the home-based service delivery programs) were also computed for the identical set of variables described above and are displayed in Appendix Table 4.1.

Substantive Results

A successful first stage (i.e., the instruments explain a large amount of variance in the dependent variable) is an important component of instrument variables (Angrist & Krueger, 2001; Gennetian et al., 2008). An instrument is successful if the F-statistic is above the recommended level of 10 (Angrist and Pischke 2008). The first stage results are presented in two forms. Table 4.2 displays the results for the first stage regression where the number of services and supports used was regressed on the instruments (treatment, and treatment by site interactions) and the covariates, and then the predicted value was used in the second stage to

predict the HOME Total score. Table 4.2 shows the results from only the center based Early Head Start programs, which is why the site number starts at 6 – results for the full sample are available in Appendix Table 4.2. As shown in the table the F-statistic for the addition of instruments is well over the recommended level of 10 (F = 27.64). The F-statistic was also above 10 for the IV regressions examining the other parenting and home environment outcomes and when the service components (e.g., employment/education and parenting-directed services) were instrumented (range of F-statistics: 13.73 - 20.93).

{Insert Table 4.2}

Another test of the success of the first stage is the variation in the site by treatment interaction coefficients. Table 4.2 demonstrates that there was sufficient variation in the effects; several of the coefficients are negative (site 6 and 14), and two are statistically significant (site 7 and 8). Figure 1 also displays the variation in the treatment by site interaction effects. For each research site a black dot indicates treatment and a hollow dot indicates control cases in the opposite quadrant. The large spread in the indicators demonstrates that there was wide variation within sites and across sites in the impact of random assignment in the take-up of services and supports. However, it is clear that the treatment condition took up more services and supports (shown by the cluster of black indicators in the upper right quadrant), and that take-up services was related to the higher HOME Total scores. This relationship is shown by the best fitting line, which is nearly identical (covariates were not included in the graph because of how the data were collapsed to create the figure) to the IV coefficient displayed in Table 4.3 for the total number of services predicting the HOME Total score.

{Insert Figure 4.1}

The second stage results are presented in Table 4.3. Each coefficient in the table comes from a separate regression. OLS results are presented next to the IV results for each of the outcomes examined. Number of services had a positive significant ($p < .05$) effect on the HOME Total score (effect size = .17), and HOME Warmth (effect size = .22). Similar sized effects were found for the HOME Language and Cognitive Stimulation subscale and Parent-Child Play, however they did not reach statistical significance. No significant effects were found for any of the Three Bag Task dimensions. OLS results varied slightly from the IV results. For all HOME scores (effect sizes: Total = .11; Language and Cognitive Stimulation = .12; Warmth = .13) and the Parent-Child Play score (effect size = .15), a significant association was found ($p < .05$). The difference in results indicates that OLS results may be biased; however the effect sizes across the two models were consistent, but, as expected, the IV models produced larger standard errors. Similar to the IV models, no significant associations were found in the OLS models between total number of services and the Three Bag Task dimensions, with the exception of the Supportiveness domain (effect size = .13, $p < .05$).

{Insert Table 4.3}

Results for service components. Table 4.3 also presents the results for the individual service components (number of parenting directed services and number of employment services taken up). These analyses are exploratory, and unlike the results described above causality cannot be implied. Each service component was examined individually, so the results of each of the services components come from individual analyses. As described above, the first stage results from all analyses were successful as indicated by the large F-statistic. IV results for the number of parent-directed services are similar to the IV results for the total number of services used - the number of parent-directed services used was significantly related to the HOME Total

score (effect size = .18) and the HOME Warmth scale (effect size = .22). The OLS results were also consistent, with positive significant associations found for all HOME scores, Parent-Child Play, and the Supportiveness domain on the Three Bag Task.

Turning to the results for the total number of employment services used, differences were found between this service type and the other service scales examined. Total number of employment services was significantly associated ($p < .05$) with all of the HOME scores (effect sizes: Total = .22; Language and Cognitive Stimulation = .17; Warmth = .24). No significant associations were found for the other measures of parenting practices. OLS results varied substantially from the IV results; no significant associations emerged for any of the outcomes in the OLS models and for several of the outcomes the directions of the associations were opposite.

Results using complete data set. As a robustness check, analyses were run on the whole sample to determine if large differences existed when programs that were home-based were included in the analysis. Similar to the results for the analytic sample, the first stage was successful using the full sample (see Appendix Table 4.2 and Appendix Figure 4.2), with F-statistics that ranged from 17.67-27.60. The larger F-statistic is likely due to the increased sample size, which is providing more power to detect effects, and the variation in site-specific effects. IV results for the total number of services used were generally consistent with the models using the research sites that provided center-based or mixed approach services. Significant effects were found for the HOME Total score (effect size = .11), the Language and Cognitive Stimulation scale (effect size = .11), and the Supportiveness dimension from the Three Bag Task (effect size = .11).

Next, exploratory analyses were conducted for the two service composites. Total number of parent directed services and total number of employment services were significantly ($p < .05$)

associated with HOME Total score (effect size: parent-directed = .12; employment = .14) and HOME Language and Cognitive Stimulation (effect size: parent-directed = .13; employment = .15). Results using the full sample are presented in Appendix Table 4.3.

Robustness check with the Head Start Impact Study. To see if the parents who utilized additional services and supports in the Head Start Impact Study (HSIS) also demonstrated improved parenting practices, parallel OLS regressions were run using the HSIS data set. Analyses were appropriately weighted using the HSIS sampling weights (parent interview Spring 2003 weight). IV analyses were attempted, but given the low first stage F statistics (less than 3), they were unsuccessful, so only the OLS results are discussed. The OLS results from the HSIS were consistent with the OLS results from the EHS study. The total number of services parents utilized was significantly related to the amount of academic stimulation (effect size = .23; SE = .04) provided in the home and the number of cultural activities the parents participated in with their child (effect size = .15; SE = .04) at the end of the Head Start year.

Discussion

The goal of the study was to understand how parent supports and services affect parenting practices and the home environment. Overall, the results of the study indicate that the number of services parents participate in has a positive effect on the home environment, particularly the warmth and emotional support provided to children. The findings provide support for the social causation theory (Conger & Donnellan, 2007) by demonstrating that parents who take-up services provide more warmth and sensitivity to their child, and in general have more positive parenting practices (McLoyd, Mistry, & Hardaway, 2014; Mistry et al., 2008). When the full sample (i.e., including the home-based EHS programs) was used, the

results were consistent for the overall home environment, but there was a significant impact on language and cognitive stimulation, which is likely due to the increased power from the larger sample size. Direct pathways could not be tested and given the study design it is not known if the findings can be attributed to more investments made by parents, a reduction of stress, or a combination of the two.

These results are particularly promising given the recent focus on two-generation programs (Chase-Lansdale & Brooks-Gunn, 2014; Haskins et al., 2014), and demonstrate that expanding services as part of the two-generation model (e.g., center-based child care and parent services) may result in a more positive home environment for children from disadvantaged backgrounds. As more and more programs move towards incorporating parenting components or other services for parents, it may be important to examine how services are impacting parenting practices as opposed to focusing on family well-being (e.g., increase in wages). Similarly, research has demonstrated that parent supports may be most effective for expecting parents or parents of very young children (Hsueh & Farrell 2012) and may not be effective for parents with many risk factors, including for families with income levels that are well below the poverty line (Bronfenbrenner 1974; Goodson et al., 2000). More research is needed to further understand who benefits the most from services and if certain populations can be better reached through increased or more targeted recruitment efforts.

Examining the descriptive statistics in Table 4.1, it is clear that take-up of services is far from universal. Approximately half of parents took up a direct parenting service and about three-fourths took part in some employment or education training. However, less than one-fourth of parents in the EHS study, regardless of the treatment or control condition took up a family well-being service such as mental health or housing assistance. Further research should

investigate whether this was due to the need of families not being matched with these services or if recruitment practices did not target families that were likely to take-up these services. One important policy consideration is how to promote the usage of services and supports either through child development programs or through community organizations, and to understand if the benefit of offering or referring parents to these services is cost effective. It may be that parents are hearing about services via informal communication (Small, 2009) and no formal mechanism (i.e., family service workers) is needed.

Another consideration regarding the effects found for services and supports on the home environment is whether those effects translate to gains in child outcomes. Prior research demonstrates a strong connection between the home environment and children's academic and socio-emotional development (Anders et al., 2012; Bradley & Corwyn, 2007; Melhuish et al., 2008; Watamura, Phillips, Morrissey, McCartney, & Bub, 2011), but it is not yet known if changes in the home environment via an intervention led to improved child outcomes. Establishing if the change in the home impacts child outcomes is difficult to test given the many other factors that contribute to children's development.

Although causal conclusions cannot be drawn from the analyses, the results from the exploratory analyses suggest that the different types of services offered or referred to parents are associated with unique outcomes. Number of employment services was only related to the HOME Cognitive and Language Stimulation scale, whereas number of parenting services was significantly related to both the HOME Cognitive Stimulation scale and the HOME Warmth scale. These results again provide support for the social causation theory in that providing services that reduce stress and supply the family with more materials led to more positive parenting practices. However, similar to the results for the total number of services, neither total

number of employment nor parenting services was related to the structured play task. Future research should work to examine each bundle of services separately to better understand the role each type of service plays in parenting practices and child development.

Even with the strong quasi-experimental design, several limitations remain. First, because of the one channel assumption (Angrist & Pischke, 2008), multiple pathways could not be examined, such as the type of service, or whether take-up of services had an impact on child outcomes. Examining the direct effect of services on children's outcomes is of much policy importance, and future studies should work to understand if services have a positive impact on children's academic and socio-emotional development. Second, the IV method was not successful in the HSIS, so it is not known if the results can be replicated for older children, particularly those most likely to be in center-based care (Pianta, Barnett, Burchinal, & Thornburg, 2009). Another limitation is the EHS evaluation was not nationally representative and many of the programs were new implementers, so it is not yet known if an even larger effect of taking up services and supports on parenting practices exists for more established programs. Further research is needed to better understand if the effects found in the present study translate to parents of older children and for the general population.

As stated above, the mechanism through which parenting practices were improved is not known and future work should attempt to understand whether it was a reduction in stress, the infusion of more resources (e.g., income, parenting knowledge), or a combination of the two. By understanding the direct mechanism through which parents are most affected by services and supports, or which parents are affected by which services and supports, programs can better target their delivery and may be better suited to refer parents to the most appropriate service.

Conclusion

The present study used the Early Head Start data set to examine the effect of total number of services parents utilized on the quality of the home environment, and results indicate that a positive effect of services on parenting practices and the home setting. Given the increased attention on two-generation programs, the findings from the study provide support for incorporating parent services, both those aimed at directly improving parenting practices and families' overall well-being. Providing more services for parents in these programs is likely to result in improved parenting practices, which in theory should have a positive effect on children's development. However, more research is needed to understand if service and support use does in fact translate into positive impacts on child development.

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Table 4.1.

Descriptive statistics for service use predictors, parenting outcomes, and covariates for the center and mixed approach programs from the Early Head Start evaluation.

	Full Sample			Treatment			Control			
	N	% or Mean	SD	N	% or Mean	SD	N	% or Mean	SD	P-Value
Child and Family Characteristics										
First Born	1600	0.64	0.48	795	0.62	0.48	805	0.65	0.48	0.20
Child Gender - Male	1598	0.51	0.50	798	0.51	0.50	800	0.51	0.50	0.88
Child Race - White	1593	0.34	0.47	799	0.34	0.47	794	0.34	0.47	0.95
Child Race - Black	1593	0.40	0.49	799	0.40	0.49	794	0.41	0.49	0.72
Child Race - Hispanic	1593	0.20	0.40	799	0.21	0.41	794	0.20	0.40	0.46
Child Race - Other	1593	0.05	0.22	799	0.05	0.21	794	0.06	0.23	0.48
Child Age in Months	1609	3.02	4.74	803	3.11	4.77	806	2.93	4.71	0.44
Pregnant at RA	1609	0.25	0.43	803	0.25	0.43	806	0.25	0.44	0.81
Primary Language English	1577	0.83	0.38	796	0.84	0.37	781	0.82	0.38	0.52
Participate in Previous CD Program	1564	0.17	0.37	782	0.17	0.37	782	0.16	0.37	0.95
Number of Kids in Household	1609	1.04	1.15	803	1.08	1.15	806	0.99	1.15	0.13
Poverty Ratio	1249	67.15	56.21	630	66.73	60.06	619	67.59	52.04	0.79
Prior Public Service Use	1526	0.50	0.50	766	0.50	0.50	760	0.49	0.50	0.51
Less Than High School	1571	0.47	0.50	787	0.47	0.50	784	0.46	0.50	0.70
High School Degree/GED	1571	0.29	0.45	787	0.27	0.45	784	0.31	0.46	0.09
Some College	1572	0.24		787	0.26		784	0.23		0.17
Not Working	1580	0.51	0.50	793	0.50	0.50	787	0.51	0.50	0.76
Single Parent	1604	0.78	0.41	803	0.79	0.41	801	0.78	0.42	0.65
Teen Mom	1606	0.41	0.49	800	0.41	0.49	806	0.42	0.49	0.63
Services and Supports										
Parenting Class	1142	0.46	0.50	587	0.61	0.49	555	0.29	0.46	0.00
Parent Group Socialization	1128	0.27	0.45	581	0.39	0.49	547	0.15	0.36	0.00
Parent Support Group	1139	0.14	0.35	585	0.20	0.40	554	0.08	0.28	0.00
Number of Parenting Services	1134	0.88	0.97	586	1.20	1.00	548	0.54	0.80	0.00
Education/Job Training	1145	0.75	0.43	588	0.87	0.33	557	0.63	0.48	0.00
Employment Services	993	0.63	0.48	544	0.77	0.42	449	0.47	0.50	0.00
Mental Health Assistance	1143	0.22	0.41	587	0.21	0.41	556	0.22	0.41	0.85
Housing Assitance	1134	0.52	0.50	581	0.53	0.50	553	0.52	0.50	0.80
Transportation Assistance	1145	0.28	0.45	588	0.34	0.47	557	0.22	0.41	0.00
Number of Education/Employment Services Used	993	1.42	0.73	544	1.67	0.60	449	1.11	0.75	0.00
Number of Family Well-Being Services Used	1131	1.02	0.88	580	1.08	0.88	551	0.96	0.87	0.02
Number of Family Support Services	1119	2.37	1.25	580	2.70	1.15	539	2.02	1.26	0.00
Any Service Use	1131	0.95	0.22	585	0.98	0.14	546	0.92	0.28	0.00
Number of All Services Used	1107	3.80	2.18	578	4.60	2.03	529	2.93	2.01	0.00
Parenting Outcomes										
HOME Total Score	959	26.56	5.05	488	26.90	4.85	471	26.21	5.23	0.03
HOME Language and Cognitive Stimulation Scale	986	10.27	2.10	507	10.39	1.98	479	10.14	2.21	0.07
HOME Warmth Scale	955	2.39	0.93	490	2.46	0.89	465	2.32	0.98	0.02
Parent-Child Play	1146	4.36	0.86	595	4.41	0.87	551	4.30	0.84	0.03
Parent Intrusiveness (3 Bag Task)	915	1.61	0.79	479	1.58	0.78	436	1.64	0.78	0.23
Parent Negative Regard (3 Bag Task)	914	1.32	0.63	478	1.32	0.61	436	1.32	0.64	0.89
Parent Detachment (3 Bag Task)	915	1.24	0.61	479	1.22	0.58	436	1.25	0.63	0.47
Parent Supportiveness (3 Bag Task)	914	3.92	0.94	478	3.96	0.93	436	3.88	0.95	0.20

*Note.*Child and family characteristics collected at baseline, service and support information was collected at 6, 15, and 24 months post random assignment, and parenting outcomes were collected when children were 36 months old. RA = random assignment. Family well-being services include mental health assistance, housing assistance, and transportation assitance. Number of family support services include those services along with education/job training, and employment services. Any service use and number of all service use include all services and supports, including parenting services.

Table 4.2.

First stage regression results from the IV analysis predicting total number of services used.

	Total Number of Services Used
Treatment	.55 (.20)**
First Born	.04 (.06)
Child Gender - Male	.02 (.08)
Child Race - Black	.05 (.09)
Child Race - Hispanic	-.03 (.15)
Child Race - Other	-.03 (.19)
Child Age in Months	-.02 (.01)
Pregnant at RA	-.03 (.12)
Primary Language English	.02 (.13)
Participate in Previous CD Program	.11 (.09)
Number of Kids in Household	.03 (.03)
Poverty Ratio	-.00 (.00)
Prior Public Service Use	.27 (.07)***
High School Degree/GED	-.12 (.08)
Less Than High School	-.18 (.09)
Not Working	.04 (.07)
Single Parent	.14 (.08)
Teen Mom	.01 (.09)
Site X Treatment Interactions	
Site 6	-.20 (.27)
Site 7	.76 (.27)**
Site 8	.57 (.29)*
Site 9	.33 (.29)
Site 11	.38 (.25)
Site 12	.47 (.28)
Site 14	-.34 (.30)
Site 15	.27 (.29)
Site 17	.09 (.28)
N	827
Model F-Statistic	13.79***
F-Statistic for treatment x site (instruments)	27.64***

Note. Standard errors are in parantheses. Both stages from the IV analysis include site fixed effects, which were partialed out from the model. Total number of services used is count of services taken up, and is then standardized to have a mean of 0 standard deviation of 1. Missing data were handled with dummy variables. *$p < .05$, **$p < .01$, ***$p < .001$.

Table 4.3.

IV and OLS regression results for parental service use predicting the HOME environment and parenting practices.

	HOME Total Score		HOME Lang & Cog Stim		HOME Warmth		Parent-Child Play	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV
(1) Total Number of Services	0.11** (0.04)	0.17* (0.07)	0.12*** (0.03)	0.14 (0.07)	0.13** (0.04)	0.20* (0.09)	0.15*** (0.04)	0.13 (0.08)
(2) Total Number of Parent Services	0.14*** (0.03)	0.18* (0.08)	0.13*** (0.03)	0.16 (0.08)	0.12** (0.04)	0.22* (0.10)	0.15*** (0.04)	0.15 (0.09)
(3) Total Number of Employment Services	-0.02 (0.04)	0.22** (0.08)	0.02 (0.04)	0.17* (0.08)	-0.02 (0.05)	0.24* (0.09)	0.05 (0.04)	0.15 (0.09)
N (range)	734-845	734-845	750-864	750-864	731-848	731-848	861-990	861-990
F-Statistic for Instruments (range)		14.48-19.89		14.79-20.28		14.24-19.76		14.78-20.93

	Intrusiveness		Negative Regard		Detachment		Supportiveness	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV
(1) Total Number of Services	-0.00 (0.04)	-0.05 (0.08)	-0.07 (0.04)	0.02 (0.08)	-0.06 (0.04)	-0.06 (0.09)	0.13** (0.04)	0.10 (0.08)
(2) Total Number of Parent Services	-0.02 (0.04)	-0.06 (0.09)	-0.04 (0.04)	0.02 (0.09)	-0.06 (0.04)	-0.06 (0.09)	0.13*** (0.04)	0.10 (0.09)
(3) Total Number of Employment Services	0.01 (0.04)	-0.05 (0.09)	-0.03 (0.05)	0.01 (0.08)	0.03 (0.04)	-0.08 (0.10)	0.03 (0.04)	0.12 (0.09)
N (range)	712-816	712-816	711-806	711-806	712-807	712-807	711-806	711-806
F-Statistic for Instruments (range)		13.80-17.48		13.73-17.38		13.80-17.48		13.94-17.49

Note. Standard errors are in parantheses. The instruments used to predict service use were treatment, and research site by treatment interactions. Each row represents a separate regression. These variables were included in the first stage and omitted from the second stage. Both stages from the two-stage least squares IV analysis include site fixed effects, which were partialled out from the model. Covariates included in both regressions were whether first born, child gender (1 = male), child race (white(ref), black, Hispanic, and other), child age in months, whether mother was pregnant at random assignment, whether primary language was English, whether participated in previous child development program, number of kids in the household, poverty ratio, prior service use, maternal education (less than high school degree, high school degree/GED, or some college(ref)), whether not working, whether single parent, and whether teen mom. All covariates were collected at baseline. Both Parenting measures were collected when children were 36 months ould, and service information was collected at 3 time points (6, 15, and 24 months after random assignment), and then a dichotomous variable was created indicating if a particular service was ever used during the study period. Services included in the total number of services variable included parenting class, parent group socialization, parent support group, education/job training, employment services, mental health assistance, transportation assistance, and housing assistance. Number of parenting services is total number of parenting directed servives (parenting class, parent group socialization and parent support group), and number of employment servicies is total number of education/job training, and employment services. Outcome and predictor variables of interest were standardized to have a mean of 0 standard deviation of 1. Missing data were handled with dummy variables. *p < .05, **p < .01, ***p< .001.

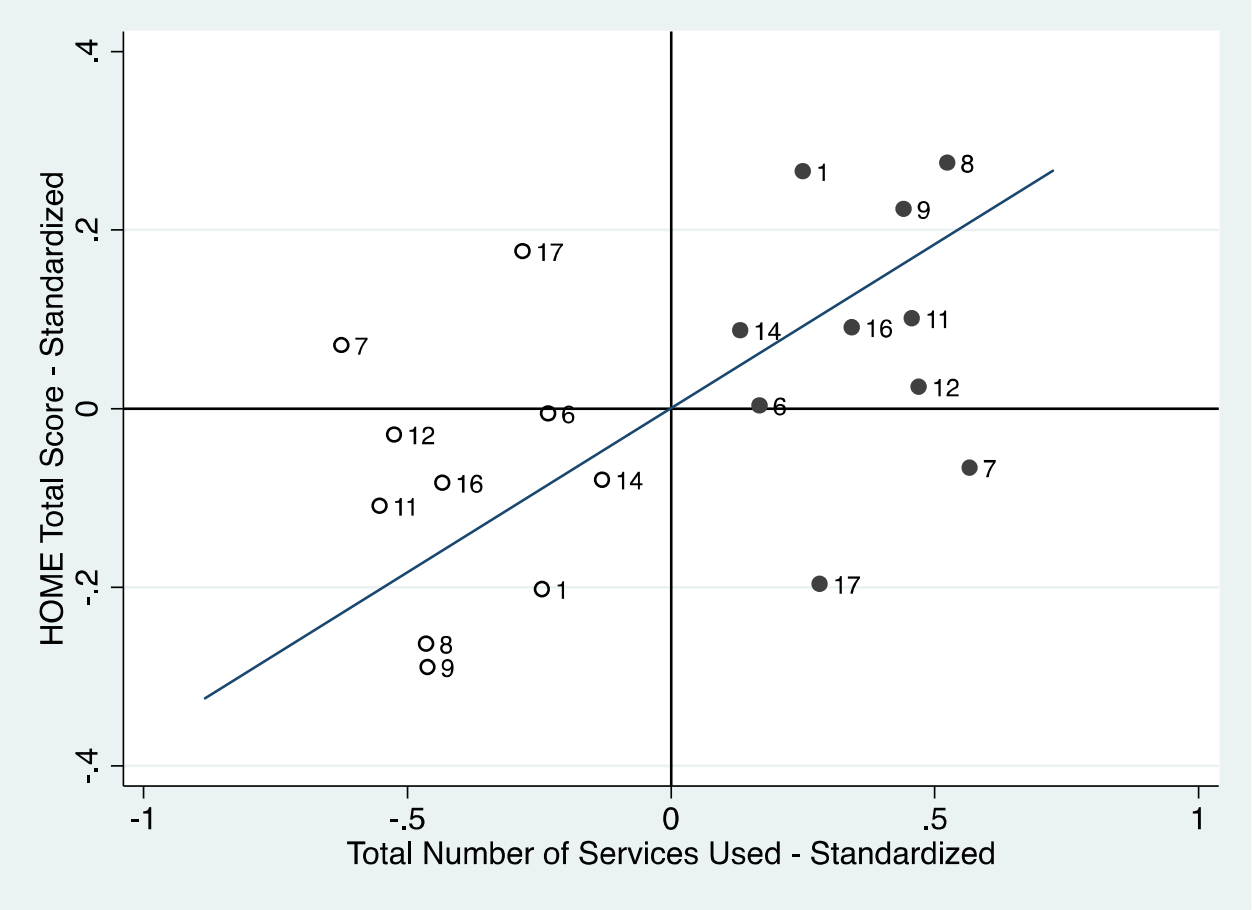


Figure 4.1. First stage regression results. The figure displays the first stage results from instrumenting total number of services used with treatment, and treatment by site interactions. For each black point on the graph (treatment) there is a corresponding hollow point (control) for each of the research sites using center-based or mixed approach program service delivery methods. Results indicate a positive treatment effect on total number of services used, and that service usage is positively related to the HOME Total Score.

Appendix Table 4.1.

Descriptive statistics for service use predictors, parenting outcomes, and covariates for all program types in the Early Head Start evaluation.

	Full Sample			Treatment			Control			
	N	% or Mean	SD	N	% or Mean	SD	N	% or Mean	SD	P-Value
Child and Family Characteristics										
First Born	2960	0.62	0.48	1488	0.62	0.49	1472	0.63	0.48	0.76
Child Gender - Male	2948	0.51	0.50	1490	0.52	0.50	1458	0.50	0.50	0.47
Child Race - White	2925	0.37	0.48	1483	0.37	0.48	1442	0.37	0.48	0.96
Child Race - Black	2925	0.35	0.48	1483	0.34	0.47	1442	0.35	0.48	0.69
Child Race - Hispanic	2925	0.24	0.43	1483	0.24	0.43	1442	0.23	0.42	0.72
Child Race - Other	2925	0.05	0.21	1483	0.05	0.21	1442	0.04	0.21	0.78
Child Age in Months	2977	3.03	4.65	1503	3.09	4.65	1474	2.98	4.64	0.51
Pregnant at RA	2977	0.25	0.43	1503	0.24	0.43	1474	0.26	0.44	0.22
Primary Language English	2876	0.79	0.41	1469	0.80	0.40	1407	0.78	0.42	0.27
Participate in Previous CD Program	2864	0.13	0.34	1453	0.13	0.33	1411	0.13	0.34	0.60
Number of Kids in Household	2977	0.98	1.09	1503	1.00	1.09	1474	0.97	1.10	0.36
Poverty Ratio	2451	60.67	52.63	1248	59.62	52.90	1203	61.76	52.35	0.31
Prior Public Service Use	2835	0.52	0.50	1435	0.52	0.50	1400	0.52	0.50	0.94
Less Than High School	2870	0.48	0.50	1454	0.48	0.50	1416	0.48	0.50	0.97
High School Degree/GED	2870	0.29	0.45	1454	0.27	0.45	1416	0.30	0.46	0.11
Some College	2870	0.24		1454	0.25		1416	0.22		0.10
Not Working	2883	0.55	0.50	1461	0.55	0.50	1422	0.55	0.50	0.89
Single Parent	2969	0.75	0.43	1503	0.75	0.43	1466	0.74	0.44	0.76
Teen Mom	2971	0.38	0.49	1497	0.38	0.49	1474	0.39	0.49	0.80
Services and Supports										
Parenting Class	2081	0.47	0.50	1074	0.62	0.48	1007	0.30	0.46	0.00
Parent Group Socialization	2053	0.28	0.45	1058	0.42	0.49	995	0.14	0.34	0.00
Parent Support Group	2075	0.15	0.35	1068	0.21	0.40	1007	0.08	0.27	0.00
Number of Parenting Services	2064	0.90	0.98	1067	1.25	1.01	997	0.52	0.79	0.00
Education/Job Training	2086	0.73	0.45	1076	0.87	0.34	1010	0.58	0.49	0.00
Employment Services	1842	0.64	0.48	1018	0.77	0.42	824	0.47	0.50	0.00
Mental Health Assistance	2084	0.22	0.42	1075	0.23	0.42	1009	0.22	0.41	0.74
Housing Assitance	2021	0.58	0.49	1043	0.59	0.49	978	0.57	0.50	0.52
Transportation Assistance	2086	0.28	0.45	1076	0.33	0.47	1010	0.23	0.42	0.00
Number of Education/Employment Services Used	1842	1.39	0.76	1018	1.66	0.62	824	1.06	0.78	0.00
Number of Family Well-Being Services Used	2018	1.09	0.88	1042	1.15	0.87	976	1.03	0.88	0.00
Number of Family Support Services	2033	2.42	1.27	1064	2.76	1.15	969	2.04	1.29	0.00
Any Service Use	2055	0.96	0.20	1072	0.98	0.12	983	0.93	0.26	0.00
Number of All Services Used	2010	3.87	2.19	1055	4.72	2.02	955	2.93	1.97	0.00
Parenting Outcomes										
HOME Total Score	1807	27.23	4.79	939	27.48	4.67	868	26.96	4.90	0.02
HOME Language and Cognitive Stimulation Scale	1861	10.49	2.02	971	10.60	1.93	890	10.38	2.11	0.02
HOME Warmth Scale	1794	2.53	0.83	932	2.57	0.80	862	2.49	0.86	0.05
Parent-Child Play	2076	4.36	0.85	1087	4.39	0.87	989	4.33	0.83	0.11
Parent Intrusiveness (3 Bag Task)	1659	1.59	0.78	875	1.58	0.79	784	1.60	0.77	0.52
Parent Negative Regard (3 Bag Task)	1658	1.28	0.61	874	1.28	0.62	784	1.28	0.60	0.80
Parent Detachment (3 Bag Task)	1659	1.24	0.60	875	1.22	0.57	784	1.26	0.63	0.24
Parent Supportiveness (3 Bag Task)	1658	3.92	0.93	874	3.97	0.93	784	3.87	0.92	0.04

*Note.*Child and family characteristics collected at baseline, service and support information was collected at 6, 15, and 24 months post random assignment, and parenting outcomes were collected when children were 36 months old. RA = random assignment. Family well-being services include mental health assistance, housing assistance, and transportation assitance. Number of family support services include those services along with education/job training, and employment services. Any service use and number of all service use include all services and supports, including parenting services.

Appendix Table 4.2.
First stage regression results from IV analysis predicting total number of services used (full sample).

	Total Number of Services Used
Treatment	.57 (.20)**
First Born	.02 (.06)
Child Gender - Male	.08 (.04)
Child Race - Black	.03 (.07)
Child Race - Hispanic	-.05 (.11)
Child Race - Other	.02 (.14)
Child Age in Months	-.01 (.01)
Pregnant at RA	.07 (.08)
Primary Language English	.02 (.09)
Participate in Previous CD Program	.07 (.07)
Number of Kids in Household	.04 (.02)
Poverty Ratio	-.00 (.00)
Prior Public Service Use	.21 (.05)***
High School Degree/GED	-.14 (.06)*
Less Than High School	-.16 (.07)*
Not Working	.03 (.05)
Single Parent	.05 (.06)
Teen Mom	.04 (.06)
Site X Treatment Interactions	
Site 2	.22 (.26)
Site 3	.60 (.24)*
Site 4	-.24 (.29)
Site 5	.13 (.29)
Site 6	-.22 (.27)
Site 7	.74 (.27)**
Site 8	.56 (.28)*
Site 9	.30 (.29)
Site 10	.47 (.25)
Site 11	.38 (.25)
Site 12	.44 (.28)
Site 13	.62 (.25)*
Site 14	-.35 (.30)
Site 15	.58 (.26)*
Site 16	.26 (.29)
Site 17	.07 (.27)
N	1542
Model F-Statistic	13.41***
F-Statistic for treatment x site (instruments)	27.64***

Note. Standard errors are in parantheses. Both stages from the IV analysis include site fixed effects, which were partialed out from the model. Total number of services used is count of services taken up, and is then standardized to have a mean of 0 standard deviation of 1. Missing data were handled with dummy variables. *$p < .05$, **$p < .01$, ***$p < .001$.

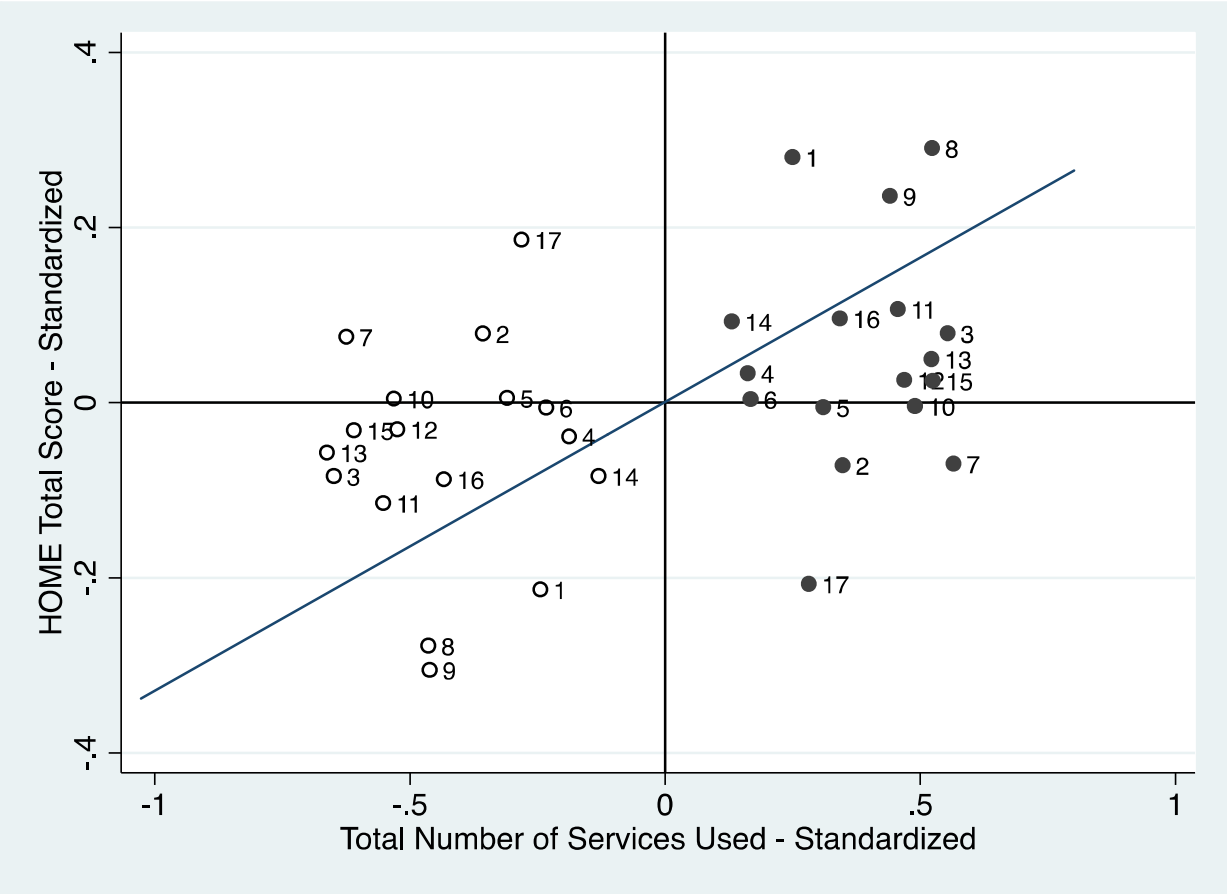
Appendix Table 4.3.

IV and OLS regression results for parental service use predicting the HOME environment and parenting practices (full sample).

	HOME Total Score		HOME Lang & Cog Stim		HOME Warmth		Parent-Child Play	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV
(1) Total Number of Services	0.11** (0.04)	0.11* (0.05)	0.12*** (0.03)	0.11* (0.05)	0.13** (0.04)	0.08 (0.05)	0.15*** (0.04)	0.04 (0.05)
(2) Total Number of Parent Services	0.14*** (0.03)	0.12* (0.05)	0.13*** (0.03)	0.13* (0.05)	0.12** (0.04)	0.09 (0.05)	0.15*** (0.04)	0.05 (0.06)
(3) Total Number of Employment Services	-0.02 (0.04)	0.14** (0.05)	0.02 (0.04)	0.15** (0.05)	-0.02 (0.05)	0.09 (0.06)	0.05 (0.04)	0.04 (0.06)
N (range)	1409-1584	1409-1584	1446-1625	1446-1625	1401-1573	1401-1573	1600-1794	1600-1794
F-Statistic for Instruments (range)		20.44-27.64		20.57-27.60		20.37-27.13		20.28-27.60

	Intrusiveness		Negative Regard		Detachment		Supportiveness	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV
(1) Total Number of Services	-0.00 (0.04)	-0.01 (0.06)	-0.07 (0.04)	-0.00 (0.05)	-0.06 (0.04)	-0.02 (0.06)	0.13** (0.04)	0.11* (0.05)
(2) Total Number of Parent Services	-0.02 (0.04)	0.01 (0.06)	-0.04 (0.04)	-0.01 (0.06)	-0.06 (0.04)	-0.02 (0.06)	0.13*** (0.04)	0.10 (0.06)
(3) Total Number of Employment Services	0.01 (0.04)	-0.02 (0.07)	-0.03 (0.05)	-0.02 (0.06)	0.03 (0.04)	-0.03 (0.06)	0.03 (0.04)	0.11 (0.06)
N (range)	1304-1460	1304-1460	1303-1459	1303-1459	1304-1460	1304-1460	1303-1459	1303-1459
F-Statistic for Instruments (range)		17.67-26.09		17.59-26.02		17.67-26.09		17.64-26.11

Note. Standard errors are in parantheses. The instruments used to predict service use were treatment, and research site by treatment interactions. Each row represents a separate regression. These variables were included in the first stage and omitted from the second stage. Both stages from the two-stage least squares IV analysis include site fixed effects, which were partialled out from the model. Covariates included in both regressions were whether first born, child gender (1 = male), child race (white(ref), black, Hispanic, and other), child age in months, whether mother was pregnant at random assignment, whether primary language was English, whether participated in previous child development program, number of kids in the household, poverty ratio, prior service use, maternal education (less than high school degree, high school degree/GED, or some college(ref)), whether not working, whether single parent, and whether teen mom. All covariates were collected at baseline. Both Parenting measures were collected when children were 36 months ould, and service information was collected at 3 time points (6, 15, and 24 months after random assignment), and then a dichotomous variable was created indicating if a particular service was ever used during the study period. Services included in the total number of services variable included parenting class, parent group socialization, parent support group, education/job training, employment services, mental health assistance, transportation assistance, and housing assistance. Number of parenting services is total number of parenting directed servives (parenting class, parent group socialization and parent support group), and number of employment servicies is total number of education/job training, and employment services. Outcome and predictor variables of interest were standardized to have a mean of 0 standard deviation of 1. Missing data were handled with dummy variables. *p < .05, **p < .01, ***p< .001.



Appendix Figure 4.1. First stage regression results. The figure displays the first stage results from instrumenting total number of services used with treatment, and treatment by site interactions. For each black point on the graph (treatment) there is a corresponding hollow point (control) for each of the research sites using center-based or mixed approach program service delivery methods. Results indicate a positive treatment effect on total number of services used, and that service usage is positively related to the HOME Total Score.

Chapter 5: Key Findings and Future Research

Early childhood is a critical period for children's development; what occurs during the early years of a child's life sets the stage for future development (Duncan, Ziol□Guest, & Kalil, 2010). Children who are in high-quality early childhood settings tend to do better in school, exhibit more prosocial behavior, and attend college at higher rates than children in lower-quality environments (Crosnoe, Leventhal, Wirth, Pierce, & Pianta, 2010; Currie, 2001; Vandell, Belsky, Burchinal, Steinberg, & Vandergrift, 2010). The home and child care environments are the most influential environments during these early years, and research continually shows the importance of early child care and parenting practices for children's development (Bradley, Whiteside-Mansell, Casey, & Barrett, 2010; Heckman, 2006; Vandell et al., 2010). Children's environments do not operate independently of each other, and a potential avenue for policymakers and practitioners to reach parents and make a difference in the home environment is through children's center-based early childhood programs.

The purpose of this dissertation is to further our understanding of how parents and center-based early childhood programs can work together to provide high-quality home environments and foster positive child development. By providing a deeper understanding of the role early child care and education centers play in positively influencing the home environment, centers can better provide parents with services and volunteer opportunities. Also, programs can better allocate their resources to recruit families that are most likely to participate or restructure their programs to better serve those who are not currently participating.

Summary of Findings

In Chapter 2, I examined the services (e.g., parent education, parent support groups, employment and education services) that centers offered to parents to determine whether families

are taking-up services and what characteristics of parents are predicting service usage. I find that a majority of parents in both the Head Start Impact Study (HSIS) and National Evaluation of Early Head Start (EHS) data sets are utilizing services, specifically services related to parenting practices and those aimed at improving parent and family well-being. Parents who were single, teen mothers, and/or had less than a high school education were the most likely to take-up services related to the families' well-being. This is promising because parents who are most in need of family well-being services are utilizing them. In contrast, parents with multiple risk characteristics, such as having less than a high school degree and being a single parent, did not utilize services related to parenting practices.

Next, in Chapter 3, I focused on parental involvement in children's center-based early childhood programs, such as volunteering or attending parent-teacher conferences. I used the NICHD Study of Early Child Care and Youth Development (SECCYD) and the HSIS to investigate the characteristics of parents that are related to involvement in children's preschool settings, and whether parental involvement is related to children's development and parenting practices at the end of the preschool year and into first grade. Results indicate parents are participating in children's preschool education, and in the HSIS, the offer of Head Start has a positive effect on parents' involvement.

In this study, I examined both demographic and background characteristics as predictors of parental involvement. When demographic characteristics were examined, results indicate that single parent families were the least likely to participate in children's preschool settings. However, the most predictive characteristic of involvement was the quality of the home environment prior to preschool entry, including the amount of academic activities and the various cultural outings (e.g., museum trips, movies) parents participated in with their child. This

finding was replicated across the two data sets. The second part of the study examined the extent to which parental involvement predicted child and parenting outcomes. Only in the HSIS was there a significant association between parental involvement and child academic outcomes (effect size range: .12-.13), and parenting practices (effect size range: .15-.32). Socio-emotional development was not related to parental involvement.

In Chapter 4 I examined if take-up of parental services, such as employment and education supports, is causally related to parenting practices and the quality of the home environment. A rigorous econometric technique, instrumental variables, was used to estimate the relationship between utilization of services and parenting practices. Data from the EHS were used in the primary analyses, and the HSIS was analyzed as a robustness check. Findings indicate the number of services used positively affects parenting practices at the end of the Early Head Start intervention (effect size: .17). Exploratory analyses indicate both parenting related and employment/education services are related to the quality of the home environment (effect size: parenting related services = .18; employment/education services = .22). Results from the HSIS, although not causal, are similar in that take-up of services is related to positive parenting practices (effect size range: .15-.23).

Key Lessons Learned

Three independent studies addressed the overarching questions of how center-based early childhood programs and parents interact, and whether the interaction leads to a positive impact on the home environment or is related to children's development. Several key findings prevailed across the studies and each of these four main findings is described below.

Parents are interacting with their child's center-based early care setting. A result from this dissertation that is important for centers that aim to serve or involve parents in their

programming is the robust finding that parents are involved in their child's education, and take up services offered to them. This result was evident in all three data sets examined. Findings from the first and second study demonstrate parents participated in activities in children's center-based care and took-up services related to their parenting practices and their own well-being. Evidence from the HSIS and EHS indicate that the offer of participation in the federally funded Head Start or Early Head Start programs positively affected parental involvement. To my knowledge, this is the first study that shows Head Start is meeting its stated goals of involving parents in children's education and successfully connecting families to services aimed at improving their well-being (Duch, 2005; Zigler & Valentine, 1979). Given that Gelber and Isen (2013) find parenting practices are positively impacted during the Head Start years and into elementary school, the results from this dissertation provide a mechanism (i.e., service receipt) through which Head Start influences the home.

Cumulative risk matters for service use and parental involvement. The second key finding from my dissertation is that parents who have multiple risk factors are less likely to utilize parenting related services and be involved in their child's center-based education or care setting. Studies one and two examined predictors of service use and involvement, specifically demographic characteristics such as whether employed, whether single parent, and whether teen mom, and several background characteristics such as the prior quality of the home environment and maternal depression. Parents who had multiple risk factors did not take-up services related to parenting practices, nor were they involved in their child's center-based early childhood program. Centers may be struggling to reach parents with multiple risk characteristics or parents are simply too overwhelmed to take advantage of opportunities to become involved or to utilize parenting services.

One positive finding is that cumulative risk in terms of demographic characteristics was positively predictive of parents utilizing family well-being types of services (e.g., nutrition assistance, and education or employment supports). This suggests parents who do face multiple barriers are still able to connect with services that aim to improve their well-being either through providing the family with income or nutrition assistance, or by connecting parents with employment and education services.

Comprehensive services affect parenting practices and the home environment. Another key finding from this dissertation is that comprehensive services provided in center-based early childhood programs have a positive impact on the home environment. This suggests that centers are effectively connecting parents to services that are positively influencing the amount of academic activities and emotional warmth parents are providing to their children.

The analyses conducted in study three indicate that the various services types (parenting directed and family well-being services) uniquely predict different domains of parenting practices. Families who utilized services related to improving their well-being showed increases in the emotional warmth provided in the home, whereas take-up of parenting related services was associated with increases in the academic stimulation domain of the home environment. These two findings are aligned with developmental theories that argue that family stress is related the quality of the home environment (McLoyd, Mistry, & Hardaway, 2013; Mistry, Lowe, & Benner, 2008), *and* parental investments, such as attending a parent education class or parent support group, are associated with more inputs provided in the home environment (Conger & Donnellan, 2007; Yeung, Linver, & Brooks–Gunn, 2002).

Other recent studies are also demonstrating how two-generation programs can impact parents, such as through increasing parents' educational attainment (Sabol & Chase□Lansdale,

2014). These findings are the beginning of an evidence base using rigorous methods that demonstrate the impact of two-generation programs on parents and the home environment. Although the mechanism through which the connections to services happen is unknown, the results from this dissertation demonstrate that the renewed interest in two-generation programs (Haskins, Garfinkel, & McLanahan, 2014) is warranted, and services provided to parents are effective at improving the quality of the home environment.

Parental involvement is likely most important for low-income children. Results from the second study indicate that parental involvement was only associated with child and parenting outcomes for children in the HSIS sample. Parental involvement was positively associated with children's academic achievement, and parenting practices including the number of academic activities parents conducted at home, and the amount of cultural activities, such as museum visits the parents engaged in with their child. Because of the lack of association between parental involvement and child or parenting outcomes in the SECCYD, it is plausible that children from low-income families or families that are served by Head Start centers benefit the most from parental involvement. However, an interaction between low-income and involvement was not able to be tested in the SECCYD due to the small sample size, so it is possible this finding may not replicate across data sets. One potential reason for this association is that Head Start centers engage parents in more academic activities during the school day or provide direct instruction during parent education classes on techniques parents can use at home to incorporate academic activities for their child into their everyday routines.

Future Research

Although this dissertation provides ample evidence that parents are involved in children's center-based early childhood programs, and that comprehensive early education programs have a

positive impact on the home environment, many questions remain. First, despite the clear indication that parents are utilizing services and becoming involved in their child's care setting, it is not known *how* parents are becoming aware of services or volunteer opportunities. Several potential avenues include direct contact with center staff, such as a family service coordinator or classroom teacher, or informal conversations with other parents in their social network (Small, 2009). A future qualitative study could investigate how parents are becoming connected to services. Further understanding the methods through which parents are becoming involved or taking-up services will impact the way centers recruit or promote involvement activities and parent services.

Similarly, a more in-depth understanding of the content of services and participation activities is needed in order to explain why services and parental involvement have positive benefits. Future research could investigate the activities that parents are assisting with in classrooms or what a parent support group offers to parents. If we better understand what is happening during volunteer activities or when parents participate in parent education courses, we can better examine mechanisms through which change in the home environment is occurring. For instance, it is unknown if parents are changing their practices at home because of the information they are receiving from trained instructors or teachers, or if it is from other parents and the feeling of social support that accompanies being part of a group or social setting.

Another future research direction is to better understand parent needs. Although parents are taking up the offered services and are participating at high rates, it is unclear if all their needs are being met through center-based early childhood programs. If there are potential opportunities or services that parents are interested in, centers may be able to allocate resources away from

services that are not being utilized to services that are more likely to be used or differentially provide services based on risk/need.

A key finding from this dissertation is that taking-up services and supports, and being involved in children's center-based early learning program leads to more positive parenting practices. However, it is not known if the changes in the home environment lead to improved child outcomes or if the effects on parenting practices are sustained long-term. An important future direction for policy is to examine if impacts in the home translate into increased school readiness skills or academic and socio-emotional gains later in a child's life. If the impacts in the home do translate to child outcomes or to long-term improvements in parenting practices it is likely that more center-based early childhood programs will want to provide parents with services or opportunities to become involved. Also, more funding may be needed from federal, state, or local agencies for parent components, particularly if the impacts on children from the parent services/involvement activities are larger than the ones from children participating in high-quality center-based care alone.

Even if parental involvement and service do lead to improved child outcomes, it is necessary to understand the cost of offering services to determine if the benefits outweigh the cost. Few benefit-cost analyses exist for early childhood education programs (Karoly, Greenwood, Everingham, Hoube, & Kilburn, 1998), and none to my knowledge examines the cost of offering comprehensive services. This key component of Head Start and Early Head Start programs constitute an important next step is understanding the costs associated with providing these services to parents.

Practice and Policy Implications

The results of the dissertation speak primarily to Head Start and Early Head Start programs. First, it is apparent that programs are meeting their stated aims of providing comprehensive services to families (Puma et al., 2010). Parents with the most need are participating in services aimed at improving their well-being; however, parents who have several risk factors are not participating in their child's schooling nor are they taking advantage of parenting related services. A practical implication of this finding is for centers to provide parenting services in conjunction with other types of services or to provide parenting services, such as support groups at multiple times/locations to better serve the most disadvantaged parents.

Second, the results indicate that services are effective at improving the home environments. A policy implication of such finding is that other center-based care settings, such as universal preschools may want to work to include parental service and volunteer opportunities (if they do not already). Policymakers could provide an avenue for this by possibly including funding for a parent component as part of the early learning grants that are becoming available. Also, community child care centers, particularly those that serve low-income families can apply these findings by offering parental services or modeling their involvement activities after Head Start and Early Head Start programs.

An important finding from this dissertation is that no matter the age of the child, families' benefit from services. Even though it is likely that many centers that serve 3- and 4-year old children encourage parental involvement, it is less likely that infant/toddler center-based programs are offering services to parents. The findings from this dissertation indicate that programs that serve the youngest children should still be working with parents to meet their needs and provide them with parenting related and family well-being services.

Conclusion

With a renewed interest in two-generation programs it is important to understand the ways in which programs are affecting children not only directly, but also indirectly such as by promoting positive parenting practices. Given the recent national, and state attention on early childhood education, determining the benefits of center-based early childhood programs is particularly important for future funding and for understanding the effectiveness of comprehensive services. This dissertation aimed to address this gap in the literature by examining the role center-based early childhood programs that children are in from birth to age 5 have on positively influencing parenting practices, and to a lesser extent child development. The findings from each study within this dissertation demonstrate that parents are taking-up services and becoming involved in their child's center-based early childhood programs, and that doing so benefits the home environment and parenting practices. Early childhood programs and policies should work to further incorporate parents into programming, and provide them with services and supports.

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