Essays on Childhood Disability, Policy, and Family Outcomes

By

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Abstract

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Despite an increase in the number of families raising a child with an identified disability, the evidence that these families have unique and pressing needs for supports, and the existence of some supportive policy infrastructure, the current quantitative evidence base about how parents of children with disabilities are faring is limited. In three separate empirical papers, I examine questions that broadly seek to understand how raising a child with a disability impacts parents and the role of policy in parents' lives. In two of the papers, I account for policy explicitly in my empirical model or in the study design; in the third, I discuss how findings could inform policy. Using three different nationally-representative data sets and a variety of quasi-experimental methods, the studies focus on different parental outcomes that span the range of childhood.

The first paper uses a two-pronged approach to understand whether families with young children with disabilities are able to access child care. I find that children with disabilities are more likely to be in nonparental care, more likely to be in care part-time, more likely to use center-based care, and more likely to pay less for care than typically-developing children. Next, *I examine whether changes in maternal employment rates at kindergarten are similar for moms raising children with and without disabilities and find that, if anything, moms of children with disabilities are entering the labor force at lower rates than other moms. In the second paper, I use a variety of models and find that the Individuals with Disabilities Education Act increases parental attendance at conferences but has no overall effect on parental engagement. I find little evidence of impact on parental satisfaction with children's schools. Findings are consistent across racial and socioeconomic subgroups. In the final paper, I use propensity score matching and event history methods to examine how the risk of parental relationship dissolution differs by a child's special needs status. I find an overall increased risk of relationship dissolution for parents raising a child with special needs; this risk is statistically significant for cohabiting parents but not for married parents.*

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Chapter 1. Introduction and Dissertation Overview

I. Introduction

Estimates of the proportion of children in the United States who have a disability or special health care need range from four to nine percent with most centering around seven to eight percent (Halfon et al., 2012). Recent decades have seen an increase in the number of families in the United States who are raising a child with an identified disability or special healthcare need. By one estimate, the overall prevalence of childhood disability increased by over 15 percentage points in the first decade of the 2000s, driven primarily by an increase in identified neurodevelopmental and mental health conditions (Houtrow et al., 2014). A recent study reinforces this, finding a similar increase (16-17 percentage points) from 2009 to 2017 in the overall prevalence of developmental disabilities alone (Zablotsky et al., 2019). Though the factors propelling this increase are complex, the result is that a growing number of families may face increased caregiving and economic demands that can stem from raising a child with a disability (Stabile & Allin, 2012).

On average, families raising children with disabilities are more likely to be economically vulnerable across a variety of measures than families raising typically-developing children. For example, families with children with disabilities are more likely to live in poverty (Parish & Cloud, 2006), more likely to be food insecure (Sonik et al., 2016), and more likely to experience an episode of material hardship overall (Parish et al., 2008) than families with typically-developing children. Families also face increased costs associated with caring for a child with a disability, such as higher out-of-pocket healthcare costs, which can be particularly burdensome for families with children with severe health conditions (Lindley & Mark, 2010). In addition to the direct economic costs, parents of children with disabilities also face higher indirect costs. Families report spending a larger portion of their time caring for children with disabilities, including managing appointments and other necessary services, than do families of typically developing children (Stabile & Allin, 2012). Relatedly, parents of children with disabilities, and particularly mothers, have lower rates of employment, and, when they do work, tend to work fewer hours than parents of typically developing children (Powers, 2001). Interviews with parents suggest that families have unique needs for specialized supports, including training related to their child's health, peer support from other families, and advocacy resources (Heiman, 2002).

There are a number of social welfare policies that support families raising children with disabilities. While some policies are targeted directly to children with disabilities and their families, such as the childhood Supplemental Security Income (SSI) program and the Individuals with Disabilities Education Act (IDEA), others, including the Child Care Development Fund (CCDF) and Head Start, are intended to support the broader population of children and families but include mechanisms to address the unique needs of children with disabilities and their families. Policy supports range from programs that provide direct financial assistance to families—like SSI—to those that increase accessibility—like the Americans with Disabilities Act (ADA)—to those that fund other supports for families—like respite care and Medicaid Home and Community Based Service (HCBS) waivers; some are intended to fulfill a blend of these functions. Following the general scheme of the social safety net in the United States, relevant policy supports are fragmented and have a variety of funding mechanisms and oversight.

Broadly, however, their intent is to support the growth and development of children with disabilities, and, to some extent, support the children's parents and families.

Despite the increase in families raising a child with an identified disability, the evidence that these families have unique and pressing needs for supports, and the existence of some social welfare infrastructure intended to provide supports, the current quantitative evidence base about how parents are faring and the role of policy is thin. Though there is some relevant work in both the family policy and disability literatures that attends to related questions, each has largely focused elsewhere. Research in the broader family support realm is often centered on low-income or other vulnerable families, without specific attention to the unique needs of families raising children with disabilities. Likewise, much of the related disability literature is interested in child development and well-being as well as clinical interventions that may support the child and family, with less explicit attention to policies and related family outcomes. Thus, as the incidence of identified disability in childhood continues to grow, the United States finds itself confronting a significant policy issue and knowing little about how raising a child with a disability may impact parents or the role of current policy in family outcomes.

This dissertation aims to strengthen the existing evidence base. In three separate empirical papers, I examine questions that broadly seek to understand how raising a child with a disability impacts parents and the role of policy in parents' lives. In two of the papers, I account for policy either explicitly in my empirical model or in the study design; in the third, I discuss how findings could inform policy. Using three different nationally-representative data sets and a variety of quasi-experimental methods, the studies focus on different parental outcomes that span the range of childhood. Taken together, these papers can broaden understanding of how raising a child with a disability can affect parents across a variety of domains as well as the ways in which families' support needs are or are not being met with current policy.

II. Dissertation Overview

Chapter 2 aims to shed light on child care access for children with disabilities by examining both child care use and potential differences in employment patterns at kindergarten enrollment for mothers raising children with and without disabilities. Using the Department of Education's Early Childhood Longitudinal Study-Birth Cohort (ECLS-B), I first use regression analyses to examine how and whether child care use differs at age four by disability status. I then employ a difference-in-difference framework to compare rates of maternal employment before and after kindergarten enrollment for moms of children with and without disabilities. The first set of analyses suggests that children with disabilities have higher likelihoods of being in child care overall, and, particularly, in part-time and center-based care than typically-developing children. The difference-in-difference analysis finds that moms raising children with disabilities do not increase employment at statistically significantly different rates than other mothers as their children enter kindergarten, and, in fact, there is some evidence that they enter the labor force at lower rates than other mothers. These findings may suggest that federal policies are supporting access to child care for children with disabilities. I also discuss the ways in which these findings may indicate overall shortcomings in the broad package of supports available to families with young children with disabilities.

Moving forward from the early childhood years into elementary school, Chapter 3 examines the role of IDEA in parental engagement and satisfaction with children's education. One of the primary goals of IDEA is to ensure parents of children with disabilities have a voice in their child's education, yet much of the current literature suggests it is falling short of this goal, particularly for parents of color and low-income parents. To examine this relationship, I employ a variety of analytic methods—including instrumental variables, fixed effects, and regression analyses—and use data from the Early Childhood Longitudinal Study-Kindergarten 2011 cohort (ECLS-K 2011). I also examine differences by parental race and income category. Findings are largely null but do indicate an increased rate of conference attendance for parents of children who receive services under IDEA; findings also suggest little difference by race or socioeconomic status. I discuss implications for policymakers as they consider how best to support families with students who receive special education services.

Chapters 2 and 3 have study designs that focus on specific policies—or clusters of policies—and understanding how these policies work for families. Chapter 4 departs from this and aims to broadly inform understanding of family structure and implications for policy. Specifically, this chapter examines whether the experience of non-normative parenting—as defined as parenting a child with a special healthcare need or disability[1]—is associated with increased risk of relationship dissolution, and how this compares to parents of typically-developing children. This study uses event history methods combined with propensity score matching and data from the National Longitudinal Survey of Youth 1997 cohort (NLSY97) to better understand how increased caregiving responsibilities may impact relationship dissolution for married and cohabiting parents. I find that non-normative parenting increases the risk of dissolution, and that this risk is statistically significant for couples cohabiting at birth though not

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[1] The definition of disability and related concepts is a key methodological concern for this dissertation and related work. In each chapter, I take care to carefully describe how disability is defined as well as how the operationalization may bias estimates.

married couples. I discuss how policymakers and social workers may wish to account for this increased risk in relevant supports and programs.

I conclude with chapter 5 in which I summarize findings for each study, underscore patterns evident across the studies, and discuss overall implications for policy and social work research broadly. Given the relatively small number of quantitative studies focused on family outcomes for children with disabilities and the role of policy, I highlight the ways in which this dissertation adds to the current evidence base through use of quasi-experimental methods and nationally-representative survey data. I also suggest important considerations for future research, particularly related to methodological concerns.

Given the non-trivial number of families raising children with disabilities and the limited empirical evidence about family supports, studies that investigate how caregiving for a child with a disability may impact parental outcomes and how policy may support parents are needed to begin to build an evidence base for policymakers. Taken together, findings from this dissertation underscore the importance of understanding the complementary nature of supports for families and the ways in which availability of supports in one area may influence another. This dissertation also calls attention to the heightened needs of families raising children with disabilities; policymakers and social workers must continue to consider how best to serve these families as well as to better understand the ways in which current supports may or may not be adequate.

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Chapter 2. Child Care for Families Raising Children with Disabilities: Equitable Access?

I. Introduction

The number of families raising young children with identified disabilities has grown in recent decades. Using the example of a single diagnostic category, Boyle and colleagues (2011) find a seventeen percentage-point increase in the proportion of children with developmental disabilities (defined broadly) born in the United States between 1997 and 2008. This growth means that a significant number of families are now raising children with disabilities; Halfon and colleagues (2012) estimate there are currently 1.2 million children under the age of six in the United States who have a chronic condition that may reflect an underlying disability, representing a prevalence rate of around five percent.

This increase in the number of children with disabilities has important implications for social safety net programs; families caring for children with disabilities are at increased risk of economic insecurity due to increased costs and caregiving needs. Given this increase in recognized disabilities among children, it is not surprising that the childhood Supplemental Security Income (SSI) program has been affected, prompting concerns about growth in the program (Aizer et al., 2013; Office of the Assistant Secretary of Planning and Evaluation, 2015). The childhood SSI program is the largest federal program intended specifically to provide financial support for families raising children with disabilities. Childhood SSI is a means-tested program that provides modest monthly benefits—up to $783/month in 2020—to children who qualify based on strict medical criteria, in addition to income and asset eligibility requirements[2] (Social Security Administration, 2020).

That support is especially needed because families raising children with disabilities face greater constraints in balancing employment and caregiving responsibilities, resulting in decreased labor market participation for these parents, particularly mothers who are often responsible for a majority of the caregiving (e.g., Parish & Cloud, 2006; Scott, 2018; Stabile & Allin, 2012). Easier access to quality care could help increase labor market participation. It may also have benefits for children; participation in high-quality early care and education settings for children with disabilities can also support healthy development (Odom et al., 2012). Yet, the policy and research literature has largely overlooked the role of overlapping and complementary federal early care and education policies in supporting labor market participation for mothers of children with disabilities.

This study seeks to understand the current landscape of child care access and arrangements for young children with disabilities in supporting maternal employment, indirectly shedding light on the role of the current set of child care policies in promoting access to care. If families' need for child care is met by existing policies and programs and families are able to maintain consistent employment, then families' use of public benefits, including childhood SSI benefits, may be reduced as their household income increases. Describing the current child care use and employment patterns of mothers who have young children with disabilities can inform policymakers and researchers about the extent to which the current menu of federal policies is

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[2] For children who live at home with a parent who is not also an SSI recipient, a portion of the household's earned, and in some cases unearned, income is considered available to the child through a process called *deeming*. For more information, see https://www.ssa.gov/ssi/spotlights/spot-deeming.htm.

supporting labor market attachment and thus the potential for economic self-sufficiency for families raising children with disabilities.

II. Background

Access to affordable and appropriate child care is a crucial employment support for all families, one that may be particularly salient for families with young children with disabilities, such as childhood SSI recipients. Indeed, parents raising children with disabilities, and mothers in particular, may face greater challenges to labor market participation than the general population. Parents of children with disabilities have a difficult time locating appropriate child care for a host of reasons, including the limited supply of trained caregivers, perceived discrimination, additional costs, and difficulty integrating needed services and care (Ceglowski et al., 2009; DeVore & Bowers, 2006; Knoche et al., 2006; Weglarz-Ward & Santos, 2018). Thus, access to child care remains difficult, despite federal policies intended to support access and affordability. Raising a child with a disability is already associated with economic disadvantage; difficulty accessing early care may exacerbate economic vulnerability by limiting parental employment (Parish & Cloud, 2006).

Access to child care may be an overlooked yet key support that could help support families' financial stability, particularly families who receive SSI benefits. In 2017, 1.2 million children under the age of 18 received childhood SSI benefits (Social Security Administration, 2018). Children served by the SSI program are, by definition, more economically disadvantaged than the general population of children and the overall population of children with disabilities. The number of children served by the program has increased in recent decades, although it has begun leveling off (Romig, 2017). Still, multiple stakeholders have expressed concern about growth in the program (e.g., Joffe-Walt, 2013; Office of the Assistant Secretary of Planning and Evaluation, 2015) as well as about how SSI receipt affects the employment trajectories of recipients' parents (Deshpande, 2016). This concern is particularly acute for families with very young children; approximately 18% of childhood SSI recipients in 2018 were under the age of six (Social Security Administration, 2018). Employment for parents of these children is likely at least partially dependent on their parents' ability to find appropriate child care. Given the relatively low monthly benefit levels of SSI payments, supporting parental employment for families through the availability of child care may improve a family's overall economic well-being.

A. Conceptual Framework

The interdependence of employment and child care is underscored by Meyers and Jordan's (2006) child care accommodations framework. Meyers and Jordan suggest that families' use of child care is best understood as a series of accommodations to a variety of structural factors, including the labor market, available resources, and access to child care. This framework also highlights the importance of policy in determining some of the accommodations families must make. For families raising children with disabilities who likely face a different pattern of accommodations than do families of typically-developing children, policy may be particularly salient. In the review of the literature that follows, we outline accommodations that families may be making due to their child's disability as well as other important contextual factors that may impact family's child care use and employment.

B. Review of the Literature

Families with children with disabilities are more likely to live in poverty (Parish & Cloud, 2006) and more likely to experience an episode of material hardship than families of typically developing children (Parish et al., 2008). In part, this finding may be a result of the increased costs associated with raising a child with a disability. The cost of high-quality child care has increased for all families over the past decades; in some cases, the increase has outpaced the rise in the cost of college tuition (Child Care Aware, 2017; Laughlin, 2013). The economic burden of care may be particularly difficult for families raising children with disabilities. In qualitative studies, families raising children with disabilities report high cost of care as a barrier to locating appropriate, quality care for their children (Glenn-Applegate et al., 2010; Weglarz-Ward & Santos, 2018); some families report that providers charge increased fees to care for children with disabilities (Ceglowski et al., 2009). These increased fees come on top of other additional costs, such as higher out-of-pocket healthcare costs, related to raising a child with a disability (Lukemeyer et al., 2000; Mitra et al., 2017; Shattuck & Parish, 2008). Using the National Survey for Children with Special Health Care Needs, Shattuck and Parish (2008) estimate that families raising children with disabilities incur an additional $1,000 in child-related costs annually (2018 dollars) on average. This average, however, disguises the high costs faced by families raising children with severe disabilities; using a more recent version of the same survey, Lindley and Mark (2010) find that over 20% of families with children with disabilities had additional child-related costs of more than $1,285 annually (2018 dollars).

In addition to the economic challenges, families with young children with disabilities report struggling to find care that can accommodate their children's needs; these challenges include difficulty coordinating care with other needed services, perceived discrimination and discomfort on the part of caregivers, and lack of appropriate therapeutic or other support services (Booth-Laforce & Kelly, 2004; Ceglowski et al., 2009; Knoche et al., 2006; Weglarz-Ward & Santos, 2018). In interviews, parents report that they perceive their child care options as limited due to the difficulty of integrating care with outside services (Booth-Laforce & Kelly, 2004) or finding providers who provide supports, such as physical therapy or speech therapy, to meet their children's specific needs (Glenn-Applegate et al., 2010).

One major concern that could be addressed by policy is the lack of caregivers trained in early childhood inclusion. A joint policy statement from the Departments of Health and Human Services and Education explicitly notes lack of training as a major barrier to inclusion (US Departments of Health and Human Services and Education, 2015). This concern is also borne out by several studies, from both the parent and provider perspectives (Ceglowski et al., 2009; Grisham-Brown et al., 2010; Weglarz-Ward et al., 2019).

Despite these challenges, children with disabilities are enrolled in early care and education settings. They often start care later in life and may experience a greater number of care transitions or a greater number of arrangements overall (Booth & Kelly, 1999; Ceglowski et al., 2009; DeVore & Bowers, 2006; Knoche et al., 2006). Several studies of low-income populations find no difference by disability status in child care setting, specifically between center-based care and home-based care (Parish et al., 2005; Wall et al., 2006). Qualitative studies suggest parents raising young children with disabilities prefer informal care settings (Booth-Laforce & Kelly, 2004; Ceglowski et al., 2009). However, more recent analyses of nationally representative data suggest children with disabilities may use center-based care at higher rates than other children, and that differences in settings may vary by the child's age (Costanzo & Magnuson, 2019; Sullivan et al., 2018).

The difficulty of finding appropriate and affordable child care may compromise parents' ability to find and keep employment. The current study focuses particularly on maternal employment for a few reasons. First, by some estimates, children with disabilities live in single-parent, mother-headed households at disproportionately higher rates than typically-developing children (Cohen & Petrescu-Prahova, 2006). Also, in two-parent, opposite-sex households, mothers often bear the majority of the caregiving responsibilities, which can result in a "motherhood penalty" in wages and labor market participation (e.g., Budig & England, 2001; Corell et al., 2007; Staff & Mortimer, 2012); some evidence suggests that this inequality in carework may be heightened in families raising children with disabilities (Baker & Drapela, 2010; Scott, 2018). Labor market attachment for mothers of children with disabilities is consistently lower than that of mothers of typically developing children, with mothers of children with disabilities having a decreased likelihood of overall employment and increased levels of part-time work (e.g., DeRigne & Porterfield, 2010; Loprest & Davidoff, 2004; Powers, 2001). Evidence suggests that many factors influence the relationship between child's health and maternal employment. Several studies find that the definition and severity of disability impact the magnitude and significance of the estimated effects (e.g., Brandon, 2000; DeRigne, & Porterfield, 2010; Lemmon, 2015; Loprest & Davidoff, 2004; Wasi et al., 2012). Likely as a result of inconsistent diagnosis criteria and groupings, the evidence is mixed on the type of disability that has the greatest effect on employment, with various authors pointing to physical disabilities (Lemmon, 2015; Wasi et al., 2012) and autism (DeRinge & Porterfield, 2010), among others. Severity, however it may be defined, is also implicated in the magnitude of the effect on maternal employment (e.g., Brandon, 2000; DeRigne & Porterfield, 2010). Brennan and Brannon (2005) demonstrated that the greater the symptomology of the illness, the larger the impact on parental employment due to less frequent school attendance and less availability of adequate care. Somewhat contrary to the general findings about severity, Powers (2003), using the 1985–1993 SIPP panels with three different definitions of disability, found the most expansive (i.e., less severe) definition rendered the greatest effect on maternal employment, though only for single-mother headed households, lowering the probability of beginning employment by 21 percentage points over a two-year period.

The relationship between childhood disability and parental employment is slightly more nuanced for SSI beneficiaries. Specifically, SSI payments may allow parents to forego labor market participation and provide specialized care for their children or SSI receipt may enable parents to pay for specialized care or have greater flexibility in the decision to work or not. The findings in the literature are decidedly mixed, though most tend to show a negative relationship between SSI receipt and parental employment (DeRigne & Porterfield, 2010). Guldi and colleagues (2018) find that SSI eligibility—though not necessarily SSI receipt—reduces maternal labor supply from full to part time. A recent study using Social Security Administration (SSA) administrative data found a similar relationship with parental earnings; specifically, when a child was removed from SSI, parents responded by increasing earnings (Deshpande, 2016). However, some evidence has found little or no effect on parental earnings (Duggan & Kearney, 2007).

Of central importance to this study is how maternal labor market participation is affected in the early childhood years, given the need for early care and education prior to enrollment in elementary school. Porterfield (2002) finds a stronger effect of a child's disability on employment or hours worked for mothers of young children. However, other studies find that the child's age does not affect the relationship (Wasi et al., 2012). Notably, studies that consider child's age often consider it merely as a confounder or conduct analyses by age group and do not allow the relationship to vary by age; thus, there is no current evidence as to whether and how the relationship between maternal labor supply and childhood disability varies by child's age, and, particularly, how it varies from early childhood to enrollment in kindergarten. This study seeks to fill that gap.

C. Policy Context

Like many areas of federal policy in the United States, child care supports are comprised of a variety of funding streams overseen by a mix of authorities. For this study, we focus on the constellation of policies intended to influence access to child care for families of children with disabilities: (1) subsidies available through the Child Care and Development Fund (CCDF); (2) Head Start and Early Head Start; and (3) the Individuals with Disabilities Education Act (IDEA). The policy mechanisms differ; some are intended to lower economic costs, some to guarantee access, and some to do both. In this study, we are interested broadly in whether this package of policies creates access to care and do not focus specifically on the role of any one policy or mechanism. Following the accommodations framework, we think about this package as essential for understanding the context in which families are using child care. Thus, we briefly describe the policies to further motivate the analysis and provide context for study design, findings, and discussion.

The Child Care and Development Fund (CCDF) is a block grant program that provides child care subsidies to low-income parents who are employed. Recent reauthorizations require states to give priority for funding to children with disabilities (US Department of Health and Human Services, 2016) and develop strategies to increase the availability of high-quality care for children with disabilities (US Department of Health and Human Services, 2015), though some states were already prioritizing children with disabilities prior to these requirements (US Department of Health and Human Services, 2003). One recent study using the Early Childhood Longitudinal Study, Birth Cohort (ECLS-B) found that subsidies increased use of nonparental care, particularly center-based care, for children with special healthcare needs (Sullivan et al., 2018).

Like CCDF, which may offset costs for families, Head Start and Early Head Start are required by statute to set aside 10% of their enrollment slots for young children with disabilities (45 CFR §1308). IDEA may allow access to care for children who qualify both by ensuring receipt of required services and by providing necessary care at no cost to the family. IDEA mandates inclusion for children with disabilities in all education settings, including early childhood and child care (US Department of Education, 2016). IDEA also provides funding for nonparental care for children with disabilities for the portion of the day when the child receives services, defraying some of the cost of care (U.S. Library of Congress, 2016). Unlike subsidies and Head Start and Early Head Start, which are income limited, children from households across the income distribution are entitled to services via IDEA.[3]

Though we focus on access to care for children with disabilities, the general child care environment for all families provides important context for the study, and, as the accommodations framework suggests, all families are making a series of contextual choices. In particular, the costs of child care are high for all families, and many parents of typically developing children also struggle to locate appropriate, affordable care (Laughlin, 2013). Some of the policies intended to support children with disabilities also apply to children in the general population. Specifically, both Head Start and child care subsidies are available to typically developing children from low-income families. However, use of subsidies is limited; estimates of utilization range from 7 to 34% of income-eligible families (Forry et al., 2013). In recent years, interest in implementing public preschool programs has grown. In 2018, 44 states provided publicly funded preschool for some children for some portion of the day; still, a limited number of children enroll in public preschool—approximately one-third of all four-year-olds and just under six percent of all three-year-olds (National Institute for Early Education Research, 2019). Availability of high-quality care for very young children—infants and toddlers—has lagged that of preschoolers (Lally et al., 2003).

Following Meyers and Jordan's accommodations framework, this study examines the extent to which parents of children who have disabilities have differing child care arrangements

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[3] There is essentially no empirical work examining interactions between child care programs and childhood SSI, though the program policies are explicit about some of the eligibility relationships. For example, receipt of SSI qualifies a child for enrollment in Head Start or Early Head Start (Office of Head Start, 2019). SSA policy explicitly states that subsidies for child care received through CCDF should not be included as countable income in determining SSI eligibility (20 CFR 416.1102, 416.1103, and 416.1124(b)).

and maternal employment patterns compared with parents of typically-developing children. Though the research literature has focused on maternal employment overall and has provided some indication of the difficulty families have in accessing early care and education, evidence about access to early care and employment in the early years is currently lacking. In particular, little is known about the efficacy of the package of policies including CCDF, Head Start and Early Head Start, and IDEA in fulfilling its goal of ensuring free and appropriate access to early education and care for young children with disabilities. Nor is it known whether this access is, in turn, supporting parental employment. One recent study finds a relationship between subsidy eligibility and child care use (Sullivan et al., 2018). However, no current national study attempts to understand the effect of the current constellation of policies related to early care for children with disabilities on parental employment and economic stability. Understanding whether the current landscape of complementary policies and programs are supporting families of children with disabilities as intended is salient for policy makers.

III. Data and Methods

We use data from the Department of Education's ECLS-B. The ECLS-B is representative of children born in the United States in 2001 and designed to provide information about children's health and development from birth through enrollment in kindergarten. Data are collected from parent interviews, which were conducted at four or five time points, depending on the child's year of kindergarten enrollment. Parents of 10,700 children[4] born in 2001 were interviewed in the first interview (wave 1), around the child's nine-month birthday. The second interview (wave 2) was intended to coincide with the child's second birthday; the third interview

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[4] As required by the Department of Education, we present only weighted proportions and round all sample sizes to the nearest 50.

(wave 3, or the preschool wave) occurred during academic year 2005–2006. Parents were also interviewed during the 2006–2007 academic year (wave 4, or the kindergarten 2006 wave), which is the year 75% of the sample began kindergarten. Because states have different age cutoffs for kindergarten enrollment and because age eligibility may not follow the calendar year, some children did not begin kindergarten until the following school year. Parents of these children (approximately 1,550) were interviewed both during the first kindergarten wave (2006–2007) and again the following academic year (wave 5), when their children enrolled in kindergarten for the first time (Snow et al., 2009). We include children who entered kindergarten in both waves and control for year of kindergarten entrance in analyses. Interviews for the last three waves of data collection could have occurred at any time between September and March of the academic year of collection; we also account for this timing in our analysis.

The ECLS-B data are well-suited for the current study because they are nationally representative as well as longitudinal, alleviating endogeneity concerns that may arise with cross-sectional data. The survey collected detailed information about children’s health and development and about parental employment. In addition, the ECLS-B includes a relatively large sample of children with disabilities, thereby relieving some concerns about statistical power or sample size in other datasets. In this study, we use data from the parent interviews, which contain detailed information about (1) diagnosed health conditions, (2) child care arrangements and use, (3) receipt of Individualized Education Programs (IEPs),[5] and (4) parental employment.

The child’s mother was the respondent in a majority of the cases across waves. Because the mother’s employment is most likely to be impacted by the child’s health status (Porterfield,

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[5] An IEP is the legal document that specifies the specialized services a child is eligible for under IDEA.

2002; Lemmon, 2015), we focus on maternal employment and limit our analytic sample to children whose mother was present in the household and completed the survey in the focal child's kindergarten year, which could have been either 2006–2007 or 2007–2008 (N=6,900).[6] To reduce bias, we also exclude children who were diagnosed with a disability during their year of kindergarten enrollment from our difference-in-difference analysis, leaving an analytic sample of 6,700 children. When presenting descriptive statistics, we use weights suggested by the Department of Education to adjust for the complex sampling design and nonresponse. Because our models account for endogenous sampling concerns, we present multivariate results using unweighted models with robust standard errors; however, results are robust to the inclusion of weights (Solon et al., 2015).

In addition to the main analysis, we also used multiple imputation with chained equations (MICE) to account for missing data and disproportionate nonresponse by disability status. As a robustness check, we conduct all analyses on the analytic sample with imputed data for missing responses. We also run models on the full ECLS-B sample (N=10,700) with imputed data for all missing data, including missing waves.[7]

A. Measures

[TABLE 2.1]

Disability. The key independent variable is the focal child's disability status. Parents were asked in each wave of interviews whether the focal child had been diagnosed with any of a variety of health conditions. The conditions varied by interview wave but generally included

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[6] Approximately 100 cases do not have a household mother when the child is in kindergarten; these are excluded from the sample. A very small number of cases did not enroll in kindergarten by the 2007 wave (Snow et al., 2009); these cases are also excluded from our sample.

[7] We present the MICE model results for our difference-in-difference analysis in Appendix Table 2.5. Information on our MICE models, including additional analytic results, is available by request.

measures of intellectual disability, developmental delays, autism, issues with mobility, mental health diagnoses, speech and language conditions, blindness, difficulty hearing, and other conditions. One of the major methodological considerations with this study, as with all studies concerned with disability, is the imprecise and heterogenous nature of the disability construct, as outlined in Table 2.1. The table also showcases the consequential—and challenging—nature of measuring disability in this and other common data sets. At the high end of prevalence estimates, using the broadest definition, which includes measures for children diagnosed with asthma and children who require vision correction with glasses, 44% of the sample has a disability diagnosis. The proportion of the sample in each wave with a disability begins at about 6% at the nine-month wave and increases to 16 to 22% in the kindergarten waves; these are children whose parents reported that they had been diagnosed with a specific health condition in the previous year. About 23% of the sample has a disability in at least one wave prior to kindergarten, even if they do not report having a disability in later waves; 8% have a disability continuously once they report having a disability (and have a diagnosis prior to kindergarten enrollment). The proportion of children who receive intervention services or who have IEPs is substantially smaller than the proportion who report having a disability. Approximately 6% of the sample had an IEP in place prior to kindergarten enrollment and also reported receiving early intervention services. We also examined the distribution of some of the disability categories of the sample; communication-related diagnoses are the largest group represented (12% with a diagnosis before kindergarten) and intellectual disability is the least represented (less than 1%). Note that the list is not exhaustive and thus the estimates do not total the overall measures.

We present results using three binary measures of disability, as measured before the child's enrollment in kindergarten: (1) a continuing measure of disability, (2) a measure of disability in any wave, and, for some models, (3) an indicator for having an IEP. We exclude diagnoses of asthma and difficulty seeing in the first two measures for a few reasons. First, these conditions are often relatively manageable and may not require time-intensive care from a parent or child care provider. Second, neither is explicitly covered under applicable federal policies. Finally, less than 1% of children with asthma or difficulty with vision report receiving regular special services. The first measure—continuing disability—indicates that once the parent reports that the child has a disability, the disability continues to be reported in each subsequent interview. We restrict this measure to children whose disabilities were identified prior to kindergarten enrollment in an attempt to disentangle diagnostic and parental employment timelines. The second measure—disability in any wave prior to kindergarten enrollment—is intended to be a broad measure of whether a parent ever reports the child has a disability in any wave of data collection. Though it is likely this measure biases the estimate of the number of children with disabilities upwards, the parent survey asks whether a child has been diagnosed since the previous survey, so it is also possible that the previous measure of disability does not capture parents who no longer report the condition in subsequent interviews based on the wording of the survey.

We select these measures for a few reasons. First, given the difficulty in measuring disability, taken together, the measures may help bound the estimated impact of having a child with a disability on child care access and parental employment. If the definitions exist on a spectrum of severity, children who are identified as having a continuing disability may represent an upper bound of the effect of having a child with a disability while the other measure—disability in any wave—may offer a lower bound; the second measure may capture children with less severe conditions or temporary conditions that may be less likely to influence child care access. Additionally, these measures may estimate the effect of two different aspects of disability. While the first measure—continuing disability—captures children with an ongoing health condition, the second includes children who may have experienced a health shock or whose health condition may have improved. We use IEP receipt in our analyses because of its policy relevance; children with IEPs are receiving services under IDEA. Thus, estimates for this measure help us understand the role of IDEA in child care access and parental employment.

Child Care Arrangements. One of our primary outcomes of interest is child care arrangements. We employ multiple of measures of child care use in order to broadly understand families' child care use patterns and gain a better understanding of the accommodations context that may be influencing these patterns. First, to determine whether a child is in regular nonparental child care, we use a binary indicator for parental report of regular nonparental care at least ten hours each week. We are also interested in understanding patterns in the length of time children are in nonparental care each week. We use a continuous measure of the number of hours each week a child is typically in nonparental care, across all arrangements. We also use binary measures for full-time care, which includes children in nonparental care for more than 30 hours each week, and part-time care, which includes children in care at least ten hours but less than or equal to 30 hours each week. Given public funding for and emphasis on access to center-based care settings, investigating patterns of arrangements is also important to understand how policy may be creating access. Thus, we include measures of the child's primary care arrangement, defined as the arrangement in which the child spends the most time each week. We define the arrangements as informal care or relative care if the child is in care by a relative, regardless of the location of the care, or a nonrelative in the child's home; home-based care if the child is in care with a nonrelative at a location other than the child's own home (e.g., in-home providers); and center-based if a child is in care at a child care center or preschool. We also include a measure for whether the child is ever enrolled in Head Start. Children in different arrangements for equal time default to center-based care first (due to its policy relevance), then home-based or informal care. Finally, we look at the cost of care for families, both annually and hourly. In some models, we also use a binary indicator for whether a child is receiving a child care subsidy; the indicator is based on a parent's report that an institution of some kind is helping with child care payments, or a parent's report of paying no fee for home-based or center-based care (with the exception of Head Start). Thus, this indicator is not a precise measure of subsidies received under CCDF.

Employment. Another key dependent variable is parental employment, with a focus on maternal employment specifically as previously described. We use several measures of employment in this analysis. The first is a binary measure of whether a child's mother is employed at the time of the survey, regardless of the number of hours worked. We also include binary indicators for full-time employment (at least 35 hours per week) and part-time employment. In addition, we include measures of the continuous hours worked by the household mother respondent in the last week and total number of hours worked by all parents in the household.[8] In some models, we also include a binary indicator for household father

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[8] These analyses are restricted to households in which the household mother was the survey respondent.

employment. We focus on employment outcomes at two time points: employment during the preschool wave (wave 3) and employment during the child's first year of kindergarten enrollment. Since the year of kindergarten enrollment varies across the sample, this measure could be employment at wave 4 for children who first enrolled in kindergarten in wave 4 or employment at wave 5 for children who first enrolled in wave 5. We account for these differences with a binary indicator for year of entrance.

Covariates. We include covariates that are likely related to either child care and disability or parental labor supply and disability. For the child care models, these covariates include indicators of the child's race and ethnicity (white, Black, Latinx, or other race) and sex and a four-category indicator for household income-to-poverty ratio, adjusted for household size (below 100% of the 2005 federal poverty threshold, between 100% and 200% of the threshold, between 200% and 400% of the threshold, and above 400%). Models predicting parental employment use the mother's race instead of the child's, a control for whether the mother was employed in the 12 months prior to the child's birth, a measure for whether the child is homeschooled or attending half-day kindergarten, the year the child entered kindergarten, and the quarter in which the interview occurred. All models include a categorical indicator of highest parental education level, an indicator for single-mother households, the number of children under six in the household, the number of other children in the household, the number of nonparental adults in the household, an indicator for poor or fair maternal health status, and an indicator for urbanicity. Each model also includes state fixed effects.

Ideally, we would also account for employment in our child care analyses and household economic status in our employment analyses. However, there are clear endogeneity concerns. As the accommodations framework emphasizes, households are unlikely to make child care and parental employment decisions independently, and the causal direction of the relationship is not clear. Similarly, though household economic status likely drives parental employment behavior, it also directly influences household income. We use income-to-poverty ratio in wave 3 when considering child care arrangements at the same time point. For employment outcomes, we use income-to-poverty ratio at wave 1, which is conceptually less problematic than income from the same time point. We also include a measure of parental education level as a proxy for socioeconomic status. Additionally, we conduct robustness checks including relevant variables.

B. Analytic Methods

To describe child care use for children with disabilities, we first use multivariate regression to predict child care use by disability status, holding constant other relevant demographic and household characteristics. We focus our main analysis on the preschool wave (wave 3, which occurred the year the child turned four), because this is the age at which the majority of children are enrolled in early care or education.[9] We use ordinary least squares (OLS) models to test the association between disability status and hours in care and cost of care. We use logistic regression to predict regular nonparental child care (for at least ten hours each week), full-time child care (defined as greater than or equal to 30 hours/week), and part-time child care (more than ten but fewer than 30 hours/ week). We also examine the type of child care use, with logistic regressions predicting center-based care, home-based care, and Head Start, as well as a multinomial logistic regression comparing the outcomes of no regular nonparental care, home-based care, or center-based care.

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[9] Results for earlier waves of care are available in Appendix Table 2.2. More information is available upon request.

Our analytic models are below, where $\ell_{child\ care\ dv}$ is the log odds of the binary child care variables, β_1Disability is the indicator for childhood disability, and β_2X is a vector of covariates described above. The multinomial model is represented by Equations 3 and 4 below, where $log\ (\frac{\pi_i^{(CC/HC)}}{\pi_i^{NC/CC}})$ represents the odds ratio of the outcomes of home-based care (HC) and center-based care (CC) compared to the base outcome of no care (NC) in Equation 1, and the outcomes of home-based care compared to the base outcome of center care in Equation 2 for an individual, i; $\beta 1^{(IC)}$ disability$_i$ is the key predictor; and $\beta 2^{(IC)}\chi_i$ is the vector of covariates.

Equation 1: $\ell_{child\ care\ dv} = \beta_0 + \beta_1\text{Disability} + \beta_2\text{X} + \varepsilon$

Equation 2: $Y_{hours/cost} = \beta_0 + \beta_1\text{Disability} + \beta_2\text{X} + \varepsilon$

Equation 3: $log\ (\frac{\pi_i^{(HC/CC)}}{\pi_i^{NC}}) = \alpha^{(\frac{HC}{CC})} + \beta 1^{(\frac{HC}{CC})}$ disability$_i$ $+ \beta 2^{(\frac{HC}{CC})}\chi_i + \varepsilon_i$

Equation 4: $log\ (\frac{\pi_i^{(HC)}}{\pi_i^{CC}}) = \alpha^{(HC)} + \beta 1^{(HC)}$ disability$_i$ $+ \beta 2^{(IC)}\chi_i + \varepsilon_i$

We use a difference-in-difference framework (DD) to examine the difference in the rate of change of maternal employment at kindergarten enrollment between parents of children with a disability and parents of typically developing children. The DD framework compares a “treatment” group to a control group, comparing outcomes before and after a specific intervention or policy event. If the major assumptions of the method hold, using DD methodology can provide a stronger foothold in causality than regression alone. In addition, the intuition behind DD offers a clear interpretation of results. Theoretically, unlike early care and education, which may have barriers to access for all children and potentially for children with disabilities in particular, access to kindergarten is free and universal. Given this change at the time of kindergarten enrollment, parental employment is likely to increase for all children. If current policies are not supporting access to child care for children with disabilities, the effect will be larger for parents of children with disabilities; that is, the increase in parental employment rates will be greater for this group. If, however, current policies are supporting access to child care for these families, the analysis would show a similar effect on parental employment at kindergarten enrollment for both groups, or potentially a smaller change for parents of children with disabilities.

We compare maternal employment outcomes for children with disabilities to typically developing children. In our main DD analyses, we use data from the latter two waves (or three if the child enrolled in kindergarten in 2007) and compare outcomes from both groups from parent interviews pre-kindergarten to kindergarten enrollment. Our analytic model is outlined in Equation 5, where Y_{it} is a measure of maternal employment for individual *i* and time *t*. The dummy variable $B1Disability_{it}$ is an indicator for a child with a disability, $B2Kindergarten_{it}$ is an indicator for kindergarten enrollment, and $\delta(Disability * Kindergarten)_{it}$ is the DD estimate for the effect of kindergarten enrollment on maternal employment rates for mothers of children with disabilities. βX_{it} is the vector of covariates including maternal health status, parental education level, and household and demographic variables. We also include controls for half-day kindergarten and year of kindergarten enrollment, as well as state fixed effects.

Equation 5: $$Y_{it} = \beta 0 + \beta 1Disability_{i} + \beta 2Kindergarten_{t} + \delta(Disability * Kindergarten)_{it} + \beta X_{it} + \varepsilon$$

DD requires additional assumptions beyond the general assumptions for all multivariate regression analyses to obtain unbiased estimates. In particular, DD relies on the parallel trends assumption, which, in this case would mean that maternal employment rates for children with and without disabilities follow the same time trends in absence of treatment. That is, the difference in the level of maternal employment between the two groups would remain relatively stable in the absence of kindergarten enrollment. We are able to provide some evidence that this assumption is met. Additionally, the DD framework assumes that the composition of each group cannot be altered by the intervention itself. In this case, whether or not a child has an identified disability cannot be determined by enrollment in kindergarten. In order to assure that this assumption is not violated, we include only children who have been identified as having a disability prior to kindergarten enrollment. Results are robust when we also include children who are identified as having a disability in kindergarten.

IV. Results

A. Main Results

[TABLE 2.2]

There are some differences in key characteristics by disability status (Table 2.2). In particular, children with disabilities are disproportionately likely to live in households with a single parent and with a mother reporting fair or poor health. As expected, there are also differences in birthweight status as well as likelihood of the household ever having received SSI or SSDI.[10] Across all measures, boys and children who are white are more likely to be identified as having disabilities. Differences in kindergarten enrollment are apparent by homeschool status and the increased likelihood for children with disabilities to begin kindergarten in the second year of enrollment covered by the survey.

[TABLE 2.3]

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[10] The survey does not differentiate which member of the household is eligible for SSI/SSDI; thus, it is not clear whether the receipt of benefits is due to the health of the child or that of another household member.

Patterns of child care use suggest an increased use of nonparental care overall as children age and a significant shift to center-based care from home-based care at the preschool wave (Table 2.3). This trend is not surprising, given the increase in supply and reduction in costs of center-based care for preschoolers compared to infants and toddlers. Some differences by disability status are evident in the table; most of these differences emerge in the preschool wave. Children with disabilities are significantly more likely to be in any regular nonparental care, more likely to be in part-time care, and more likely to be in full-time care than typically developing peers. Children with disabilities are also more likely to be enrolled in center-based care and, by some measures, less likely to be in relative or informal care. Disability status is also associated with some sort of subsidy for child care use. Perhaps as a result, parents of children with disabilities are paying, on average, less for care, both annualized and hourly. Finally, children with disabilities began nonparental care of all types and center-based care specifically at later ages compared with other children.

[TABLE 2.4]

To further unpack the relationship between disability status and child care use in the preschool wave, we conducted multivariate regression models predicting child care use and child care type by disability status while controlling for relevant demographic and household characteristics (Table 2.4). Overall, results indicate that both primary measures of disability are significantly associated with increased likelihoods of regular care use for at least ten hours each week, part-time care, and center-based care, with larger magnitudes for children with continuing disabilities than for children with disabilities in any wave. Children with a continuing disability are 9 percentage points more likely to be enrolled in regular care, 8 percentage points more likely to be enrolled in part-time care, and 11 percentage points more likely to be enrolled in center-based care than typically developing peers. Children with a disability in any wave before kindergarten are 4 percentage points more likely to be in any regular care, 4 percentage points more likely to be in part-time care, and 6 percentage points more likely to be in center-based care than typically developing peers.

The policy-relevant measure of disability—whether the child has an IEP—is strongly associated with increased use of care overall. Having an IEP increase the probability of enrollment in: any nonparental care by 18 percentage points, part-time care (12 percentage points), center-based care (19 percentage points), and Head Start (2 percentage points). Looking at the results of the multinomial logit (panel 2), children with disabilities are less likely to be in only parental care, slightly less likely to be in informal care, and more likely to be in center-based care than typically developing peers. The magnitude of the estimates is moderate for children with a continuing disability and rather large for children with an IEP. Children with a disability on average pay less for child care than their peers; the hourly cost estimates indicate that the lower cost of care is not simply an artifact of children with disabilities being in care fewer hours each week.[11]

[TABLE 2.5]

In general, when models include the subsidy indicator, the magnitude of the estimates decreases slightly (Table 2.5). Subsidy receipt decreases the likelihood of full-time care use and increases the likelihood of part-time care for children with disabilities in any wave. Subsidies are

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[11] In order to focus discussion on the disability measures, and because the covariate estimates are consistent and expected across models, we do not present covariate estimates here. Appendix Table 2.3 contains covariate estimates for the model using the indicator for disability in any wave, excluding the state fixed effects estimates. In general, these are in the direction we would expect. Additional covariate estimates available upon request.

associated with decreased center-based care for children with continuing disabilities and increased use of home-based care.

[TABLE 2.6]

We also examine difference in child care use by disability type (Table 2.6, top panel). Following the accommodations framework, we believe that specific health condition is a key piece of the structural context of child care use. When results are broken out by disability by type, it is clear that the overall disability estimates obscure some heterogeneity by disability type; estimates of the effects of different diagnoses differ in magnitude and, in some cases, direction. Broadly, the different diagnostic groups are related to increased use of care overall, increased likelihood of part-time care, increased use of center-based care, and decreased annual and hourly costs. However, some diagnostic groups, including autism and physical impairments, are not significantly associated with use of regular nonparental care, though for some, like congenital syndromes, the magnitude of the relationship is quite large. While communication group conditions are associated with a slight increase in the number of weekly hours in care, congenital syndromes are associated with a moderate decrease. Physical impairments are the only diagnostic group significantly associated with a decreased use of full-time care and a significantly increased probability of Head Start enrollment. Notable differences are also evident in costs by diagnostic type, but all groups are associated with lower cost, with the discount ranging from $465 annually (physical impairments) to $1600 annually (autism).

To better understand child care use among the potential SSI population and in keeping with our theoretical framework, we repeat these estimates for the subgroup of families who have ever had income below the poverty threshold in any of the first three waves of the survey and families who report ever having received disability benefits (Table 2.6, bottom panels). The pattern of results remains similar for both subgroups, though the magnitude of the relationships is generally larger for both than it is for the population overall, particularly for children who have an IEP. The estimates for likelihood of center-based care for children in families who received disability benefits are notably large.

[FIGURES 2.1a, 2.1b]

We graphed the unadjusted mean maternal employment rates for children with disabilities and typically developing children, using the two main disability measures by survey wave, to better understand patterns over time (Figures 2.1a, 2.1b). These figures suggest that as children age, rates of maternal employment increase, which follows previous literature and our understanding of the availability of child care for all children. Mothers of children with disabilities have lower rates of overall employment than mothers of typically developing children. These figures also provide some indication that the parallel trends assumption required for unbiased DD estimates is met for these data; the two groups follow relatively similar patterns across survey waves. They do indicate, however, that the biggest change in the rates of employment for mothers of children with disabilities occurs between wave 2 (when the child is two years old) and the preschool wave, rather than in kindergarten, as hypothesized.

[TABLE 2.7]

At kindergarten enrollment, mothers of children with disabilities increase their employment at a lower rate than mothers of typically developing children (Table 2.7). Beginning in wave 2, there is a 1.5 percentage point difference in employment levels between the two groups overall. This finding disguises the heterogeneity in the differences between full- and part-time employment between the two groups; there is a larger gap in full-time employment (2 percentage points) and a larger proportion of mothers of children with disabilities have part-time employment compared to mothers of typically developing children. Between wave 2 and wave 3, both groups increased employment overall at the same rate, though mothers of children with disabilities increased full-time employment and decreased part-time employment at a higher rate than mothers of typically developing children (seven percentage points in full-time employment compared to five percentage points; two percentage point decrease in part-time employment compared to .4 percentage point). Between wave 3 and kindergarten enrollment, however, mothers of typically developing children increased employment at a slightly higher rate (3.8 compared to 1.5 percentage points), and almost all of the growth in full-time employment. There is essentially no change in part-time employment for mothers of children with disabilities between preschool and kindergarten enrollment, and a .7 percentage point increase for mothers of typically developing children.

To further examine the relationship between disability and maternal employment at the two different waves, Appendix Table 2.4 contains the results of logistic regressions predicting maternal employment in the preschool wave (wave 3) and at kindergarten enrollment by the two main disability measures. Generally, the marginal effects estimates of disability status for maternal employment for both measures in the preschool wave are nonsignificant. At the kindergarten wave, however, both measures are significantly associated with a three-percentage point decrease in the probability of any maternal employment. Both are also associated with a decrease in the average maternal hours worked and average total parental hours worked. Results are similar for children who live in households that have ever had income below poverty and those that have ever received SSI or SSDI (second and third panels).

[TABLE 2.8]

We examined the differences in the rates of change of maternal employment at kindergarten enrollment for children with and without disabilities using DD estimates for linear probability models (LPM) that predict any maternal employment, full-time employment, and part-time employment, as well as models predicting maternal and total parental hours worked in the last week (Table 2.8). The estimates for the main effects of having a disability are negative in all models, except for the LPM predicting part-time employment, and mostly statistically significant. Childhood disability, depending on the measure, is associated with an approximately three to four percentage point decrease in maternal employment overall and in full-time employment at kindergarten, as well as one-to-two fewer average hours worked each week for both mothers and all parents in the household. The estimates for the effect of kindergarten enrollment on employment outcomes are generally positive and statistically significant. The DD estimator estimates the difference in the change of employment rates for mothers of children with disabilities compared to mothers of typically developing children. For the most part, the DD estimates are not statistically significant; all are close to zero. The direction of the estimates is negative for overall employment and part-time employment. This finding suggests that there is no statistically significant difference in the change in the rate of maternal employment at kindergarten enrollment for mothers of children with disabilities compared to mothers of typically developing children. We find a similar pattern for poor households and households that have ever received disability benefits (second and third panels).

B. Alternate Specifications

We tested our DD models using a range of alternative specifications. First, we included wave 2 of the data in our estimates; this specification results in a statistically significant negative estimate for the rate of change in part-time maternal employment for mothers of children with disabilities compared to other mothers. This finding is consistent when we apply the recommended survey weights whether or not we include wave 2. We find similar results when we run models excluding children in half-day kindergarten; in this specification, mothers of children with IEPs increase their rates of part-time employment at kindergarten by approximately four percentage points less than mothers of typically-developing children.

We also estimated models using imputed data for the main analytic sample and imputed data across waves for all 10,700 of the original participants (Appendix Table 2.5). Using the imputed data, results from some models suggest a statistically significant but smaller rate of change in maternal employment for mothers of children with disabilities. Estimates suggest that mothers of children with a disability in any wave increased their rate of overall employment less than mothers of typically developing children by approximately two percentage points, with a similar estimate for part-time employment. Contrary to our initial hypothesis, these findings suggest employment at kindergarten for mothers of typically developing children increases at a higher rate than for mothers of children with a disability diagnosis in any wave prior to kindergarten.

Because of the increase in child care use at the preschool wave for all children, but for children with disabilities in particular, we estimated models using the preschool year as the treatment year to determine whether availability of care during this developmental stage may differentially impact maternal employment. This analysis did not yield any significant results. Due to endogeneity concerns related to early identification and use of care (i.e., children in care may also be more likely to be identified as having a disability), we also tested a model where we limited children with a disability only to those whose condition was identified prior to entering child care; this analysis does not find any differences in results.

[TABLE 2.9]

We also examined differences by diagnostic categories for the LPMs predicting differences in maternal employment rates at kindergarten enrollment (Table 2.9). Looking at main effects, all of the diagnostic categories are associated with a decreased likelihood of maternal employment though with differences by childhood conditions.[12] Though the DD estimates for overall employment for all conditions are nonsignificant, the magnitude and in some cases the direction differs notably from the overall disability estimates. Further, disaggregating by full- and part-time employment, highlights some key differences. Mothers of children with intellectual disabilities appear to increase full-time employment at higher rates (approximately 13 percentage points higher) than mothers of typically developing children at kindergarten enrollment and increase their rates of part-time employment at lower rates. Similarly, the full-time employment estimates for mothers of children with intellectual disabilities and autism and those with congenital syndromes show similar patterns.

V. Discussion

At age four, children with disabilities are more likely to be in any regular nonparental care, more likely to be in part-time care, more likely to be enrolled in center-based care as their

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[12] We do not show the main effects of kindergarten enrollment because these estimates do not differ substantially across models, nor do they differ substantially from the main models shown in Table 2.8.

primary arrangement, more likely to attend Head Start, and more likely to have arrangements that cost less on an hourly and annual basis compared to typically developing children. Children with disabilities are no more or less likely to be enrolled in full-time care than their typically developing peers; there is some indication they are less likely to be enrolled in informal care. Notably, the pattern of results is broadly similar no matter which definition of disability is employed, with the exception of the outcome of Head Start enrollment. As expected, our two non-IEP measures for disability bound estimates; the measure for disability in any wave generally results in estimates of lower magnitude than those for continuing disability. These findings provide some confidence in our selection of disability measures. Receipt of an IEP is associated with the largest magnitude estimates. Results are robust when we control for employment and across measures of income.

We exclude the subsidy indicator from our main models due to concerns about endogeneity (e.g., in order to receive a subsidy, children must be enrolled in care). However, when we model subsidy receipt, the magnitude of the relationship between disability and child care use is decreased moderately, particularly for the disability in any wave measure (our lower-bound measure), though the pattern of relationships remains the same. Given the disproportionate number of children with disabilities who report subsidized care—approximately 10 to 20 percentage points higher than typically developing children—this is to be expected. To further probe the effect of subsidies, we also examined the marginal effect of subsidies by disability status. We find that subsidy receipt is associated with a decreased likelihood of full-time child care for both measures of disability. For children with a continuing disability, subsidy receipt is associated with a decreased likelihood of center-based care and an increased likelihood of home-based care compared to children with disabilities without subsidies. The negative relationship with center-based care is somewhat surprising; we might expect subsidies to increase access to center-based care. However, given the strength of the association between center-based care and disability status, a decreased likelihood does not indicate lowered use of center-based care overall.

The patterns of care access and use do not differ when we consider only households that have had income below the poverty threshold at any point in the child's life—households that are most likely to be meet the SSI eligibility criteria—and those that have ever received disability benefits. In fact, the strength of the relationship between disability status and part-time care and center-based care are stronger for these subgroups. This finding indicates that the relationship to access is not being driven simply by high-income families choosing center-based care. This analysis paints an encouraging picture of child care access for SSI recipients and the families most likely to be eligible for SSI; these estimates suggest that the current child care landscape may be sufficiently supporting employment for these families.

Our results are consistent with the conclusion that the constellation of child care policies may be effectively supporting access to child care for children with disabilities. At the most basic level, we see an increased likelihood of regular child care in general for children with disabilities. We also find an increased likelihood of center-based care compared to other care types. In general, much of the public policy infrastructure is designed to improve access to center-based care; thus, this relationship may be a result of policy levers. Our results also suggest that children with disabilities receive care at a decreased cost, all else constant, even compared to other families with income below the poverty threshold. Though this may be related to the quality of care these families can access, there is some indication that it is instead a result of policy. In particular, we find that cost is decreased overall, both annually and hourly. We also see differences by disability type; the cost of care for children with autism is discounted by the largest amount, followed by children with intellectual disabilities and children with congenital syndromes. These conditions are often diagnosed prior to preschool, and we might expect children with these conditions to have the most difficulty accessing affordable care. Thus, differences in cost may be the result of effective public policy that provides access to early care and education via IEP or subsidy.

Our estimates for explicitly policy-relevant measures are also consistent with policy increasing access. Having a disability in any wave statistically significantly increases the likelihood of Head Start enrollment, which is notable given the small number of children in our sample enrolled in Head Start. The estimates for the IEP indicator are particularly telling. Having an IEP, which indicates that the child is receiving services from the Department of Education under IDEA, strongly increases the likelihood of care overall, center-based care, Head Start enrollment, and decreased costs. These indicators are all consistent with increased access and in clear keeping with the purpose of IDEA. The estimates for the effect of an IEP on care use for low-income children and children in households that have received disability benefits are particularly encouraging. Having an IEP increases the likelihood of any child care use and center-based care by over 25 percentage points for these groups. Further, while receipt of an IEP is associated with fewer hours in care for the overall population, it is associated with an increased number of hours in care for these populations and an increased likelihood of full-time care for children in households who have ever received disability benefits.

One issue to consider is the direction of the relationship between child care use and disability. Children in child care—particularly high-quality, center-based care—are more likely to be screened for health concerns; screening is required by law, under IDEA's Child Find provision. However, some of our estimates indicate that the relationship is not just about increased identification for children in care. First, results are robust when we conducted analyses using only children with diagnoses prior to care enrollment. Also, our results by diagnostic type are not indicative of a story of increased identification once in care. Though the patterns are all broadly similar to the overall results, children with intellectual disabilities and children with autism have some of the strongest likelihoods of center-based care use. These conditions are generally identified at an early age. The strength of these relationships is also stronger than the estimates for communication-related conditions, which may be more likely to be identified and screened for after a child has entered care. It is also possible that parents may select center-based care for children with disabilities, even prior to diagnosis, because they think it will be helpful to their children and as a means of connecting to services, including formal diagnoses, early identification of developmental delays, early intervention services, and IEP receipt. Our approach cannot rule out that parents with non-typically developing children prefer center-based care, and it is also possible that experiencing center-based care increases the odds of a disability being formally diagnosed. When we look at care use patterns for children diagnosed with a disability in kindergarten (Appendix Table 2.2), however, we do not find that these children were more or less likely to be in center-based care than the general population. We do find that they were less likely to have been enrolled in Head Start, however. This association may be related to identification in Head Start, or parental preferences.

The association between disability status and use of part-time care rather than full-time care warrants additional consideration. It may indicate that young children with disabilities are using early childhood centers primarily as sites for services or learning enrichment rather than traditional child care to support parental employment. In this case, policy may be succeeding in supporting the child's health needs, but it may not be providing care sufficient to support parental employment. This pattern may also reflect the complexity families face in balancing caregiving needs and other requirements like medical appointments or it may be a result of children's health conditions impacting their ability to participate in full-time care. Children with disabilities may be more likely to experience health events, such as hospitalizations or illness, which may make it difficult to attend full-time, regular child care. Indeed, the results of the DD analysis indicate that parents of children with disabilities are less likely to increase their rates of part-time employment at kindergarten enrollment, perhaps because of their overall higher rates of part-time employment in earlier waves. Mothers of children with disabilities may not be able to sustain full-time employment as a result of their children's healthcare needs, such as frequent appointments or procedures or conditions that require the child to be out of care for some time. Additionally, mothers may have a preference for part-time or flexible employment in order to ensure availability to care for their child at times when child care may not be possible; this may explain the higher rates of part-time employment before and after kindergarten enrollment. Finally, we may be concerned that policy is effectively supporting part-time enrollment and access, but not full-time access. Indeed, the marginal effect of subsidy receipt is associated with an increased probability of part-time compared to full-time care. Children may have access to care for the portion of the day when they receive IEP services, for example, but not for the rest of the day. This pattern could also be the result of the expansion of public pre-K programs, which are typically not full day but do lower the age of access to free, public education.

That we find a stronger association with part-time care use may also indicate that our findings are more consistent with the previous literature emphasizing families' challenges finding care than it first appears. The accommodations framework reminds us that families are making accommodations to multiple factors in their child care use, including personal preference. Thus, though we find that children with disabilities are more likely to be enrolled in care than children without disabilities, we have no insight into parents' satisfaction with care, the length of time the child has been in that particular child care arrangement (or how long they will remain), nor the process of locating care and what public resources may be available to help them in that process. Moreover, what evidence we do have, suggests that children with disabilities enter care later than typically-developing peers, which may underscore the difficulty locating care. The differences we find in care use by disability status also underscore that our findings represent an average for all children identified with disabilities, which may understate the difficulty some families have accessing care.

Overall, the results of our DD analysis could have several policy implications. These results, taken in concert with the child care estimates, suggest child care is accessible for families raising young children with disabilities. The constellation of federal child care policies may be adequately supporting access to child care for families, particularly low-income families, raising children with disabilities. Further, the increased availability of public pre-K programs for four-year-olds may play a role. The unadjusted rates of employment indicate a greater shift in employment between the two-year-old wave and the four-year-old wave, which may also suggest this expansion has a role in the results. To test this, we also ran a model with preschool as the treatment year; results were nonsignificant.

Additionally, the mostly nonsignificant results and the overall trend of negative estimates may simply indicate that the labor supply of parents of children with disabilities is less elastic than that of parents of typically developing children. Here again the context of accommodations for these families is important to consider. We know these parents have many more responsibilities to juggle, and enrollment in kindergarten may not relieve these responsibilities. In fact, given the length of school days and other out-of-school time for holidays and summer, kindergarten may provide less support for employment for parents who have to find after-school or other out-of-school care for children enrolled in school. It may also be important to consider other policy levers to support employment for parents raising a child with a disability. Even if child care is sufficiently available, parents' ability to work may be hindered by the increased needs of children with disabilities. Parents may not be able to take children to medical appointments or address their overall needs if they do not have access to paid leave or flexible scheduling. This limitation may be highlighted in the different patterns of results for children with continuing disability in households that report ever having received disability benefits; the DD estimates are larger and concentrated almost entirely in full-time employment, meaning mothers of children with disabilities in this group are less likely to increase employment at kindergarten enrollment compared to mothers of typically developing children.

Finally, the DD estimates for specific diagnostic categories indicate the need to consider how different conditions may differentially affect access to care and parental employment. Mothers of children with developmental disabilities, grouped broadly, appear to increase their employment at kindergarten enrollment at greater rates than mothers of typically developing children. This finding may be a result of the severity of the condition, which could influence care availability (though we do not see this in the child care results), or it may be indicative of the role of diagnostic timing or differences in how conditions manifest across developmental stages. All of these conditions can be identified early, which may allow families time to account for services and supports by kindergarten enrollment.

VI. Limitations and Conclusions

A. Limitations

The nature and severity of children's special needs are clearly important to understanding child care accommodations and parents' employment contexts. Although the data offer a relatively large sample of children with disabilities and we attempt to disaggregate by some diagnoses, we are still unable to do so beyond broad categorizations. In addition, we rely on child care arrangements and estimates of maternal employment rates to infer information about the accessibility of child care. This approach does not account for parental preferences related to child care; parents of children with disabilities may have different preferences for care than children of typically developing peers. It also does not account for the parental employment context, such as the availability of employer flexibility and paid leave, which may also influence parental employment. Therefore, lower rates of maternal employment may simply reflect a difference in parental preferences or the impact of related policies rather than accessibility of care. The relationship between the child's health status and parental employment characteristics could also bias our estimates. Similarly, while this study aims to provide information about the current menu of policies intended to assist families that have children with disabilities in accessing child care, it cannot disentangle the roles of specific policies nor can it account for the supply of child care. These data also do not reflect some recent, consequential changes in the child care landscape, such as changes to the subsidies intended to increase access and implementation of IDEA Part C, which extends services to infants and toddlers. Our data also limit our understanding of some key timing issues; it may be useful to have data on post-treatment outcomes, particularly since the kindergarten enrollment years coincide with the beginning of the Great Recession. Additionally, though we have information for the first wave that a parent reports their child having a specific health condition, we do not know precisely when the child was diagnosed.

B. Summary and Conclusions

Our analysis broadly supports the idea that federal policies—including subsidies, IDEA, and Head Start—are providing access to child care for children with disabilities, including SSI recipients. Children with disabilities have higher likelihoods of enrollment in child care, particularly part-time and center-based care, at age four, and there is some evidence that policy levers may be easing access and decreasing costs. The results of our DD analysis are nonsignificant and indicate, that, if anything, mothers of children with disabilities increase their rate of employment at kindergarten enrollment at lower rates than mothers of typically developing peers. Thus, our analysis finds support for the efficacy of policies designed to support employment for parents of children with disabilities, including for children from very low-income families, who may be most likely to receive SSI. Our findings also suggest several avenues for future research to further understand the accommodations families raising children with disabilities may be making in their child care decisions, including examining child care access for very young children with disabilities and the role of IDEA Part C in providing access; exploiting state differences in child care policy to isolate the role of specific policies; oversampling children with disabilities in large-scale data collections to disaggregate by disability type; and exploring employment supports available to parents of school-age children with disabilities, such as out-of-school care and paid leave.

Children with disabilities, including SSI recipients and their families, appear to be using early care and education at relatively high rates. This access may provide an important support for parental employment and may also confer developmental benefits for children. As the number of young children with disabilities continues to grow, it will be important for early care and education providers to be appropriately trained to meet the needs of these children and their families. It will also remain important for policymakers and federal agencies that serve children with disabilities to monitor and continue to support child care access and provide other policy supports to ensure families are receiving the support they need to maintain economic stability.

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Tables

Table 2.1: Proportion of ECLS-B Sample That Meets Various Disability Definitions

Disability Measure	Operationalization	Wave	Weighted Proportion	Population Size	N
General Disability	Binary indicator for parents who responded affirmatively to the question, "Has your child been diagnosed with any of the following conditions . . .?"	Wave 1	6.3%	247,856	600
		Wave 2	9.7%	379,620	900
		Wave 3	13.9%	541,618	1,100
		Wave 4	15.5%	604,177	1,200
		Wave 5	21.7%	259,489	500
Multiple Diagnoses	Indicator for parents who responded that child had more than one diagnosis in the conditions listed	Wave 1	1.2%	45,398	150
		Wave 2	2.9%	113,457	350
		Wave 3	5.0%	196,227	450
		Wave 4	5.2%	202,832	450
		Wave 5	7.6%	90,877	200
Continuing Disability Measure, Prior to Kindergarten	Once a parent answers yes to the disability question, the parent continues to report the child's disability through all remaining waves	Waves 1–3/4	8.4%	328,742	700
& All Waves		All	14.4%	562,384	1100
Disability in Any Wave, Prior to Kindergarten &a	A parent responded that the child had a disability in any interview wave	Waves 1–3/4	23.2%	902,989	1,850
All Waves		All	29.2%	1,141,895	2,250
Disability in any Wave, Including Asthma	A parent responded that the child had a disability, including asthma, in any interview wave	All	43.8%	1,712,151	3,300
Child's Health is Fair or Poor	A parent rated the child's health fair or poor on the 5-category self-rated health scale	Wave 1	2.3%	89,987	200
		Wave 2	2.2%	86,099	200
		Wave 3	2.6%	100,046	200
		Wave 4	2.0%	78,944	200
		Wave 5	2.1%	25,111	50
IEP, IEP before Kindergarten	The child has an Individualized Education Program in place	Wave 3	5.1%	197,395	450
		Wave4	5.4%	212,248	500
		Wave 3/4	5.6%	218,894	500
Received Special Services	The parent reported that the child received intervention services in the previous month, including physical therapy, occupational therapy, speech and language therapy, or other support services	Wave 1	2.5%	97,776	350
		Wave 2	2.5%	99,377	350
		Wave 3	3.2%	125,199	250
		Wave 4	5.1%	198,363	400
		Wave 5	8.3%	99,080	200
Received Early Intervention Services Prior to Kindergarten	The parent reported that the child received Early Intervention Services, in any location	Waves 1–3/4	6.1%	239,058	600

Table 2.1: Proportion of ECLS-B Sample That Meets Various Disability Definitions

Disability Measure	Operationalization	Wave	Weighted Proportion	Population Size	N
	Specific Diagnoses				
Communication Related	Specific measure of child having difficulty hearing, talking, or other communication-related condition (including speech and language delays)	Wave 1	0.7%	28,952	50
		Wave 2	4.5%	175,950	750
		Wave 3	10.4%	405,467	1100
		Wave4	8.7%	341,343	700
		Wave 5	10.2%	19,482	250
		Waves 1–3/4	11.9%	464,414	1050
Intellectual Disability	Specific measure of intellectual disability (e.g., Down Syndrome, Turner Syndrome, intellectual disability)	Wave 1			—
		Wave 2	0.4%	13,697	—
		Wave 3	0.2%	7,815	50
		Wave4	0.4%	14,459	50
		Wave 5	0.4%	5,142	—
		Waves 1–3/4	0.6%	25,040	50
Emotional or Mental Health	Specific measure of emotional or mental health conditions (e.g., oppositional defiant disorder, ADD, ADHD)	Wave 3	4.3%	168,184	400
		Wave 4	5.1%	199,316	400
		Wave 5	7.8%	93,221	200
		Waves 3/4	6.7%	262,055	550
Autism	Specific measure of autism	Wave 3	0.9%	34,370	100
		Wave 4	1.1%	44,153	100
		Wave 5	1.0%	11,944	50
		Waves 3/4	1.2%	46,498	100
Physical/Orthopedic	Specific measure of challenges with mobility, limbs, or a diagnosis of spina bifida	Wave 1	1.3%	496,885	150
		Wave 2	0.6%	22,698	100
		Wave 3	2.6%	101,618	300
		Wave4	2.1%	82,051	200
		Wave 5	2.5%	29,894	100
		Waves 1–3/4	4.1%	160,803	400
Chronic Condition	Specific measure of chronic conditions, including heart conditions, epilepsy, diabetes, or anemia	Wave 1	2.7%	104,463	200
		Wave 2	2.3%	91,187	200
		Wave 3	2.6%	102,799	200
		Wave 4	3.2%	124,279	250
		Wave 5	3.6%	43,047	100
		Waves 1–3/4	6.0%	234,669	500

Table 2.1: Proportion of ECLS-B Sample That Meets Various Disability Definitions

Disability Measure	Operationalization	Wave	Weighted Proportion	Population Size	N
Congenital Syndromes, Identifiable at Birth	Specific measure of Down Syndrome, Turner Syndrome, or Spina Bifida	All Waves	0.2%	7824.896	—
Autism/ Developmental Disability	Combined measure of developmental disabilities (intellectual disability and autism)	All Waves	1.9%	74,242	150

Source: ECLS-B: Unweighted Ns presented

Table 2.2: Sample Summary Statistics, Selected Characteristics by Disability Type

	All	Any Disability, Pre-K			Continuing Disability, Pre-K		
		Yes	No	SS	Yes	No	SS
N=	6900	5100	4750		700	6250	
Male	51.2%	58.4%	49.0%	***	64.7%	50.0%	***
Child Race/Ethnicity							
White	53.7%	59.0%	52.2%	***	59.1%	53.2%	**
Black	13.9%	13.3%	14.1%		12.6%	14.0%	
Latinx	25.1%	21.6%	26.2%	***	21.1%	25.5%	*
Other Race	7.2%	6.1%	7.6%	*	7.1%	7.2%	
Low Birthweight	7.5%	11.5%	6.3%	***	10.7%	7.2%	***
Single Parent HH (Wave 3)	21.9%	25.1%	21.0%	**	24.9%	21.6%	
Number of Children in HH ≤ 5 (Wave 3)	1.6	1.6	1.6		1.7	1.6	
Number of Siblings (Wave 3)	1.4	1.4	1.4		1.4	1.4	
Number of Nonparental Adults in HH (Wave 3)	0.38	0.41	0.37		0.46	0.37	*
HH Income, Mean (Wave 1)	$50,720	$49,773	$51,019		$49,829	$50,802	
Family Income as % FPL (Wave 3)							
< 100% FPL	23.5%	23.7%	23.5%		24.6%	23.4%	
100–199% FPL	28.8%	28.8%	28.8%		27.3%	28.9%	
200–399% FPL	24.3%	26.4%	23.7%		27.0%	24.0%	
400%+ FPL	23.4%	21.2%	24.1%	*	21.2%	23.6%	
HH Income Ever Below FPL (Waves 1–3)	37.0%	36.9%	37.1%		40.0%	36.8%	
HH Income Ever Below 200% FPL (Waves 1–3)	63.8%	64.5%	61.4%		65.8%	61.8%	
HH Received SSI/DI Benefits	8.9%	14.7%	7.1%	***	22.0%	7.7%	***
HH Ever Received SSI/DI (Since Child's Birth)	9.5%	11.9%	8.7%	**	10.4%	9.3%	**
Parents' Highest Level of Education (Wave 3)							
High School or Less	33.8%	33.8%	33.8%		32.8%	33.9%	
Some College	33.3%	35.7%	32.6%	*	36.9%	32.9%	
College or Higher	32.9%	30.5%	33.6%		30.0%	33.3%	
Urbanicity (Wave 3)							
Urban, Large	71.7%	68.6%	72.6%	**	67.5%	72.1%	*
Urban, Small	11.7%	12.8%	11.4%		13.3%	11.6%	
Rural	16.6%	18.5%	16.0%		19.2%	16.3%	
Census Region (Wave 3)							
Northeast	16.3%	15.1%	16.7%		15.2%	16.4%	
Midwest	21.7%	25.5%	20.1%	***	26.9%	21.2%	**

Table 2.2: Sample Summary Statistics, Selected Characteristics by Disability Type

	All	Any Disability, Pre-K			Continuing Disability, Pre-K		
South	38.0%	38.5%	37.8%		35.6%	38.2%	
West	24.0%	21.0%	25.0%	**	22.3%	24.2%	
Mother Employed 12 Months Before Birth	71.9%	72.1%	71.8%		72.3%	71.8%	
First Enrolled in K in Wave 4 (2006)	73.0%	68.0%	74.4%	***	66.3%	73.6%	***
Homeschooled for Kindergarten	1.8%	1.0%	2.0%	***	1.1%	1.8%	
IEP	5.1%	21.5%	0.1%	***	41.1%	1.7%	***

*** p<0.01, ** p<0.05, * p<0.1

Source: Authors’ calculations using ECLS-B data

Table 2.3: Child Care Arrangements by Disability Status (Bivariate)

		Wave	All	Any Disability, Pre-K			Continuing Disability, Pre-K		
				Yes	No	SS	Yes	No	SS
Regular Child Care Use	Avg Hours in Care/Week	1	15.96	15.99	15.94		14.45	16.10	
		2	16.00	15.80	16.04		13.85	16.19	**
		3	22.63	23.58	22.33		24.95	22.41	**
	Regular Child Care	1	42.8%	42.5%	42.9%		39.6%	43.1%	
		2	44.2%	43.4%	44.4%		40.6%	44.5%	
		3	65.5%	69.7%	64.2%	***	75.6%	64.6%	***
PT vs FT Care	PT Care (10–29 hrs/wk)	1	12.5%	12.5%	12.5%		12.5%	12.5%	
		2	12.5%	12.3%	12.5%		15.9%	12.2%	
		3	25.2%	27.7%	24.5%		32.2%	24.6%	**
	FT Care (>/=30 hrs/wk)	1	30.3%	30.0%	30.4%		27.1%	30.6%	
		2	31.7%	31.1%	31.9%		24.7%	32.4%	***
		3	40.3%	42.0%	39.6%		43.5%	40.0%	*
Primary Care Arrangement Type	Relative Care/Informal Care	1	23.8%	23.2%	24.0%		22.6%	23.9%	
		2	18.9%	17.1%	19.5%		16.3%	19.2%	
		3	13.4%	10.7%	14.3%	***	12.0%	13.6%	
	Center-Based Care	1	8.0%	7.8%	8.0%		7.3%	8.0%	
		2	13.9%	13.5%	14.1%		14.7%	13.9%	
		3	46.8%	52.5%	45.1%	***	56.9%	45.9%	***
	Home-Based Care	1	11.1%	11.5%	11.1%		10.0%	11.3%	
		2	11.4%	12.8%	11.0%		9.6%	11.6%	
		3	5.2%	6.4%	4.8%	**	6.8%	5.1%	
Policy-Relevant	Head Start	3	3.6%	4.5%	3.3%		4.0%	3.5%	
	IEP	3	5.1%	21.5%	0.1%	***	41.1%	1.7%	***
	Child Care Subsidy	1	6.2%	6.0%	6.3%		6.2%	6.3%	
		2	8.2%	8.8%	8.0%		10.4%	7.9%	
		3	20.0%	27.3%	17.7%	***	37.6%	18.4%	***
Cost of Care	Cost of Care (Annual)	1	$2,695.66	$2,636.66	$2,711.45		$2,519.17	$2,709.89	
		2	$3,209.63	$3,241.84	$3,200.54		$2,904.37	$3,234.62	
		3	$2,529.44	$2,216.03	$2,627.95	**	$1,829.34	$2,597.88	***
	Cost of Care (Hourly)	1	$ 1.92	$ 1.62	$ 2.00	***	$ 1.61	$ 1.94	*
		2	$ 2.17	$ 2.18	$ 2.17		$ 2.00	$ 2.19	
		3	$ 2.25	$ 1.88	$ 2.36	***	$1.39	$ 2.33	***
Earliest Age (Months)	All Types	—	12.17	13.27	11.83	*	14.55	11.94	**
	Center-Based Care	—	28.25	29.47	27.86	**	30.50	28.01	**

*** p<0.01, ** p<0.05, * p<0.1

Source: Authors’ calculations using ECLS-B data

Table 2.4: Regression Models Predicting Child Care Outcomes at Wave 3

	Regular Care	Hours in Care	FT	PT	Center	Head Start	Home-Based	Cost/Hour	Annual Cost
Disability Any Wave	0.04***	0.05	–0.01	0.04***	0.06***	0.01**	0.00	–0.41***	–386.75***
	(0.01)	(0.53)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.08)	(87.54)
Continuing Disability	0.09***	0.99	–0.00	0.08***	0.11***	0.01	–0.01	–0.65***	–649.28***
	(0.02)	(0.79)	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)	(0.10)	(105.75)
IEP Indicator	0.18***	2.32**	0.02	0.12***	0.19***	0.02***	–0.02	–1.10***	–1,055.15***
	(0.03)	(0.93)	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)	(0.11)	(119.72)
Mean	[0.68]	[23.90]	[0.43]	[0.25]	[0.50]	[0.04]	[0.05]	[2.21]	[2,565.34]

	Multinomial Logit Predicting Care Type			Marginal Effect Estimate for Care Type		
	Home-Based Care vs. No Care	Center-Based vs. No Care	Home-Based vs. Center	No Care	Home-Based	Center-Based
Disability, Any Wave	1.01	1.29***	0.78***	–0.04***	–0.02*	0.06***
	(0.09)	(0.09)	(0.06)	(0.01)	(0.01)	(0.01)
Continuing Disability	1.19	1.77***	0.67***	–0.09***	–0.02	0.12***
	(0.16)	(0.19)	(0.08)	(0.02)	(0.02)	(0.02)
IEP Indicator	1.64***	2.85***	0.58***	–0.18***	–0.02	0.19***
	(0.29)	(0.40)	(0.08)	(0.03)	(0.02)	(0.03)

*** p<0.01, ** p<0.05, * p<0.1;
Standard errors in parentheses. Regular care indicates a child was in nonparental care at least ten hours each week; PT indicates part-time care (between 10-29 hours/week); FT indicates full-time nonparental care (30 hours/week or more). Models were all analyzed separately. Results are presented as marginal effects for binary outcomes or regression coefficients for continuous outcomes. Multinomial logistic models presented as odds ratios and overall marginal effects, respectively. Models predicting cost have sample sizes of 5,350; all others use sample of 6,600 (due to missing values for covariates). Dependent variable means are in brackets and unweighted.
Source: Authors' calculations using ECLS-B data

Table 2.5: Regression Models Predicting Child Care Outcomes at Wave 3, Subsidy Models

	Regular Care	Hours in Care	FT	PT	Center	Head Start	Home-Based	Cost/Hour	Annual Cost
Disability, Any Wave	0.00	–0.63	–0.01	0.01	0.02	0.00	0.00	–0.25**	–206.37*
	(0.02)	0.62	(0.02)	(0.01)	(0.02)	(0.01)	(0.01)	(0.11)	(115.59)
Marginal Effect of Subsidy	0.02	–0.91	–0.07**	0.09***	–0.01	0.01	0.00	0.05	–59.05
Continuing Disability	0.04	–0.4	–0.01	0.05**	0.09***	0.00	–0.02**	–0.44**	–459.60***
	(0.02)	–0.99	(0.02)	(0.02)	(0.03)	(0.01)	(0.01)	(0.18)	(168.93)
Marginal Effect of Subsidy	–0.01	–0.64	–0.07*	0.06	–0.10**	–0.01	0.04**	0.15	164.63

*** p<0.01, ** p<0.05, * p<0.1;
Standard errors in parentheses. Regular care indicates a child was in nonparental care at least ten hours each week; PT indicates part-time care (between 10-29 hours/week); FT indicates full-time nonparental care (30 hours/week or more). Models were all analyzed separately. Results are presented as marginal effects for binary outcomes or regression coefficients for continuous outcomes. Models predicting cost have sample sizes of 5,350; all others use sample of 6,600.
Source: Authors’ calculations using ECLS-B data

Table 2.6: Regression Models Predicting Child Care Outcomes at Wave 3, Subgroups

	Any Care	Hours in Care	FT	PT	Center	Head Start	Home-Based	Cost/ Hour	Annual Cost
Panel 1: Full Sample by Disability Type									
Communication Group	0.09***	1.09*	0.00	0.08***	0.10***	0.01	0.00	–0.65***	–621.95***
	(0.02)	(0.64)	(0.02)	(0.01)	(0.02)	(0.01)	(0.01)	(0.09)	(99.07)
Intellectual Disability	0.14*	2.10	–0.02	0.12**	0.19***	0.02	–0.05	–1.06***	–997.27***
	(0.07)	(3.76)	(0.06)	(0.05)	(0.07)	(0.03)	(0.05)	(0.21)	(342.99)
Emotional/Mental Health	0.11***	1.10	–0.00	0.10***	0.14***	0.01	–0.01	–0.78***	–769.43***
	(0.02)	(0.86)	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)	(0.12)	(121.67)
Autism	0.09	0.08	–0.05	0.11***	0.13**	0.03	–0.03	–1.20***	-1,631.23***
	(0.06)	(1.98)	(0.05)	(0.04)	(0.06)	(0.03)	(0.03)	(0.32)	(274.87)
Chronic Condition	0.04*	1.25	0.03	0.01	0.04*	–0.00	0.01	–0.22*	10.62
	(0.02)	(0.96)	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)	(0.12)	(157.87)
Physical Impairment	–0.05	–1.19	–0.05**	0.05**	0.05*	0.04***	–0.02	–0.52***	–465.12***
	(0.11)	(1.04)	(0.03)	(0.02)	(0.03)	(0.01)	(0.01)	(0.13)	(156.76)
ID/Autism	0.10**	0.32	-0.03	0.10***	0.15***	0.02	-0.03	-1.17***	-1,411.19***
	(0.05)	(1.95)	(0.04)	(0.03)	(0.05)	(0.01)	(0.03)	(0.23)	(228.10)
Congenital Syndromes	0.18***	–8.06**	–0.21	0.12	0.05	0.02	—	–1.14***	–558.57
	(0.03)	(3.81)	(0.15)	(0.09)	(0.12)	(0.06)		(0.42)	(1,011.36)
Mean	[0.68]	[23.90]	[0.43]	[0.25]	[0.50]	[0.04]	[0.05]	[2.21]	[2,565.34]
Panel 2: HH Income Ever < Poverty									
Disability, Any Wave	0.01	–1.12	–0.03	0.04**	0.04*	0.02	0.00	–0.17**	–200.29**
	(0.02)	(0.92)	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)	(0.07)	(84.63)
Continuing Disability	0.07**	–0.53	–0.02	0.08***	0.10***	0.01	0.01	–0.35***	–472.45***
	(0.03)	(1.24)	(0.03)	(0.02)	(0.03)	(0.02)	(0.01)	(0.10)	(92.47)
IEP Indicator	0.26***	2.78**	0.05	0.13***	0.24***	0.04**	0.01	–0.42***	–543.27***
	(0.05)	(1.34)	(0.04)	(0.03)	(0.04)	(0.02)	(0.02)	(0.09)	(109.26)
Mean	[0.66]	[23.91]	[0.43]	[0.23]	[0.49]	[0.08]	[0.03]	[0.68]	[887.99]

Table 2.6: Regression Models Predicting Child Care Outcomes at Wave 3, Subgroups

	Any Care	Hours in Care	FT	PT	Center	Head Start	Home-Based	Cost/ Hour	Annual Cost
Panel 3: HH Ever Received SSI/SSDI									
Disability, Any Wave	0.11***	2.37	0.04	0.07*	0.17***	0.04*	0.01	–0.59**	–363.14**
	(0.04)	(1.75)	(0.04)	(0.03)	(0.04)	(0.02)	(0.02)	(0.23)	(171.42)
Continuing Disability	0.13***	2.32	0.02	0.10***	0.20***	0.01	–0.02	–0.75***	–861.03***
	(0.04)	(2.01)	(0.04)	(0.04)	(0.04)	(0.03)	(0.03)	(0.19)	(226.91)
IEP Indicator	0.26***	5.67***	0.08*	0.13***	0.28***	0.04	–0.01	–0.76***	–978.78***
	(0.06)	(1.96)	(0.04)	(0.04)	(0.05)	(0.03)	(0.03)	(0.19)	(250.39)
Mean	[0.68]	[24.37	[0.44]	[0.25]	[0.52]	[0.07]	[0.03]	[0.83]	[1,001.53]

*** p<0.01, ** p<0.05, * p<0.1.

Standard errors in parentheses. Regular care indicates a child was in nonparental care at least ten hours each week; PT indicates part-time care (between 10-29 hours/week); FT indicates full-time nonparental care (30 hours/week or more). Results are presented as marginal effects for binary outcomes or regression coefficients for continuous outcomes. In the top panel, models predicting cost have sample sizes of 5,350; all other models in the top panel use sample of 6,900. In the middle panel, models predicting cost have sample sizes of 1,875; all other models in the middle panel have sample sizes of 2,550. In the bottom panel, models predicting cost have sample sizes of 550; all other models in the middle panel have sample sizes of 750. Dependent variable means are in brackets and unweighted.

Source: Authors' calculations using ECLS-B data

Table 2.7: Unadjusted Maternal Employment Rates by Wave, Weighted

	Employed			FT Employment			PT Employment		
	Disability, Any Wave	Typically Developing	Difference	Disability, Any Wave	Typically Developing	Difference	Disability, Any Wave	Typically Developing	Difference
Wave 2	53.9%	55.4%	1.5%	33.2%	35.6%	2.4%	20.7%	19.8%	–0.8%
Wave 3	58.6%	60.1%	1.4%	40.1%	40.7%	0.6%	18.6%	19.4%	0.8%
Change	4.7%	4.7%	**0.1%**	6.9%	5.1%	**1.8%**	–2.1%	–0.4%	**2.2%**
Wave 3	58.6%	60.1%	1.4%	40.1%	40.7%	0.6%	18.6%	19.4%	0.8%
Kindergarten	60.2%	63.9%	3.7%	41.7%	43.8%	2.1%	18.5%	20.1%	1.6%
Change	1.5%	3.8%	–**2.3%**	1.6%	3.1%	**–1.5%**	–0.1%	0.7%	**–0.7%**

FT Employment indicates household mother was employed at least 35 hours/week. PT Employment indicates household mother was employed less than 35 hours/week.

Source: Authors' calculations using the ECLS-B

Table 2.8: DD Analysis Using LPM Predicting Maternal Employment

	Panel 1 Full Sample			**Panel 2: HH Income Ever < Poverty**			**Panel 3: HH Ever Received SSI/DI**		
	Any	Continuing	IEP	Any	Continuing	IEP	Any	Continuing	IEP
				Any Employment					
Dis-ability	**-0.026	–0.031	–0.014						
	(0.012)	(0.019)	(0.019)						
Kinder-garten	***0.021	***0.019	***0.019						
	(0.007)	(0.007)	(0.007)						
DD	–0.012	–0.007	–0.012	0.003	–0.004	–0.029	0.008	–0.032	–0.056
	(0.012)	(0.018)	(0.021)	(0.022)	(0.031)	(0.038)	(0.038)	(0.041)	(0.043)
				FT Employment					
Dis-ability	**-0.032	***-0.047	*-0.030						
	(0.013)	(0.016)	(0.018)						
Kinder-garten	0.012	*0.012	0.011						
	(0.007)	(0.007)	(0.007)						
DD	0.002	0.012	0.019	0.020	0.010	–0.006	0.029	–0.033	–0.034
	(0.012)	(0.017)	(0.023)	(0.022)	(0.031)	(0.039)	(0.037)	(0.042)	(0.047)
				PT Employment					
Dis-ability	0.006	0.002	0.019						
	(0.011)	(0.016)	(0.017)						
Kinder-garten	0.01	0.007	0.009						
	(0.007)	(0.007)	(0.007)						
DD	–0.014	–0.006	–0.032	–0.017	–0.011	–0.027	–0.024	0.001	–0.023
	(0.012)	(0.017)	(0.021)	(0.020)	(0.027)	(0.033)	(0.033)	(0.039)	(0.042)

Table 2.8: DD Analysis Using LPM Predicting Maternal Employment

	Panel 1 Full Sample			Panel 2: HH Income Ever < Poverty			Panel 3: HH Ever Received SSI/DI		
	Any	Continuing	IEP	Any	Continuing	IEP	Any	Continuing	IEP
				Hours					
Dis-ability	***-1.51	**-1.61	–1.16						
	(0.52)	(0.78)	(0.71)						
Kinder-garten	***0.79	***0.81	***0.77						
	(0.28)	(0.26)	(0.26)						
DD	–0.02	–0.32	0.03	0.45	–0.27	–0.26	0.96	–1.57	–1.91
	(0.46)	(0.70)	(0.84)	(0.88)	(1.20)	(1.52)	(1.51)	(1.60)	(1.71)
				Total Hours					
Dis-ability	***-2.46	**-2.05	***-2.74						
	(0.64)	(0.93)	(0.95)						
Kinder-garten	*0.69	**0.83	**0.73						
	(0.38)	(0.352)	(0.347)						
DD	0.18	-0.97	–0.09	0.32	–1.66	–0.27	0.67	–2.76	–1.67
	(0.63)	(0.94)	(-1.18)	(1.18)	(1.656)	(2.181)	(2.06)	(2.26)	(2.55)

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Standard errors in parentheses. FT Employment indicates household mother was employed at least 35 hours/week; PT Employment indicates household mother was employed less than 35 hours/ week. Hours is a measure of regular weekly hours worked by household mother; Total Hours is a measure of combined weekly hours for all parents in the households. The full sample has 6,700 observations. The sub-sample of households ever below poverty includes 2,550 observations. The sub-sample of households that have ever received disability benefits has 750 observations. Source: Authors' calculations using ECLS-B

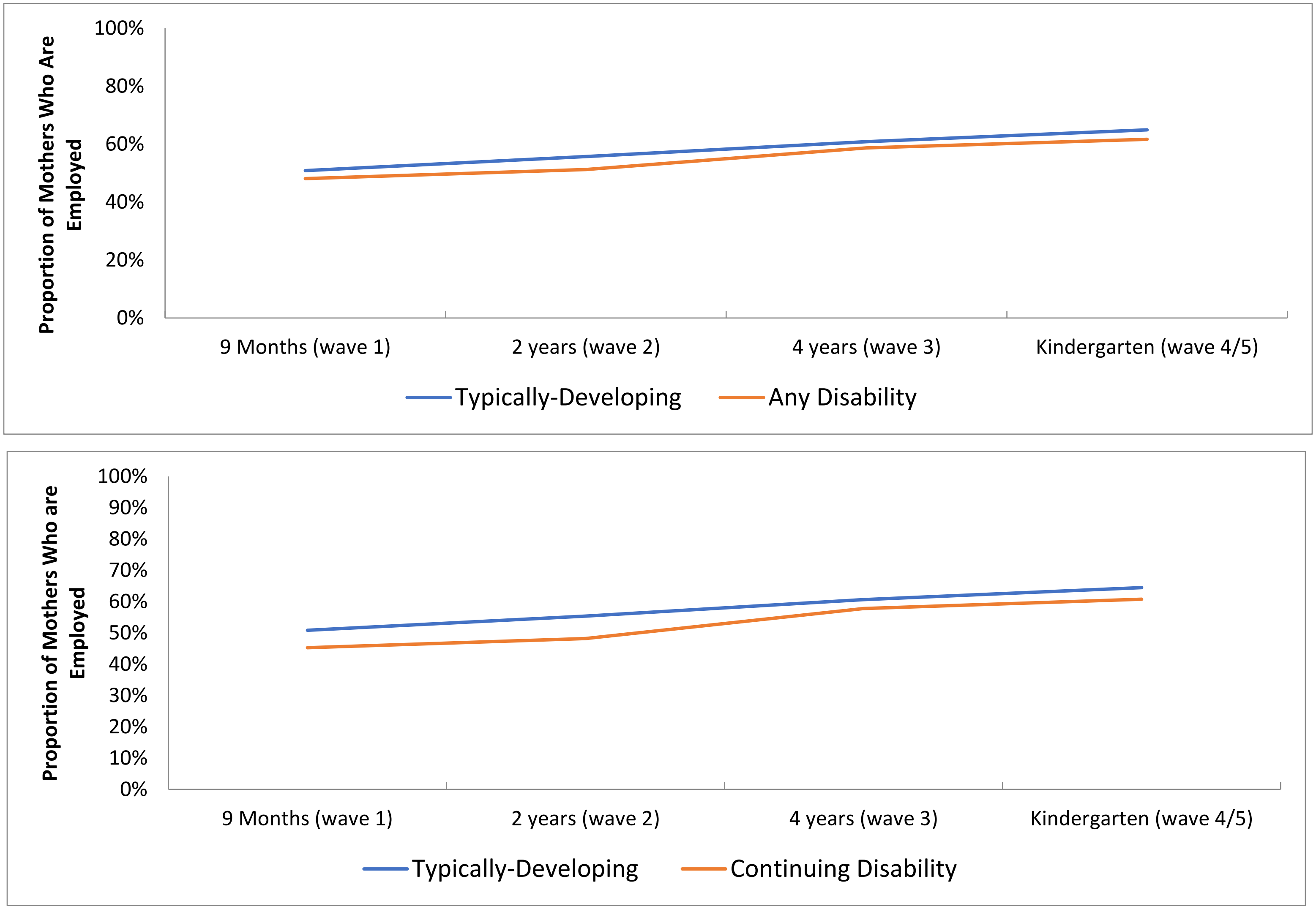
Table 2.9: DD Analysis Using LPM Predicting Maternal Employment by Disability Category

	Any Employment		FT Employment		PT Employment	
	Main Effect	DD Estimator	Main Effect	DD Estimator	Main Effect	DD Estimator
Communication	-0.042***	-0.003	-0.050***	0.010	0.009	-0.013
	(0.016)	(0.015)	(0.016)	(0.014)	(0.014)	(0.014)
Intellectual Disability (ID)	-0.157**	0.044	-0.164***	0.1301**	0.009	-0.082*
	(0.067)	(0.057)	(0.063)	(0.056)	(0.052)	(0.045)
Emotional/Mental Health	-0.041*	0.001	-0.081***	0.027	0.042**	-0.028
	(0.023)	(0.020)	(0.022)	(0.020)	(0.019)	(0.019)
Autism	-0.038	0.044	-0.084*	0.029	0.048	0.011
	(0.058)	(0.037)	(0.050)	(0.040)	(0.048)	(0.035)
Chronic	-0.013	-0.013	-0.015	0.004	0.001	-0.016
	(0.022)	(0.021)	(0.022)	(0.022)	(0.018)	(0.020)
Physical/Orthopedic	-0.047*	-0.014	-0.078***	0.030	0.033	-0.044*
	(0.026)	(0.024)	(0.025)	(0.022)	(0.022)	(0.023)
ID/Autism	-0.084*	0.049	-0.112***	0.063*	0.030	-0.015
	(0.046)	(0.034)	(0.041)	(0.035)	(0.038)	(0.030)
Congenital Syndrome	-0.226**	0.202	-0.236**	0.210*	0.008	-0.006
	(0.111)	(0.134)	(0.097)	(0.113)	(0.094)	(0.077)

*** p<0.01, ** p<0.05, * p<0.1
Standard errors in parentheses. FT Employment indicates household mother was employed at least 35 hours/week; PT Employment indicates household mother was employed less than 35 hours/ week.
Source: Authors’ calculations using ECLS-B

Figures

Figures 2.1a, 2.1b: Maternal Employment Rates Across Survey Waves by Disability Status



Source: Authors' calculations using the ECLS-B

Appendices

Appendix Table 2.1: Conditions by Interview Wave

Condition	Waves Included
Asthma	All
Blindness	1,2
Difficulty seeing	All
Difficulty hearing	All
Cleft palate	1
Heart defect	All
Failure to thrive	1
Problem with mobility	All
Problem using hands	1
Down Syndrome	1
Turner Syndrome	1
Spina bifida	1
Other special need	1
Crossed eyes	2
Delay in walking	2
Delay in talking	2
Other delay	2–5
Epilepsy	2–5
Intellectual disability	2–5
Requires special equipment	2–5
Condition impairs play	2
Evaluated and diagnosed problem with attention	3–5
Evaluated and diagnosed problem with activity level	3–5
Evaluated and diagnosed problem using limbs	3–5
Evaluated and diagnosed problem with communication	3–5
Autism	3–5
Oppositional Defiant Disorder	3–5
ADHD	3–5
Blood disease	4–5
Other chronic condition	4–5

Source: ECLS-B

Appendix Table 2.2: Models Predicting Child Care Arrangements in Waves 1 & 2, and Children Diagnosed with a Disability in Kindergarten

	Regular Care[a]	Hours in Care[b]	FT [a]	PT [a]	Center [a]	Home-Based [a]	Head Start	Annual Cost[b]
Wave 1	–0.02	–0.60	–0.02	0.00	0.00	–0.01		119.17
	(0.02)	(0.86)	(0.02)	(0.01)	(0.01)	(0.01)		(243.56)
Wave 2	0.01	0.53	0.00	0.01	0.02	0.02		–106.68
	(0.02)	(0.71)	(0.02)	(0.01)	(0.01)	(0.01)		(175.83)
Diagnosed in Kindergarten	-0.02	-0.87	-0.01	-0.00	-0.02	-0.03*	-0.03*	55.47
	(0.02)	(1.03)	(0.03)	(0.02)	(0.03)	(0.01)	(0.01)	(156.89)

	Home-Based Care vs No Care	Center-Based vs No Care	Home-Based vs Center	No Care	Home-Based	Center-Based
Wave 1	0.89	0.95	0.94	0.02	–0.02	–0.00
	(0.07)	(0.13)	(0.13)	(0.02)	(0.02)	(0.01)
Wave 2	0.99	1.17	0.85	–0.01	–0.01	0.02
	(0.09)	(0.13)	(0.10)	(0.02)	(0.02)	(0.01)
Diagnosed in Kindergarten	0.98	0.89	1.10	0.02	0.01	-0.03
	(0.16)	(0.11)	(0.17)	(0.02)	(0.02)	(0.03)

*** p<0.01, ** p<0.05, * p<0.1

Standard errors in parentheses. Regular care indicates a child was in nonparental care at least ten hours each week; PT indicates part-time care (between 10-29 hours/week); FT indicates full-time nonparental care (30 hours/week or more).

Wave 1 and Wave 2 models use wave specific disability measures and outcomes. The third model uses outcomes from Wave 3.

Source: Authors' calculations using the ECLS-B

Appendix Table 2.3: Covariate Estimate for Models Predicting Child Care Use in Wave 3

	Regular Care^a	Hours in Care^b	FT ^{a}	PT ^{a}	Center^a	Head Start ^{a}	Home-Based^a	Annual Cost^b
Any Disability, Before Kindergarten	0.04***	0.05	–0.01	0.04***	0.06***	0.01**	0.00	–386.75***
	(0.01)	(0.53)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(87.54)
Male	1.13**	0.31	1.06	1.06	1.07	1.02	1.04	–118.70
	(0.06)	(0.47)	(0.06)	(0.06)	(0.06)	(0.13)	(0.13)	(78.22)
Child Race/Ethnicity, White	reference	reference	reference	reference	reference	reference	reference	reference
Black	1.73***	8.08***	2.55***	0.51***	1.78***	3.31***	0.96	–203.41
	(0.17)	(0.81)	(0.24)	(0.06)	(0.16)	(0.67)	(0.23)	(127.86)
Latinx	1.09	1.01	1.22**	0.86*	1.06	1.61**	0.91	–186.79
	(0.10)	(0.74)	(0.10)	(0.08)	(0.09)	(0.34)	(0.17)	(132.93)
Other Race/Ethnicity	1.34***	3.53***	1.46***	0.86*	1.39***	1.43*	0.64**	471.86***
	(0.11)	(0.66)	(0.11)	(0.07)	(0.10)	(0.30)	(0.11)	(122.94)
Single Parent Family	1.92***	8.66***	2.30***	0.70***	1.12	1.25	1.58***	522.63***
	(0.15)	(0.66)	(0.17)	(0.06)	(0.08)	(0.20)	(0.27)	(104.41)
Number of Household Children 5 and Under	0.79***	–2.29***	0.78***	1.01	0.90***	1.14*	0.67***	–296.85***
	(0.03)	(0.32)	(0.03)	(0.04)	(0.03)	(0.09)	(0.06)	(51.26)
Number of Household Children 6–17	0.87***	–1.55***	0.88***	0.99	0.89***	1.00	0.99	–171.63***
	(0.02)	(0.24)	(0.03)	(0.03)	(0.02)	(0.06)	(0.06)	(35.84)
Number of Nonparental Adults in Household	1.11***	2.08***	1.18***	0.90***	0.94*	1.19***	0.73***	–109.45**
	(0.04)	(0.30)	(0.04)	(0.04)	(0.03)	(0.08)	(0.07)	(46.20)
Household Income <100%FPL	0.87	–3.74***	0.67***	1.42***	1.30***	1.75**	0.37***	–1,316.52***
	(0.08)	(0.79)	(0.06)	(0.14)	(0.11)	(0.39)	(0.08)	(101.53)
Household Income 100–199% FPL	0.92	–1.67**	0.78***	1.24**	1.07	1.66**	0.67**	–861.87***
	(0.07)	(0.69)	(0.06)	(0.11)	(0.08)	(0.35)	(0.11)	(97.44)

Appendix Table 2.3: Covariate Estimate for Models Predicting Child Care Use in Wave 3

	Regular Care[a]	Hours in Care[b]	FT [a]	PT [a]	Center[a]	Head Start [a]	Home-Based[a]	Annual Cost[b]
Household Income 200–399% FPL	reference	reference	reference	reference	reference	reference	reference	reference
Household Income 400%+ FPL	2.03***	5.05***	1.66***	1.13	1.74***	0.87	0.88	2,025.16***
	(0.17)	(0.70)	(0.13)	(0.10)	(0.14)	(0.27)	(0.14)	(126.86)
Mother Respondent Health Is Fair/Poor	0.89	–0.91	0.85*	1.07	0.89	1.31	0.80	–243.19***
	(0.08)	(0.81)	(0.08)	(0.11)	(0.08)	(0.23)	(0.19)	(93.84)
Parental Education Level High School	0.89	–0.01	0.98	0.88	0.75***	2.13***	1.36	–1,115.75***
	(0.08)	(0.76)	(0.09)	(0.08)	(0.06)	(0.58)	(0.27)	(113.61)
Parental Education Level Some College	1.18**	1.77***	1.19**	0.97	0.92	2.31***	1.14	–881.80***
	(0.09)	(0.65)	(0.09)	(0.08)	(0.07)	(0.58)	(0.18)	(104.72)
Parental Education College or Higher	reference	reference	reference	reference	reference	reference	reference	reference
Urban City, Urban Large	reference	reference	reference	reference	reference	reference	reference	reference
Urban, Small	1.21**	1.91**	1.19**	0.98	0.96	1.60**	2.67***	–532.84***
	(0.11)	(0.76)	(0.11)	(0.09)	(0.08)	(0.30)	(0.41)	(100.02)
Rural	1.15*	0.88	1.19**	0.95	1.00	2.13***	1.60**	–799.70***
	(0.10)	(0.72)	(0.10)	(0.09)	(0.08)	(0.38)	(0.29)	(98.02)
Constant	1.62	19.85***	0.47**	0.43**	0.53**	0.00***	0.18***	4,507.85***
	(0.50)	(2.85)	(0.16)	(0.14)	(0.17)	(0.00)	(0.10)	(475.68)
Observations	6,600	6,600	6,600	6,600	6,600	6,500	6,600	5,350

*** p<0.01, ** p<0.05, * p<0.1

Standard errors in parentheses. Models also include state fixed effects. Regular care indicates a child was in nonparental care at least ten hours each week; PT indicates part-time care (between 10-29 hours/week); FT indicates full-time nonparental care (30 hours/week or more).

[a] Results presented as odds ratios for logistic regression model

[b] OLS regression models

Source: Authors' estimates using the ECLS-B

Appendix Table 2.4: Regression Models Predicting Parental Employment Outcomes at Wave 3 and Kindergarten Enrollment by Disability Status

		Wave 3						Kindergarten					
		Employed[a]	Employed FT[a]	Employed PT[a]	Hours Worked[b]	Total HH Hours[b]	Father Employed[a]	Employed[a]	Employed FT[a]	Employed PT[a]	Hours Worked[b]	Total HH Hours[b]	Father Employed[a]
Full Sample	Any Disability, Before Kindergarten	–0.01	–0.02*	0.01	–0.93*	–1.62**	–0.02**	–0.03**	–0.02*	–0.00	–1.11**	–1.52**	-0.01
		(0.01)	(0.01)	(0.01)	(0.54)	(0.66)	(0.01)	(0.01)	(0.01)	(0.01)	(0.54)	(0.69)	(0.01)
	Continuing Disability, Before Kindergarten	0.00	0.00	0.00	–0.85	–1.14	–0.01	–0.03*	–0.03	–0.00	–1.81**	–2.53**	-0.02*
		(0.02)	(0.02)	(0.02)	(0.80)	(0.98)	(0.01)	(0.02)	(0.02)	(0.02)	(0.79)	(1.07)	(0.01)
< 100% FPL	Any Disability, Before Kindergarten	–0.03	–0.03	0.00	–1.02	–1.60	–0.02	–0.03	–0.02	–0.01	–0.97	–1.34	-0.01
		(0.02)	(0.02)	(0.02)	(0.88)	(1.13)	(0.02)	(0.02)	(0.02)	(0.02)	(0.93)	(1.21)	(0.02)
	Continuing Disability, Before Kindergarten	–0.04	–0.04	0.00	–2.00*	–1.46	0.01	–0.03*	–0.04	–0.00	–3.11**	–2.55	-0.01
		(0.03)	(0.03)	(0.02)	(1.21)	(1.55)	(0.03)	(0.02)	(0.03)	(0.02)	(1.25)	(1.82)	(0.03)
SSI/DI	Any Disability, Before Kindergarten	–0.02	0.03	0.01	–0.59	–0.63	0.03	–0.03	–0.04	0.02	–3.13*	0.08	0.08
		(0.04)	(0.03)	(0.01)	(1.61)	(2.09)	(0.05)	(0.04)	(0.04)	(0.03)	(1.65)	(2.10)	(0.05)
	Continuing Disability, Before Kindergarten	0.00	0.02	–0.01	0.21	1.85	0.06	–0.03*	–0.06	0.01	–4.67***	–1.17	0.05
		(0.04)	(0.04)	(0.03)	(1.79)	(2.30)	(0.06)	(0.02)	(0.05)	(0.03)	(1.78)	(2.36)	(0.06)

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Standard errors in parentheses. FT employment indicates the household mother was employed at least 35 hours/week; PT employment indicates household mother was employed less than 35 hours/week.

[a] Results presented as marginal effects for logistic regression model
[b] OLS regression models
Source: Authors' calculations using ECLS-B

Appendix Table 2.5: Difference-in-Difference Models Estimating Change in Maternal Employment Rates at Kindergarten, with Imputed Data

	Any	Continuing	IEP
	Any Employment		
Disability	-0.018	-0.034*	-0.019
	(0.012)	(0.019)	(0.018)
Kindergarten	0.022***	0.018***	0.018***
	(0.007)	(0.007)	(0.006)
Diff-Diff	-0.021*	-0.017	-0.019
	(0.012)	(0.017)	(0.020)
	FT Employment		
Disability	-0.020	-0.029	-0.032*
	(0.013)	(0.019)	(0.017)
Kindergarten	0.008	0.005	0.003
	(0.007)	(0.0070)	(0.007)
Diff-Diff	-0.012	-0.010	0.013
	(0.012)	(0.017)	(0.021)
	PT Employment		
Disability	0.005	-0.004	0.014
	(0.011)	(0.016)	(0.017)
Kindergarten	0.009	0.006	0.007
	(0.007)	(0.007)	(0.007)
Diff-Diff	-0.012	-0.005	-0.028
	(0.011)	(0.016)	(0.020)
	Hours		
Disability	-1.123**	-1.504*	-1.238*
	(0.506)	(0.770)	(0.694)
Kindergarten	0.864***	0.772***	0.682***
	(0.284)	(0.264)	(0.261)
Diff-Diff	-0.668	-0.960	-0.248
	(0.453)	(0.688)	(0.819)

*** p<0.01, ** p<0.05, * p<0.1
Standard errors in parentheses. FT Employment indicates household mother was employed at least 35 hours/week; PT Employment indicates household mother was employed less than 35 hours/ week. Hours is a measure of regular weekly hours worked by household mother. The full sample has 10,600 observations.

Chapter 3. Eligibility for IDEA Services and Parental School Involvement

I. Introduction

In the 2017-2018 academic year, 6.9 million children received special education services through the Individuals with Disabilities Education Act (IDEA), the federal special education program intended to ensure students with disabilities receive the education supports they need. A central premise of IDEA is codifying parents' right to participate in decisions about their children's education. IDEA includes specific provisions intended to ensure parental engagement with and participation in a child's education, including annual conferences with educators to decide upon actions related to evaluation and eligibility for services. One of the cornerstones of both service receipt and parental engagement under IDEA is the Individualized Education Program (IEP) process. The IEP is a legal document which outlines the supports and services the child will receive under IDEA; IDEA centers IEP meetings—the process by which the IEP is first developed and then revised annually—around parental participation and input.

While there is some evidence that IDEA is fulfilling its mission to increase parental school engagement (Fish, 2008), there is also evidence to suggest that some parents feel systematically excluded, devalued and marginalized in the IEP process (Bacon & Causton-Theoharis, 2013; MacLeod et al., 2017; Zeitlin & Curcic, 2014). Low-income parents, parents of color, parents with limited English proficiency, or parents who face other systematic disadvantages are especially likely to experience these challenges (Jung, 2011; Rossetti et al, 2018).

Using a disability studies, or critical disability, framework provides some insight into understanding the disconnect between IDEA's intent and the feelings of marginalization some parents may feel. This framework invites a careful examination of power structures in place and the role these structures play in policies like IDEA. In particular, it suggests that current policies and laws often reinforce structural disadvantages for individuals with disabilities rather than mitigate them, and that these disadvantages may be multiplied for those with intersecting marginalized identities.

This framework together with the evidence suggesting IDEA is falling short of successfully engaging parents underscores the need for further examination of whether IDEA services impact parental engagement in schools. Moreover, at least partly due to a variety of methodological challenges, there is little work examining the effect of IDEA on parental outcomes. Children who receive IDEA services are likely to differ systematically in both observed and unobserved ways from those who do not, as are their parents, making it difficult to precisely estimate the relationship between policy receipt and outcomes.

Given the limited literature as well as the large number of families who receive IDEA services, it is important to address this gap in current understanding. Thus, I seek to contribute to the literature in two ways. First, I aim to provide needed evidence about the extent to which the receipt of special education services influences parental involvement in children's education. Specifically, I ask: (1) Does receipt of services under IDEA influence parental engagement in a child's education?; and, (2) Is the relationship between IDEA and parental engagement moderated by family's socioeconomic status (SES)? Though the literature suggests some parents feel devalued in the IEP process, it also indicates that parents are still taking part in the process.

Thus, I hypothesize that IDEA will increase parental engagement in a child's education. However, following the literature and the critical disability framework, I hypothesize that there is an inverse relationship between family SES and parental engagement and satisfaction.

In addition to addressing these questions, I attempt to move the existing literature forward through use of methods intended to mitigate bias stemming from selection issues. In addition to fixed effects models, I also examine the use of two potential instruments for IDEA service receipt based on previous research. First, following Dhuey and Lipscomb (2010), I investigate whether relative age in grade is a valid instrument for IDEA service receipt for at least some disability types. Next, following Elder and colleagues (2020), I examine the use of birthweight. I find neither to be particularly effective.

II. Background

A. Theoretical Framework

Critical disability framework springs from the same well as other critical theories including critical race theory, queer theory, and feminism. Like these other critical theories, it is concerned with power dynamics, and societal norms and exclusion. This framework underscores the systemic power differential inherent in "disability" as a social construct, and the ways in which this is used as a means of othering or stigmatizing (Imrie, 2014). It also highlights underlying assumptions about individuals with disabilities and how these become codified into policy. In particular, critical disability rests on the premise that too often policy puts the onus of change on the person with a disability or their family rather than policymakers and society (Devlin & Pothier, 2006; Roulstone et al., 2014). Additionally, this framework encourages an understanding of the ways in which disability combines with race, class, and gender identities to further marginalization of individuals with disabilities.

There are echoes of the critical disability framework throughout the special education policy literature. For example, some scholars emphasize that IDEA rests on a deficit model of disability, which assumes that the child and disability itself are problems to be remedied (Beratan, 2006). Moreover, the burden is on families to first prove the necessity of these accommodations and advocate for their children to receive necessary services (Phillips, 2007). In addition, the framework's careful attention to power dynamics and intersections of privileged and marginal identities undergirds much of the literature debating disproportionality in special education services. Scholars using this framework have emphasized how identification of students for special education services serves to legitimatize labels and stigmatization of students based on race, ethnicity, or socioeconomic status (Ferri, 2009; Ferri & Connor, 2005). As Collins and colleagues (2016) sum up, the critical disability lens lays bare "the institutional ableism and racism" within schools, and special education's role in perpetuating these problematic structures (p. 12). Thus, using this framework to investigate the question of IDEA's efficacy for parental engagement provides a basis for reconciling findings related to families' feelings of marginalization with the law's intent. Further, it invites a critical examination of the ways in which IDEA may be upholding existing power structures.

B. Policy Background: IDEA

Though it began serving a much smaller number of students, for the last decade IDEA has been providing services to nearly seven million children between three and 21 in the US education system. At its core, IDEA is intended to ensure that students with disabilities have access to a “free and appropriate public education” (Individuals with Disabilities Education Act, 2004, §300.101(a)). IDEA is a federal law, though services are administered through the state or local education agency (LEA) or school district. Thus, states have discretion in some of the ways in which services may be administered, though they must be provided within the confines of the law. In federal fiscal year 2019, IDEA was appropriated approximately $13.5 billion in funding. States are allocated a portion of the funding based on a formula that accounts for the number of children being served. Funding, following enrollment overall, rose steeply between 1990 and the mid-2000s, with a more recent leveling off of both (Dragoo, 2018).

To qualify for services under IDEA, a student must first undergo an evaluation. This may be requested by a parent, or, it may be started by the school. Schools are required, under a provision in the law, to evaluate students they believe may have a disability, even if a parent has not requested this evaluation. To be eligible, a child must be found to have a disability, and, as a result, need additional services to make progress in school. Not all disabilities are eligible for services; students must have one of thirteen different types of disabilities. Specifically, these include autism, deaf-blindness, deafness, emotional disturbance, hearing impairment, intellectual disability, multiple disabilities, other health impairments, specific learning disability, speech or language impairment, traumatic brain injury, and visual impairment, including blindness.

Students receiving services under IDEA have an IEP, which is a legal document that specifies what services the school must provide to the student to accommodate their learning. IEPs are typically updated annually. Though parents are not required to attend the meeting at which this happens, schools are required to notify parents of their right to attend and to schedule the IEP meeting at a time that the parent may attend. This meeting is intended to involve parents as well as the child’s entire support staff team within the school (Office of Special Education and Rehabilitative Services, 2000).

While in theory IDEA ensures many supports for students with disabilities, for purposes of this paper I am interested in the policy’s intended supports to promote parental engagement. It provides very specific guidelines for parental rights to participation including the right to participate in meetings related to the evaluation of a child’s disability, the right to be part of the group that decides whether a child meets IDEA eligibility criteria, and the right to participate in meetings about a child’s education. In particular, the law is explicit that schools must use all possible methods to ensure parental participation in IEP and placement meetings. IDEA also contains multiple provisions and safeguards to ensure that a school is communicating with parents about any changes to their child’s education. The law itself makes clear that parental participation and engagement are an important centerpiece to the policy, as evidenced by this text:

> Almost 30 years of research and experience has demonstrated that the education of children with disabilities can be made more effective by… strengthening the role and responsibility of parents and ensuring that families … have meaningful opportunities to participate in the education of their children at school and at home . . . (IDEA, 2004, §1400(c)(5))

Given the clear intent of the law as outlined here, it is important to understand whether it is succeeding in supporting parental participation.

C. Previous Literature

C.1 Parental engagement

The role of parental involvement or engagement in a child’s education—and how to increase engagement—has been a topic of interest in child development and education research for the last few decades, often as part of a larger discussion about improving child outcomes (e.g., Epstein & Dauber, 1991; Hoover-Dempsey & Sandler, 1997). Overall, studies find that parental engagement, defined broadly, leads to improved child outcomes across a variety of domains. Parental engagement is associated with increased academic achievement (using a variety of measures), increased student motivation, and positive social-emotional development (Fan & Chen, 2011; Gonzalez-DeHass et al., 2005; Hill & Taylor, 2004; Jeynes, 2007). These impacts are found across developmental stages, from preschool through high school, though with some indications that the impacts of parental engagement may be greater for older elementary and middle-school children than younger children (Fan & Chen, 2011; Hill & Tyson, 2009; Wang & Sheikh-Khalil, 2013).

Parental engagement is a multidimensional, complex construct and is not uniformly defined in the literature, with many differences by academic discipline (Grolnick & Slowiaczek, 1994; Wang & Eccles, 2013). Many educational policy scholars conceive of parental engagement—viewed broadly as parental participation in a child's education—as a form of social capital in the mold of Bordieu (1985) and Coleman (1988, 1990) in which parents are transferring human capital or other benefits to their children through social ties and relationships with the school (e.g., Barton et al., 2004; Liu & White, 2017; Posey-Maddox, 2013). There are multiple dimensions to parental engagement, but parental school participation is one important and relatively core facet. Measures of this construct in the educational policy literature tend to focus on the ways in which parents engage with their child's school and relationships developed through this engagement (see, for example: Liu & White, 2017; Turney & Kao, 2009).

Though the literature has largely been consistent in finding overall positive associations between parental engagement and child outcomes, there are important differences by subgroups. As the social capital and critical disability lens would suggest, expectations, including definitions of parental engagement, are often based on the norms of middle-class white families (Barton et al., 2004). For example, Kao and Rutherford (2007) find that African-American students benefited more from parental school involvement than white children, while Asian children benefited less than white children. Posey-Maddox (2013) finds that shifting norms around increased parental involvement through activities like fundraising and volunteering can limit the ways in which many families can be involved, resulting in decreased involvement and satisfaction. Moreover, the ways in which families think about parental involvement—and satisfaction—can have very different meanings across cultures and contexts (e.g., Glick & White, 2004; Huntsinger & Jose, 2009; Lareau, 1996; Turney & Kao, 2009). This can lead to strained relationships between educators and parents, further decreasing the likelihood of engagement (Fields-Smith, 2006; Posey-Maddox, 2013).

Thus, while parental engagement is largely found to benefit families (and students), it is important to consider each family’s particular context. Indeed, studies consistently suggest that factors related to parental involvement vary based on: how the study defines engagement (Goodall & Montgomery, 2014); school context, including familiarity and perception of relationships (Barton et al, 2004); and family demographics. Single parent families are less likely to be engaged, given time commitments, as are low-income families, likely for similar reasons (Lareu, 1987; Weiss et al., 2003). Finally, race and ethnicity as well as parent immigration status all impact parental engagement (Carreon et al.,2004; Posey-Maddox, 2017); the findings are mixed but emphasize the imposition of white, middle-class norms on the expectations of engagement.

C.2 IDEA and parental engagement

Despite that one of its intended purposes is to support parental engagement, there is limited information about the association between IDEA service receipt and parental engagement. Analyses from surveys of special education students and their families suggest that a majority of parents participate in IEP meetings for students, and that they are largely satisfied with this participation and their child's education in general (Newman, 2005; Wagner et al.,2012). Wagner and colleagues (2012) find, using two different data sources, that nearly 90% of parents report attending their child's most recent IEP meeting, and that a majority—around 70% in both data sets—report that they are satisfied with their level of engagement with their child's education. These data are for students aged 11 and older; there is little quantitative data about engagement in elementary school. Some studies, using surveys or interviews with parents of children who receive IDEA services, find similarly that the majority of parents report involvement with IEP meetings as well as high levels of satisfaction with the IEP process and their child's education (Fish, 2008; Garriott et al., 2006; Vaughn et al., 1998). A body of qualitative literature with both parents and teachers comes to the same conclusions (Spann et al., 2003; Underwood, 2010).

Digging a bit deeper, however, paints a more nuanced picture. Wagner and colleagues (2012) find that families who are least likely to participate in an IEP meeting and report satisfaction are families with annual incomes below $25,000 and families who identify as Black or Hispanic. This is echoed in the qualitative literature, with consistent findings that low-income families, families of color, families for whom English is not a primary language, and immigrant families report low-levels of understanding and satisfaction with the special education process (Bacon & Causton-Theoharis, 2013; Cho & Gannotti, 2005; MacLeod et al., 2017). This can often lead to decreased engagement in the special education process itself as well as the overall education system (Harry et al., 1995). For example, in interviews with Mexican-American parents about their experiences with their children's IEP meetings, Zeitlin and Curcic (2014) find that IEP meetings feel depersonalized and overly focused on compliance at the expense of collaboration. This leads parents to generally feel dissatisfied with the special education system and their child's educational experience. While this example focuses specifically on the experiences of Mexican-American families, the literature is rife with examples from a variety of groups, including low-income families, low-SES families (defined broadly), Asian immigrants, families for whom English is a second language, and, particularly, for African-American families (Kibria & Becerra, 2020; Park & Turnbull, 2001; Rosstti et al., 2017).

C.3 Characteristics of children who receive IDEA services and their families

Policymakers and researchers have long been concerned with the overrepresentation of children of color in special education. In response to research calling attention to the disproportionate number of children of color receiving services (Chinn & Hughes, 1987; Dunn, 1968), Congress passed amendments to IDEA in 1995 that defined and required states to address disproportionalities in the system (Dragoo, 2018). Despite this, disproportionalities—and related concerns—remain. Indeed, microdata from the Department of Education for the 2017-2018 academic year show that while 14% of all students received IDEA services, the proportion was as high as 18% for American Indian/Alaskan Native students and 16% for Black students, and as low as 7% for Asian students (U.S. Department of Education, 2019). Overrepresentation is particularly notable in IEP categories that may be considered to be more subjectively identified, such as learning disabilities and attention deficit hyperactivity disorder (ADHD). As such, many scholars argue that this disproportionality stems from subjective bias from educators (Artiles et al., 2010; Collins et al., 2015; Fish, 2019).

More recently, studies have attempted to disentangle this relationship by examining the role of individual and school characteristics in the referral process and in who ultimately receives IDEA services. Morgan and colleagues have conducted a series of meta-analyses that adjust for individual student and school characteristics to more closely examine what may be driving these numbers. They find that, once adjusting for school and individual factors, Black students are actually underrepresented in special education services (2017) and find no evidence of overrepresentation of Hispanic, Native American, or Asian children (2018). Yet, using a case study experiment, Fish (2017) finds evidence that educators may be over-referring Black students for services for some types of disabilities, particularly related to behavior concerns.

In addition to differences in race and ethnicity, there are other differences between students who receive IDEA services and the general student population. Qualitative and quantitative studies suggest that children with limited English proficiency are overrepresented in special education (Morgan et al., 2018; Sampson & Leseaux, 2009). In addition, students receiving services under IDEA are, on average, less advantaged than the overall student population. These students are more likely to be from families with limited income or other markers of low socioeconomic status (Hibel et al., 2010; Sullivan & Bal, 2013). This mirrors what is known generally about children with disabilities in the United States (see, for example:

Parish & Cloud, 2006; Stabile & Allen, 2012). Some of this economic disadvantage may be due to decreased parental labor market participation as a result of caregiving needs and higher likelihoods of parental poor health (Powers, 2001; DeRigne & Porterfield, 2010). The literature is mixed on whether low-income children are more or less likely to be referred for special education services than higher-income peers (Achilles et al, 2007; Frey, 2002; Skiba et al, 2005); we also know little about how children who receive IDEA services compare to the population of school-age children with disabilities overall (i.e., are children with disabilities who receive IDEA services more or less advantaged than children with disabilities who do not receive IDEA services?). Similarly, little evidence exists about family structure and IDEA receipt, though some studies suggest an association between childhood disability and increased rates of parental relationship dissolution (e.g., Risdal & Singer, 2004). In addition to child and family-level characteristics, studies suggest that school characteristics also influence which children are referred to and receive special education services. In particular, schools with higher proportions of children of color are less likely to refer children for special education services, schools with a higher average SES overall are more likely to refer children, and children of color in schools with fewer students of color are more likely to be identified by educators as needing special education services or an evaluation (Elder et al., 2019; Hibel et al., 2010).

D. Methodological Challenges

As the above review of the literature underscores, much of our knowledge about families and IDEA comes from qualitative studies, with fewer quantitative studies to consult. There are likely a few reasons for this gap. Below, I briefly describe some of the methodological concerns with studies of childhood disability and IDEA service receipt in particular. I then review past research that has attempted to use quasi-experimental methods to further investigate the role of both childhood disability generally and IDEA specifically on a variety of outcomes, with a focus on studies that use instrumental variables to proxy disability status or special education receipt.

One major methodological concern is the limited sample size of children with disabilities overall, and, particularly those who receive services through IDEA. Though there are over six million children nationwide who receive these services, they represent just under 14% of the total number of students enrolled in public schools (US Department of Education, 2019), and are often limited in nationally-represented surveys.

Perhaps larger than the sample size concern is the issue of endogeneity in measures of special education receipt and many relevant outcomes. The evidence indicates that childhood disability and special education receipt are associated with several factors that may also influence parental engagement, such as socioeconomic status and family structure. It is difficult, then, to understand whether special education service receipt influences the outcomes or vice versa and to distinguish whether any observed effect of special education or disability status is actually due to unobserved factors. Some studies have attempted to use quasi-experimental designs to disentangle these selection bias concerns and further isolate the role of childhood disability or special education receipt on a particular outcome of interest. For example, Currie and Stabile (2006) use sibling fixed effects to determine the role of ADHD symptoms on educational attainment, and Fletcher (2010) uses child fixed effects to examine the role of inclusion on classmates’ educational attainment.

Instrumental variable (IV) approaches are also common in the health economics and education economics literature. Finding an appropriate instrument that is correlated with childhood disability or special education receipt but is not correlated with outcomes of interest is a challenge given the endogeneity reviewed above. Some studies use a special education funding change in Texas as an instrument and generally find increased educational attainment as the result of IDEA services (Ballis & Heath, 2019; Hanushek et al., 2002).

There is some evidence that a child's relative age in grade can lead to increased referrals for some special education services, including learning disabilities and ADHD (Elder, 2010; Elder & Lubotsky, 2009). Dhuey and Lipscomb (2010) use three nationally-representative data sets and find, consistently, that one additional month of age at kindergarten enrollment relative to the cutoff is associated with a two to five percentage point reduction in receiving special education services, suggesting this may be a potential instrument for researchers to use to examine relevant outcomes.

Perhaps most common, however, is the use of birthweight to instrument childhood disability or special education receipt (e.g., Almond & Mazumuder, 2011; Berhman & Rosenzweig, 2004; Black et al., 2007). Studies show consistently that birthweight, even when controlling for factors such as gestational age or parental socioeconomic status, is a significant predictor of childhood health status and disability services receipt. There are concerns about its validity as an instrument given the unclear role of socioeconomic status in both birthweight and childhood disability. Notably, however, a recent study from Figlio and colleagues using linked Florida vital records and school records (2020) finds a strong association between special education receipt and birthweight and further finds that this association is robust to multiple specifications, including controlling for parental socioeconomic status at birth.

E. Current Study

With an increasing number of children receiving IDEA services and concerns from some stakeholders that the law is at best ineffectual and at worst racist and ableist (Collins et al., 2016), there is a need to better understand how IDEA impacts not only students, but their families as well. Data and methodological concerns have left the quantitative literature largely silent about how families experience IDEA and whether it is, in fact, successful at engaging parents in their children's education. This study seeks to fill that gap by using rich, nationally-representative longitudinal data and employing quasi-experimental methods to isolate the potential impact of IDEA receipt on parental engagement and further investigate the role of socioeconomic status in parental outcomes.

III. Data and Methods

A. Data

I use data from the Early Childhood Longitudinal Survey- Kindergarten 2011 Cohort (ECLS-K 2011). The ECLS-K 2011 is a nationally-representative sample of children who enrolled in kindergarten in the 2010-2011 academic year. Children and families were followed longitudinally through what is generally the child's fifth grade year (2016-2017 academic year). Data come from a variety of sources, including children, parents, teachers, and school administrators. Information about the child's school is included from Department of Education administrative records. I primarily use data drawn from parent interviews conducted in the fall and spring of the child's kindergarten year and the spring of each academic year following, supplemented with administrative data about the child's school.[13]

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[13] I do not use data from parent interviews in the fall of first or second grade. For more information about the study design, see Tourangeau et al., 2019. Additional information is also available at https://nces.ed.gov/ecls/kindergarten2011.asp

As previously reviewed, data limitations may be one of the reasons for the limited evidence about IDEA receipt and outcomes. The ECLS-K 2011, however, offers a rich data set that overcomes many of these limitations. It contains detailed measures of a child's disability status (as reported by a parent), as well as their enrollment in special education services. It also contains measures of parental engagement in and satisfaction with schools. Because it follows children and families over time, analyses can mitigate some of the endogeneity concerns that arise with studies focused on disability and IDEA receipt and family outcomes.

The ECLS-K 2011 begins with a nationally-representative sample of 18,174 students from 968 schools who enrolled in kindergarten in academic year 2010-2011. This sample includes children from public, private, and other ungraded school settings, and, notably, includes children in both inclusive and special education-only classrooms. Though the ECLS-K 2011 samples children, my unit of analysis is the household rather than the child. Because IDEA explicitly provides rights to a child's parents or guardians, I limit my sample to households with at least one parent or guardian (even if the guardian is not a parent) who completed the parental interview. I further restrict my sample to children currently attending a public or private school in the year of interest; children who are not attending school or who are homeschooled are not bound by IDEA law, and thus, the analysis is not relevant.[14] My sample is further limited to parents for whom we have complete information on dependent variables of interest and necessary school characteristics. When possible, however, I impute missing data from previous years and/or based on sample means. My final analytic sample includes 17,873 unique

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[14] Given concerns about IDEA implementation in some charter and private schools, I conduct robustness checks limiting my analysis to only students in public schools. Results are robust to this specification, with some larger impact sizes (available upon request).

households;[15] households may be observed as many as six times in my data. For some analyses, I pool children across years, giving me a total analytic sample of 85, 950 households. However, due to missing covariate or school data, most of my analytic models have smaller sample sizes.

B. Measures

B.1 Main outcomes

To measure parental engagement and satisfaction outcomes, I create a scale based on available survey items. Specifically, I construct scales to measure: (1) parental engagement; and (2) parental satisfaction with school. These scales follow previous studies focused on parental engagement using ECLS-K data (see: Cooper et al., 2010; Turney & Kao, 2009).

B.1.a Parental Engagement. To measure parental engagement with school, I follow previous literature and create a summative scale combining five yes/no items, resulting in a range from zero (all no responses) to five (all affirmative). Respondents are asked whether they, or another adult in the household, has: (1) attended an open house or back-to-school night at the child's school; (2) attended a PTA or PTO meeting; (3) attended a school or class event, such as a play, sports event, or science fair; (4) volunteered in a child's classroom; and (5) gone to meetings or participated in activities at the child's school. The Chronbach's alpha for this scale is .56, which is low though within the acceptable range. Parents are asked these items every year. Because the previous literature suggests IDEA receipt may impact parental engagement, it is important to measure this construct and to do so using a scale that is comparable to other parental engagement studies that use the ECLS-K 2011.

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[15] This includes 98 households with sampled twins; thus, the sample includes 17,971 unique students. I include these families in my analyses and control for twin status.

B.1.b Conference Attendance. In the same series described above, parents are also asked whether they attended a regularly scheduled parent-teacher conference or meeting with their child’s teacher. Because the IEP meeting is a central condition of parental engagement in IDEA, I include this as its own measure. In robustness tests, I also include this measure in the overall engagement measure.

B.1.c Parental Satisfaction with School Supports. This scale sums five items that ask about parents’ satisfaction with different aspects of the child’s school. The items included in the scale are responses to the question, “How well does your child’s school . . .”: (1) “let you know how well your child is doing in school between report cards”; (2) “help you understand what children at this age are like”; (3) “make you aware of chances to volunteer”; (4) “provide information to help your child learn at home”; and (5) “provide information about community services”. Parents could respond that the school did the item very well, just okay, or that the school does not do it at all. I sum these items for a total range of 5 to 15, with a higher score indicting greater satisfaction with school services. The scale has a Chronbach’s alpha of .78, indicating the items are relatively similar. Because IDEA is intended to support parents and bring together parents and educators in support of their children, understanding how satisfied parents are with their school and the supports and communication they provide is an important indicator of the health of the relationship, and, thus, an indicator of whether IDEA is succeeding in its mission. These measures are available in the child’s kindergarten, first grade, and fifth grade years.

B.1.d Overall Satisfaction. To further investigate whether IDEA is assisting parents in participating in their children’s education, I include a measure of overall satisfaction with a child’s school as an outcome. This is measured on a five-point Likert scale, with higher responses indicating more satisfaction. Results are robust to different specifications of this measure (i.e., binary measures).

B.2 Independent variable

B.2.a IDEA Service Receipt. My main independent variable is child’s receipt of IDEA services. In my main analyses, I measure this using a school’s report of child’s receipt of these services through the presence of an IEP. For some supplemental analyses (not shown), I also include a measure of the specific diagnostic category for which the child is receiving IDEA services. The number of children who have an IEP changes each year (Table 3.1), ranging from 3.9% in kindergarten to 7.9% in fifth grade. When I describe results, I use both student’s receipt of IDEA services and having an IEP interchangeably to describe the independent variable.

B.2.b Disability. To better understand the influence of special education services on children who are most likely to receive these services and ensure an appropriate comparison group, I generally limit my analyses to a sample of students who have an identified disability. This broader measure of childhood disability is an indicator of children whose parents report in the relevant survey wave that they have been told by an education or health professional that their child has one or more of a list of various conditions.

B.3. Other measures

Following the critical disability framework, I attempt to account for the role of household positionality in the experience of IDEA services through a series of moderation analyses. Specifically, I conduct subgroup analyses by race and income, and race and income together. I construct a measure of a household’s income quintile using a categorial parent self-report measure of income and historical national income quintile cutoffs in the year prior to the survey, which is the year for which parents are asked to report income.[16] In cases where the reported income category is split across income quintile cutoffs, I randomly assign household income within the category, and then classify by appropriate quintile. I use a measure of a parent's race for subgroup analyses as well. Here, I look at parents who identify as white (not Latinx), Black (not Latinx), Latinx (any race), and other races (not Latinx).

I also estimate a series of instrumental variable (IV) models. I use two instruments in these models. The first set of estimates uses the log of the child's birthweight in ounces as the instrument. The respondent provides the child's birthweight during the fall kindergarten interview, and I use this as the instrument based on the available evidence suggesting birthweight is an appropriate instrument for disability and IDEA receipt (i.e., Corman, 2001; Figlio, 2020). The second set of estimates uses the child's relative age in grade to instrument IEP receipt. To construct this variable, I use the 2010 birthdate cutoff for kindergarten enrollment for the state in which the child's school is located (Education Commission of the States, 2011). I then subtract the child's age in months from the cutoff date to construct a measure of the child's relative age in grade. That is, if a child is born in August, and the cutoff date for her state is September, their relative age is 1 month; a child born in October would have relative age of 11 months.[17] My use of relative age as an instrument is based on work from Dhuey and Lipscomb (2010) and Elder

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[16] I use historical household income tables from the Census Bureau to construct the cutoffs (U.S. Census Bureau, 2019).

[17] In 2010, seven states allowed school districts (LEAs) to set their own cutoff. In these cases, I attempted to locate information on specific LEA cutoffs and use the available LEA information to construct the measure. If that was not possible, I used the cutoff date used in the state's largest LEA. One state (New Hampshire) did not appear to have any age cutoff in 2010; here, I used the latest possible date (January 2011) to construct the relative age measure.

and Lubotsky (2008) who find that younger children are more likely to be referred to IDEA services.

Analyses include a robust set of covariates in order to account for observable characteristics—and proxy unobservable characteristics—that influence parental engagement outcomes, childhood disability, or both. To determine model fit, I introduced covariates progressively in conceptual blocks, and considered which covariates may be highly correlated with one another. For example, for race and ethnicity, I chose to control for parent's race and ethnicity rather than child's and parent's given their high correlation and the relevance to the question at hand. At the child-level, I control for child's sex and whether the child repeated kindergarten. At the household level, controls include number of parents in the home, whether the respondent is a parent or guardian, the number of siblings in the household, number of people overall in the household, highest level of parental education, parental employment status, self-reported parent health status, an indicator for whether at least one parent was born outside the United States, an indicator for whether the child's primary home language is not English, and the income quintile measure described previously. I also include school-level variables, including an indicator for private school, the proportion of students receiving free or reduced lunch at the school, the proportion of students who are students of color, school size, and a measure of whether the school is located in an urban, suburban, or rural area. Finally, I include state fixed effects based on the school's location. I also include grade-level fixed effects in pooled analyses. Results are generally robust to alternate specifications of covariates.

C. Analytic Methods

I begin by presenting descriptive statistics about IDEA receipt and disability prevalence for my sample across academic years. I follow this with descriptive bivariate analysis of my sample by IDEA receipt and disability identification. These are intended to better understand the bivariate associations between IDEA receipt, childhood disability, and parental engagement outcomes. For these results, I use survey weights constructed by the Department of Education.

To further address whether IDEA receipt influence parental engagement, I then employ multivariate OLS regression models estimating parental engagement outcomes by IDEA service receipt. I first use a pooled sample, controlling for grade-level, and then estimate separate models for each specific grade level. Conceptually the correct comparison group for children receiving IDEA services is likely not the full student population but rather students with disabilities who are not receiving IDEA services. Thus, I conduct these analyses using the sample of children for whom a parent reported a disability in that particular wave. I also estimate a model interacting disability and IEP status using the full sample. The general models are represented by Equation 1 below, where $Y_{Engagement}$ is the measure of parental engagement, β_1IDEA is a binary measure of receipt of IDEA services, and β_2X is the vector of covariates.

Equation 1: $Y_{Engagement} = \beta_0 + \beta_1 \text{IDEA} + \beta_2 X + \varepsilon$

The critical disability framework and previous literature underscore the need to unpack the role of race and other measures of privilege. Thus, to address whether socioeconomic status moderates the association between IDEA services and parental engagement and satisfaction, I separately model the associations described above by parental race as well as by household income quintile (top two quintiles and bottom two quintiles).

IEP receipt and parental engagement are likely to be influenced by a number of unobservable factors, which are therefore likely to bias estimates obtained using OLS models. Because it is not clear precisely what these factors might be, it is difficult to estimate the magnitude or direction of the bias. Thus, to further isolate the role of IDEA service receipt, I leverage the longitudinal nature of the ECLS-K 2011 and estimate models using household fixed effects. Fixed effects models essentially treat an individual as her own control and use within-person (household) variation over time. The idea is that unobservable individual characteristics that may be influencing both the independent variable—IDEA receipt—and the outcomes—parental engagement—are likely to be time-invariant (Angrist & Pischke, 2009). Therefore, if the household experiences a change in IDEA receipt at some time during which I observe them, I may be able to attribute any changes in the outcome to the shift in IDEA receipt. The model estimated is given by Equation 2 below, where $Y_{Engagement}$ is the measure of parental engagement for individual *i* at time *t*, β_1IDEA is a time-variant binary measure of receipt of IDEA services, and β_2X is the vector of time-varying covariates, and αit is the unobserved time-invariant household effect.

Equation 2: $Y_{Engagement}\ it = \beta_0\ it + \beta_1 \text{IDEA} it + \alpha it + \varepsilon it$

In addition to fixed effects estimates, I also use an instrumental variable (IV) approach as an attempt to carefully disentangle the endogeneity between IDEA receipt and parental engagement. The validity of IV estimates rests solely on the strength of the instruments used. Strong instruments should directly impact the endogenous predictor of interest (IDEA receipt) but should be exogenous to the outcome, with the only potential association coming through the variable being instrumented (Angrist & Pischke, 2009). Here, I examine the validity of two instruments for IEP receipt: relative age in grade and birthweight. In this case, birthweight and relative age should predict IEP receipt but should be orthogonal to parental engagement measures. The two stages involved in this estimation are given by Equations 3 and 4 below.

Equation 3: $I_{IDEA} = \beta_0 + \beta_1 \text{RelativeAge/Birthweight} + \beta_2 X + \varepsilon$

Equation 4: $Y_{Engagement} = \beta_0 + \beta_1 \text{RelativeAge/Birthweight} + \beta_2 X + \varepsilon$

Following Solon, Haider, & Wooldridge (2013), I do not use weights in my regression results. Additionally, most models use robust standard errors clustered at the household-level (as compared to the school-level).

IV. Results

A. Main Results

[TABLE 3.1]

I present descriptive statistics to examine the pattern of disability status and IEP receipt over time in order to provide necessary context for the full set of analyses (Table 3.1). A substantially larger number of parents report that their children have a disability than those who receive services under IDEA. In kindergarten, the difference is 16 percentage points, with 20% of parents reporting some form of childhood disability while only 4% have an IEP. With the exception of kindergarten, the proportion of children with a disability remains relatively stable across grades, holding right around 14%. This is not true for IEP status however. Unlike overall disability, the share of children who have an IEP increases from a low of 4% in kindergarten to 8% in fifth grade, with the largest increases coming in early grades, indicating that children are continuing to be identified as requiring special services as they age. We also see differences in the categories of IDEA services by age; emotional disturbance and specific learning disabilities show a steady increase across elementary school, while speech and language services declines.

The category for other health diagnoses—which includes ADHD—has a large jump between kindergarten and first grade, and then remains steady. Taken together, these data highlight the small number of children overall who receive services under IDEA, even among those who have an identified health condition; these also suggest relevant trends in IDEA receipt prevalence through the elementary school years.

[TABLE 3.2]

Children who receive services under IDEA differ in a variety of ways from those who do not and, notably, from those who have an identified disability but do not receive IDEA services (Table 3.2). Because children who have a parent-reported disability are the most pertinent comparison group for children who receive IDEA services, I include a comparison with those students as well. IEP receipt is associated with lower levels of household income, lower levels of parental education, and lower levels of parental employment. Children with an IEP are more likely to live in single-parent homes or guardian homes than children with a reported disability but without an IEP. They are also more likely to have a parent who was born outside the United States and to have English as the primary language at home. There is some indication of overidentification by race here; children who have IEPs are significantly more likely to have parents who identify as white or Black and significantly less likely to have parents who identify as Asian than those who do not. Comparing children who have a parent-identified disability and those with an IEP further emphasizes the general disadvantage of children with IEPs.

Without controlling for confounding characteristics, there is a statistically significant bivariate relationship between IDEA receipt and each outcome of interest (Table 3.2). Parents of children who have an IEP have lower levels of engagement and satisfaction with school supports and higher levels of conference attendance than both parents of all children without an IEP and children who have an identified disability but no IEP. Overall satisfaction is also lower when compared to parents of children without an IEP.

A.1 OLS models

[TABLE 3.3]

The bivariate results hold somewhat when I control for confounding characteristics (Table 3.3). I estimate pooled OLS models using two different specifications. First, I limit my sample to children who are identified as having a disability; next, I estimate an interaction model on the full sample to account for the differences in having an IEP, conditional on having a disability. The results of my pooled OLS model suggest that receipt of IDEA services is associated with the equivalent of a two-percentage point decrease in engagement on average (compared to children who have a parent-reported disability but do not receive services under IDEA). These estimates also suggest that IEP receipt is associated with higher levels of attendance at parent-teacher conferences, higher levels of satisfaction with school supports (the equivalent of a one percentage point increase), and higher levels of overall satisfaction. The estimates for the covariates also generally match the direction and magnitude expected. Relevant for the critical disability framework, these estimates suggest that living in a household with income in the bottom two quartiles is significantly associated with lower levels of school engagement, though is also associated with higher rates of satisfaction with school supports than middle income families. Parents born outside the United States have lower rates of engagement. Latinx parents have higher levels of satisfaction with school supports compared to white parents, and Asian parents have significantly lower rates of engagement compared to white parents.

There are no statistically significant differences between white and Black parents in any of the outcomes of interest. The estimates for the grade fixed effects suggest increasing levels of parental engagement in older grades compared to kindergarten, with decreasing levels of satisfaction. To further isolate the role of child's age in the outcomes of interest, I estimate models for each school year (Table 3.4). Estimates for each year follow the same general pattern as the pooled estimates.

[TABLE 3.4]

A.2 Moderation analyses

[TABLE 3.5]

Following the critical disability framework, which stresses the importance of structural power and marginalization, I conduct a series of moderation analyses (Table 3.5). Though I hypothesized that the relationship between parental engagement and IEP receipt would vary by socioeconomic status, the estimates are broadly similar for high- and low-income families (those with income in the top two quintiles and those with income in the bottom two quintiles). The notable exception is that, contrary to my hypothesis, on average, receiving services under IDEA is associated with a higher level of parent-reported satisfaction overall for low-income families. Estimates are generally comparable by parent racial identity, with some exceptions. Having an IEP is associated with a moderate, though statistically significant, increase in Latinx parents' reported levels of overall satisfaction and satisfaction with school supports; this relationship is not evident for parents of other racial or ethnic backgrounds. The direction of the estimates suggests that having an IEP decreases satisfaction with school supports for Black parents and parents of other races; however, these estimates are imprecise, making it difficult to know whether the direction of the estimate is reliable.

Because the critical disability lens emphasizes the multiplicative approach of marginalized identities, I conduct these analyses looking at low-income parents of color, low-income white parents, high-income parents of color, and high-income white parents; this is intended to proxy different levels and dimensions of privilege. Contrary to some of the prior literature, estimates indicate that having an IEP is associated with an increased level of satisfaction for low-income parents of color and low-income white parents and is also associated with an increased level of satisfaction with school supports for low-income parents of color. Overall, there is some evidence for moderation by race and income, but it is not as stark, and sometimes runs contrary, to findings from previous work.

A.3 Quasi-experimental analyses

[TABLE 3.6]

In an attempt to further isolate the relationship between IDEA service receipt and parental engagement, I estimate a series of quasi-experimental statistical models, including household fixed effects and IV models (Table 3.6). Results from the fixed effects models essentially show little to no relationship between IDEA service receipt and parental engagement outcomes. The exception is a one percentage point increase in attendance at regular parent-teacher conferences. This mirrors the finding from the pooled OLS estimate, though slightly smaller in magnitude. Similarly, the IV estimates suggest there may not be an association between IDEA receipt and parental engagement. Notably, the IV estimates are alone in finding no affect on conference attendance. The IV estimates mirror the OLS findings related to parental engagement. Both IV models suggest a negative association between IEP receipt and parental engagement, though the IV estimates are much larger—and much less precise—than the OLS estimates; the IV estimate using relative age suggests a 16-percentage point decrease (compared to 2 percentage points using OLS). Post-estimation checks on both IV models using the Wu-Hausman test suggest an instrumental variables approach is warranted given endogeneity. Additionally, checks suggest both instruments meet the criteria to be reasonable proxies (i.e., not weak instruments); however, the very large standard errors suggest this may not be the case. Notably, I had selected relative age as an instrument based on the theory that younger children would be more likely to have IEPs. However, the association between IEPs and relative age in grade runs the opposite direction from what I had anticipated. This remains true even when I exclude children who repeat kindergarten from the analysis.

B. Alternate Specifications

In addition to the estimates described here, I also conducted several sensitivity analyses. Because students are sampled as part of a school, I estimated mixed effects (HLM) models that paralleled the OLS analyses but nested households within a school. Doing so accounts for shared error variance that can arise from groups. These estimates were not qualitatively different from the OLS results presented in Table 3.3. Similarly, I also ran models clustering the standard errors at the school level (rather than the household-level) with very little change to estimates.

I conducted several checks of my sample specification, including estimating models only for children attending public schools, excluding kindergarten repeaters, excluding children who live with guardians rather than parents, and limiting my samples to children who ever report a disability, regardless of the wave. Estimates are robust to each specification. To check for moderation by SES, I also used a variety of other SES measures, including parental education level and a composite measure created by the Department of Education. I find similar results to those presented here; that is, I find little evidence of moderation using these measures.

V. Discussion

Contrary to my hypothesis, the pattern of findings suggests that receiving services under IDEA either has no association with overall parental engagement or is linked to lower levels of parental engagement. Conversely, however, I also find suggestive evidence of IDEA service receipt increasing already-high parental conference attendance rates. There is less evidence linking IDEA service receipt and satisfaction with a child's school overall or supports from the school. I also expected to find differences in engagement levels and satisfaction by race and income; while I do find some small differences, this hypothesis is generally not borne out in the data.

My aim in this study is to understand whether IDEA is fulfilling its promise to increase parental participation in a child's education. I find suggestive evidence that it may be increasing participation in parent-teacher conferences. This is particularly remarkable in part because the baseline participation rate is nearly 92%; IDEA service receipt manages to improve upon this. Notably, the IEP conference is explicitly required by statute in IDEA and is often seen as the cornerstone of parent participation and engagement. Thus, these estimates suggest that, in this manner, IDEA is fulfilling its mission; parents do report higher levels of parent-teacher conference attendance. This is true for parents from a variety of backgrounds, including those for whom attending conferences may otherwise be difficult due to structural barriers.

How do we reconcile the tension between the finding that conference participation is increased but overall engagement is decreased in some models? Could the lower levels of engagement be reflective of parents' withdrawal due to unpleasant experiences as part of the IEP process as illustrated in past qualitative studies? This may be the case. However, patterns by grade suggest this cannot be the whole story. Specifically, the estimates for IDEA's negative impact on parental engagement are largest in kindergarten; if this reflected withdrawal, we might expect the magnitude to instead grow larger as time wears on. Moreover, OLS estimates suggest that IDEA receipt is associated with increased parental satisfaction with school supports. This would likely not be the case if parents were not engaging due to negative experiences.

I present estimates from a range of models and specifications, and, though largely consistent, not all models suggest a significant association between IDEA service receipt and parental engagement. This prompts us to ask which of the estimates are "right." Using the fixed effects models isolates variation in service receipt under IDEA; the OLS models cannot do this, and the validity of the instruments in the IV models is far from clear. Thus, considering the fixed effects estimates—which find no significant association between IDEA service receipt and overall engagement—in the context of the OLS estimates leads to some important implications. While the OLS estimates suggest that parents who have a child with a disability and an IEP are less engaged than those without an IEP, the fixed effects estimates indicate that it is not IDEA service receipt itself that causes the decreased engagement.

Findings around satisfaction are less clear. Relative to parents of children with disabilities who do not receive IDEA services, OLS estimates suggest that parents of children who do are more satisfied with their school supports and school overall. However, this does not appear to be true when we compare parents of children who have an IEP to the full population of students. Families who have students with special needs but who are not receiving services for their child through the school may be particularly unsatisfied with schooling and supports and may not feel, perhaps justifiably, their child is getting the support they need. This may then be more of a story about unmet needs for other families rather than IDEA service receipt. Again, if we consider the fixed effects estimates to be the most likely to represent the isolated impact of IDEA itself, though the OLS results indicate that parents with children with disabilities who have IEPs are more satisfied, the fixed effects estimates imply that it is not the IDEA service receipt itself that leads to greater satisfaction.

That I find no strong evidence of moderation by parents' race or income (or other measures of socioeconomic status not shown) is surprising. This is not in keeping with the bulk of the literature nor with a critical disability lens, both of which suggest that parents' marginalized identities—including race and poverty status—contribute to feelings of dissatisfaction and disengagement with the special education system. This may be a limitation of the available measures. Work by Posey-Maddox (2013) and others remind us that defining engagement and satisfaction through white, middle-class norms is problematic for understanding experiences for parents from other backgrounds. The expectation, however, is that these measures would bias the estimates towards decreased engagement for low-income or marginalized families by defining engagement based on resources available to more-advantaged families. Another contextual consideration is differences in family expectations by social class. Evidence from Calarco (2018), Lareau (2000, 2011) and others suggest that middle-class and higher SES families often expect greater individual attention and personal responsiveness than do lower-income families. These differences in expectations are likely to impact families' self-report of satisfaction.

Though largely null, findings can be informative for policymakers. That IDEA service receipt seems to increase levels of parent-teacher conference participation is notable, particularly given their already-high levels. This suggests IDEA is meeting some of its stated goals. Further, this finding in conjunction with the lack of overall significant findings around engagement may be illustrative of the importance of creating accountability mechanisms in policy. The IEP meeting is required, and IDEA contains several explicit ways in which it is supposed to happen.

Estimates that suggest having an IEP itself does not seem to impact overall parent engagement or overall satisfaction are also valuable for policymakers. These goals are implicit in IDEA, though unlike parent-teacher conferences, do not have explicit mandates in the law nor does IDEA provide specific avenues for LEAs to address these issues. In some ways, then, IDEA is falling short of its goals. On the other hand, given the volume of prior work suggesting IDEA receipt negatively impacts family engagement and satisfaction, a null association may be seen as positive.

Broadly, the overall pattern of OLS findings that suggest a negative association between IDEA service receipt and parental engagement in school coupled with the disadvantage evident in the sample of children who receive special education services is also worth further consideration. Caring for children with disabilities requires hefty parental economic and time investments (Stabile & Allen, 2012). Parents must juggle medical and service appointments and other needs outside of school in addition to keeping tabs on their child's IEP and school needs. The lower overall levels of engagement, outside of conferences, may simply reflect the increased caregiving burden these parents face. Parents may have to use their limited time, including leave from work, for medical appointments or to otherwise care for their child; it is possible they do not to have the same amount of discretionary time as other families. Similarly, these findings suggest that parents of children with disabilities who do not have IEPs are significantly less satisfied with school and supports compared to children with disabilities who do have IEPs, bolstering the notion that families with school-aged children with disabilities may broadly feel that they need more supports, and that IDEA may be just one potential avenue for these.

This also reinforces the need for researchers and policymakers to assess current supports for parents of children with disabilities overall. The current COVID-19 pandemic has exposed the lack of institutional supports for all parents. This may be felt most keenly—and not just in the context of the pandemic—for parents raising children who receive services through IDEA. In addition to potential supports provided by the school, structural changes such as increased access to respite care and paid family leave may be important levers of change to support families overall. These supports could lead to increased engagement in schools. Schools and LEAs, too, should consider ways in which they can better support families of children who receive IDEA services and increase the likelihood of parental engagement overall.

VI. Limitations and Conclusions

This study should be considered in the context of several important limitations. First, these analyses do not differentiate between types of disability or reason for IEP receipt. This may be disguising heterogeneity by type and extent of child’s education support needs—and parent caregiving responsibilities—among families. The 13 diagnostic categories vary also by stigma attached to specific diagnoses (i.e., ADHD, learning disabilities), which may, in turn, impact parental experience with a child’s school, and level of engagement and satisfaction. Thus, disaggregating by IEP diagnostic category may be instructive. Further, I do not account for either the severity of the child’s disability or, perhaps more saliently, the intensity of IEP services in this analysis. It is possible that level of service receipt—and need—may affect parental engagement and satisfaction.

Though using an agreed-upon scale to measure parental engagement is useful for comparability purposes, it also has some important limitations. Prior literature suggests that using measures of engagement and satisfaction based on white, middle-class norms may be problematic from a structural standpoint and result in lack of understanding—essentially, measurement bias—in the research literature. The scale of parental engagement used in this study relies on items such as attendance at PTO meetings and back-to-school nights, which likely contain structural bias against low-income families or other families who do not have discretionary time or who have nonstandard work schedules. A critical disability framework suggests that future work should attend carefully to the measures of these constructs, and, particularly, families for whom they may not be valid measures. Additionally, this is a composite measure, and weights each item equally. That is, the scale equates attending a PTA or PTO meeting with attending an event at the child’s school, despite the two activities potentially representing different types and levels of involvement as well as possibly requiring a different level of parental resources. Overall, though it is widely used in the parental engagement literature, this scale seems unlikely to produce unbiased estimates of this construct, particularly for low-income families. Specifically, estimates of engagement low-income families may be biased downward, incorrectly suggesting lower levels of engagement for lower-income or other disadvantaged families. Researchers should consider the limitations of this and similar scales in research on family engagement.

I use instrumental variable methods in an attempt to more carefully investigate the relationship between IEP receipt and parental engagement. Though IVs can be very powerful, they can also lead estimates astray if the choice of instrument is problematic. Conceptually, both instruments selected here are potentially problematic. Though there is a wide array of literature using birthweight as an instrument for disability and, more recently, IDEA receipt, there are several drawbacks to its use. First, some health conditions may be associated with larger weights at birth rather than smaller; these children would then be removed by the instrument. Further, questions linger about how exogenous birthweight is to parental engagement. Birthweight is influenced by a number of maternal factors that may also impact parental engagement. Still, despite these limitations, birthweight is a preferable instrument in these analyses to relative age in grade. I selected this instrument based on previous studies finding it to be a valid proxy for special education service receipt. These studies find an association between younger ages and IEP receipt for such diagnoses as ADHD and learning disabilities. My first-stage estimate, however, suggests that older relative ages predicted IEP receipt. This remained true even when I limited my sample to those conditions previous research found to be connected to younger relative age. It is possible that the association between IDEA service receipt and relative age has shifted due to a higher occurrence of “red-shirting” for children with disabilities. It may also be a result of children repeating kindergarten as a result of a learning disability or other needs, though I did remove these children from the analysis to no effect. These concerns, taken together with the very large standard errors in my estimates, suggest that while the diagnostic tests indicated my instruments passed the general validity test, they may, in fact, be quite weak. Future research should continue to attend to the use of IV methods in disability studies. Here, I attempt to use two instruments and have conceptual concerns about each.

This study is one of the first, to my knowledge, to address how IDEA influences parental outcomes. As the number of children who receive special education services continues to increase, it will be important for policymakers and researchers to attend to how this policy influences parents as well as children. Prior research has raised concerns that, in addition to upholding ableism, IDEA reinforces existing race and class power structures. I do not find substantial evidence of differences in parental experiences by race or class. Instead, I find that IDEA increases parental conference attendance and likely has no effect—negative or otherwise—on parental engagement overall or parental satisfaction. This suggests that IDEA may be having an impact on one key area explicitly included in the law, and, though not leading to overall positive effects for family engagement or satisfaction, is also not impacting these outcomes negatively. Despite these findings, a critical disability framework would argue for the importance of listening to lived experiences and understanding that not all families experience the average effect of the law. Thus, it is important to consider the full range of findings in the literature to understand the variation of family experiences with IDEA.

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Tables

Table 3.1: Disability Measures

Measure	Pooled Sample	Kinder-garten	First Grade	Second Grade	Third Grade	Fourth Grade	Fifth Grade
Disability	15.3%	19.7%	14.2%	14.7%	14.3%	14.6%	13.4%
IEP	6.2%	3.9%	4.9%	5.8%	7.3%	7.6%	7.9%
Had an IEP in Pre-K	2.9%						
Earliest IEP							
Pre-K	47.9%						
Kindergarten	14.4%						
First Grade	11.3%						
Second Grade	11.5%						
Third Grade	7.3%						
Fourth Grade	4.6%						
Fifth Grade	1.3%						
IEP Category-- Proportion of all students with an IEP							
Autism	11.5%	12.6%	9.1%	11.5%	10.5%	8.8%	8.7%
Deafness or Hearing Impairment	1.2%	2.8%	1.5%	1.4%	1.2%	1.2%	0.9%
Emotional Disturbance	6.4%	3.0%	3.7%	5.5%	7.0%	8.4%	9.1%
Intellectual Disability	9.1%	6.5%	4.5%	7.3%	7.4%	10.7%	9.2%
Multiple Disabilities	3.7%	0.7%	1.3%	2.7%	2.0%	4.6%	3.9%
Orthopedic	2.6%	3.2%	2.6%	2.5%	2.3%	1.4%	1.3%
Other Health Impairment (including ADHD)	17.0%	8.4%	20.0%	17.8%	17.8%	19.2%	22.9%
Learning Disability	38.2%	12.0%	14.2%	31.2%	40.5%	55.9%	56.3%
Speech/Language	63.3%	87.4%	78.8%	72.9%	62.8%	54.1%	43.1%
TBI	0.1%	0.8%	0.6%	0.7%	0.3%	1.1%	0.7%
Blind or Visual Impairment	1.5%	0.5%	0.2%	0.2%	0.7%	1.6%	1.2%

IEP category groupings are not exclusive. Some children may have an IEP goal in more than one category.

Source: Author’s calculations from ECLS-K 2011

Table 3.2: Pooled Sample Summary and Bivariate Results by IEP and Disability Status

Characteristic	Weighted Proportion/Mean of Pooled Sample	Receives IEP Services	Does not receive IEP services	SS	Parent Reports Disability	SS
IEP	6.2%	100%	0		26.2%	--
Disability	15.2%	64.5%	12.0%	***	--	
Engagement (5-point scale)	2.67	2.40	2.69	***	2.61	***
Attended a Parent-Teacher Conference	91.9%	96.2%	91.6%	***	93.6%	***
Satisfaction with School Supports (Ranges from 5-15)	12.08	11.82	12.09	***	12.17	***
Overall Satisfaction (5-point scale)	3.68	3.61	3.69	***	3.62	
Birthweight in Ounces (log)	4.73	4.68	4.73	***	4.69	
Relative Age in Months	7.09	9.10	6.95	***	7.91	
Student is Male	51.2%	67.7%	50.0%	***	62.8%	***
Parent Respondent Race/Ethnicity						
White, Not Latinx	56.6%	59.7%	56.1%	*	63.6%	*
Black, Not Latinx	13.0%	14.4%	12.9%	*	12.8%	*
Latinx	22.3%	19.7%	22.8%		17.8%	
Asian, Not Latinx	4.7%	2.2%	5.0%	***	1.8%	
Native Hawaiian/Pacific Islander, Not Latinx	0.4%	0.1%	0.4%		0.2%	
American Indian/AK Native, Not Latinx	1.1%	1.0%	1.0%		1.3%	
Two or More Races, Not Latinx	2.0%	2.9%	1.9%	***	2.5%	
Household Income Quintile						
HH Income Quintile 1	17.1%	29.7%	16.2%	***	20.4%	***
HH Income Quintile 2	21.4%	22.8%	21.3%		21.4%	
HH Income Quintile 3	18.5%	18.1%	18.5%		18.2%	
HH Income Quintile 4	21.1%	16.3%	21.4%		20.5%	***
HH Income Quintile 5	21.9%	13.1%	22.5%	***	19.4%	***
Highest Level of Parental Education						
< HS	7.2%	7.5%	7.2%		5.5%	**
High School Diploma/GED	20.5%	31.4%	19.7%	***	20.6%	***
Some College/AA Degree	32.6%	35.5%	32.4%	***	36.2%	
BA or Higher	39.8%	25.7%	40.7%	***	37.8%	***
English is Not the Primary Language in Home	13.1%	9.4%	15.7%	***	8.5%	
Parent was Born Outside US	4.8%	6.1%	4.7%	***	3.1%	***
Guardian Household	1.9%	3.2%	1.9%	***	3.7%	

Table 3.2: Pooled Sample Summary and Bivariate Results by IEP and Disability Status

Characteristic	Weighted Proportion/Mean of Pooled Sample	Receives IEP Services	Does not receive IEP services	SS	Parent Reports Disability	SS
Single Parent Household	18.5%	25.5%	18.5%	***	23.9%	
Self-Reported Parent Health (5-point scale)	3.79	3.54	3.80	***	3.61	*
Parent 1 is Employed	68.6%	64.6%	68.9%	***	66.2%	
Parent 2 is Employed (if applicable)	72.2%	63.0%	72.8%	***	65.0%	
Number of People in Household	4.60	4.66	4.60		4.52	***
Number of People in Household under 18	2.49	2.55	2.50		2.48	**
Number of Siblings	1.55	1.60	1.55	*	1.49	***
School Location						
Urban Area	32.3%	25.1%	32.7%	**	30.0%	
Suburban Area, or Adjacent to a Suburban or Urban Area	46.8%	48.8%	46.9%		46.4%	
Rural Area	20.9%	26.1%	20.4%	**	23.6%	
Student Attends Private School	9.3%	1.4%	9.6%	***	8.0%	***
School Size						
<150 Students	2.9%	2.9%	2.9%		3.1%	
150-299 Students	10.0%	9.9%	10.0%		11.3%	
300-499 Students	31.2%	35.0%	31.0%	**	32.7%	
500-749 Students	37.4%	33.4%	37.6%		36.9%	
>=750 Students	18.6%	18.8%	18.6%		16.1%	
Proportion of Students of Color	45.4%	42.3%	45.6%		41.9%	
Proportion of Students who Qualify for Free or Reduced Lunch	53.0%	56.1%	52.8%	*	54.3%	
Repeated Kindergarten	4.9%	16.5%	4.1%	***	8.0%	***
Grade						
Kindergarten	16.7%	10.2%	17.1%	***	21.7%	***
First Grade	16.7%	13.1%	16.9%	***	15.6%	**
Second Grade	16.7%	15.3%	16.8%	***	16.4%	**
Third Grade	16.7%	19.9%	16.5%	***	15.6%	***
Fourth Grade	16.7%	20.2%	16.4%	***	16.1%	***
Fifth Grade	16.6%	21.2%	16.3%	***	14.5%	***
Observations	85, 950	5,604	80,346		10,814	

*** p<0.01, ** p<0.05, * p<0.1 SS indicates statistically significant difference between column to the left and whether the child receives IEP services. Source: Author’s calculations from ECLS-K 2011

Table 3.3: Full OLS Models Predicting Main Outcomes by IDEA Service Receipt, Pooled Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Engagement		Conference Attendance		Satisfaction with School Supports		Overall Satisfaction	
VARIABLES	Disability Sample	Inter-action Model	Disability Sample	Inter-action Model	Disability Sample	Inter-action Model	Disability Sample	Inter-action Model
IEP	-0.10***	-0.14***	0.02***	0.04***	0.21**	0.01	0.05**	-0.01
	(0.03)	(0.04)	(0.01)	(0.01)	(0.09)	(0.12)	(0.02)	(0.02)
Disability		-0.01		0.03***		-0.15***		-0.07***
		(0.02)		(0.00)		(0.04)		(0.01)
IEP X Disability		0.03		-0.01		0.18		0.04
		(0.05)		(0.01)		(0.15)		(0.03)
Student is Male	-0.11***	-0.04***	0.01	0.01***	-0.09	-0.07**	-0.04**	-0.03***
	(0.03)	(0.01)	(0.01)	(0.00)	(0.08)	(0.03)	(0.02)	(0.01)
Parent Respondent Race/Ethnicity								
White, Not Latinx	*Ref*	*Ref*	*Ref*	*Ref*	*Ref*	*Ref*	*Ref*	*Ref*
Black, Not Latinx	-0.06	-0.03	0.00	0.03***	0.03	0.17**	-0.08*	-0.03**
	(0.07)	(0.03)	(0.01)	(0.01)	(0.17)	(0.07)	(0.04)	(0.02)
Latinx	-0.02	0.05**	-0.00	-0.00	0.37***	0.37***	-0.01	0.03*
	(0.06)	(0.03)	(0.01)	(0.01)	(0.14)	(0.06)	(0.03)	(0.01)
Asian, Not Latinx	-0.25***	-0.23***	-0.00	-0.00	0.19	0.17**	-0.07	-0.03**
	(0.09)	(0.03)	(0.01)	(0.01)	(0.21)	(0.07)	(0.05)	(0.02)
Native Hawaiian/Pacific Islander, Not Latinx	-0.20	-0.04	-0.05	-0.02	0.27	0.65***	-0.11	0.06
	(0.20)	(0.09)	(0.05)	(0.02)	(0.45)	(0.17)	(0.12)	(0.05)
American Indian/AK Native, Not Latinx	-0.09	0.07	-0.03	-0.01	-0.34	-0.05	-0.18	0.01

Table 3.3: Full OLS Models Predicting Main Outcomes by IDEA Service Receipt, Pooled Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Engagement		Conference Attendance		Satisfaction with School Supports		Overall Satisfaction	
VARIABLES	Disability Sample	Inter-action Model	Disability Sample	Inter-action Model	Disability Sample	Inter-action Model	Disability Sample	Inter-action Model
	(0.16)	(0.09)	(0.03)	(0.01)	(0.50)	(0.24)	(0.13)	(0.05)
Two or More Races, Not Latinx	0.01	-0.13***	-0.00	-0.00	-0.55**	-0.16	-0.16**	-0.09***
	(0.10)	(0.05)	(0.01)	(0.01)	(0.28)	(0.13)	(0.06)	(0.03)
Household Income Quintile								
HH Income Quintile 1	-0.20***	-0.17***	-0.02**	-0.02***	0.26*	0.17***	0.01	0.00
	(0.05)	(0.02)	(0.01)	(0.01)	(0.15)	(0.06)	(0.04)	(0.01)
HH Income Quintile 2	-0.11**	-0.06***	-0.01	-0.01	0.20	0.06	0.01	-0.00
	(0.04)	(0.02)	(0.01)	(0.00)	(0.12)	(0.05)	(0.03)	(0.01)
HH Income Quintile 3	*Ref*	*Ref*	*Ref*	*Ref*	*Ref*	*Ref*	*Ref*	*Ref*
HH Income Quintile 4	0.11***	0.16***	-0.01	-0.00	-0.05	-0.01	-0.01	0.02*
	(0.04)	(0.02)	(0.01)	(0.00)	(0.12)	(0.05)	(0.03)	(0.01)
HH Income Quintile 5	0.13***	0.21***	-0.00	0.00	0.10	-0.03	0.04	0.03***
	(0.05)	(0.02)	(0.01)	(0.00)	(0.13)	(0.05)	(0.03)	(0.01)
Highest Level of Parental Education								
< HS	-0.41***	-0.23***	-0.02	-0.02**	0.03	0.32***	-0.00	0.08***
	(0.07)	(0.03)	(0.02)	(0.01)	(0.19)	(0.07)	(0.05)	(0.02)
HS Diploma/GED	-0.25***	-0.19***	-0.01	-0.00	0.05	0.14***	0.02	0.03**
	(0.04)	(0.02)	(0.01)	(0.01)	(0.12)	(0.05)	(0.03)	(0.01)
Some College/AA Degree	*Ref*	*Ref*	*Ref*	*Ref*	*Ref*	*Ref*	*Ref*	*Ref*
BA or Higher	0.17***	0.19***	0.00	0.02***	-0.23**	-0.15***	0.02	-0.00
	(0.04)	(0.02)	(0.01)	(0.00)	(0.11)	(0.05)	(0.03)	(0.01)

Table 3.3: Full OLS Models Predicting Main Outcomes by IDEA Service Receipt, Pooled Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Engagement		Conference Attendance		Satisfaction with School Supports		Overall Satisfaction	
VARIABLES	Disability Sample	Inter-action Model	Disability Sample	Inter-action Model	Disability Sample	Inter-action Model	Disability Sample	Inter-action Model
English is Not the Primary Language at Home	0.06	-0.08***	-0.01	-0.00	0.36**	0.24***	0.07*	0.06***
	(0.07)	(0.02)	(0.01)	(0.01)	(0.16)	(0.06)	(0.04)	(0.01)
Parent Born Outside the US	-0.33***	-0.18***	-0.01	-0.02**	0.01	0.12	0.02	-0.01
	(0.12)	(0.04)	(0.02)	(0.01)	(0.27)	(0.11)	(0.06)	(0.02)
Guardian Household	-0.11	-0.12**	0.01	-0.01	0.66***	0.20	0.14***	0.12***
	(0.10)	(0.06)	(0.02)	(0.01)	(0.22)	(0.14)	(0.05)	(0.03)
Single Parent Household	-0.16***	-0.11***	-0.00	0.00	-0.15	-0.15**	-0.04	-0.04***
	(0.05)	(0.02)	(0.01)	(0.01)	(0.13)	(0.06)	(0.03)	(0.01)
Self-Reported Parent Health (5 pt. scale)	0.04**	0.04***	0.00	0.00	0.22***	0.20***	0.06***	0.05***
	(0.02)	(0.01)	(0.00)	(0.00)	(0.04)	(0.02)	(0.01)	(0.00)
Parent 1 is Employed	-0.11***	-0.13***	-0.00	0.00	0.23***	0.02	-0.00	0.02***
	(0.03)	(0.01)	(0.01)	(0.00)	(0.08)	(0.03)	(0.02)	(0.01)
Parent 2 is Employed (if applicable)	0.09**	0.07***	-0.00	0.01***	0.01	-0.01	-0.02	-0.01
	(0.04)	(0.02)	(0.01)	(0.00)	(0.11)	(0.04)	(0.03)	(0.01)
Number of People in Household	-0.03	-0.02**	-0.00	-0.00	0.11**	0.07***	0.02**	0.02***
	(0.02)	(0.01)	(0.00)	(0.00)	(0.05)	(0.02)	(0.01)	(0.00)
Number of People in Household Under 18	0.04*	-0.00	-0.00	-0.00*	0.10*	0.01	0.00	-0.01*
	(0.03)	(0.01)	(0.00)	(0.00)	(0.06)	(0.02)	(0.01)	(0.00)
Number of Siblings	-0.02	0.00	0.00	0.00	-0.16**	-0.06**	-0.02	-0.01

Table 3.3: Full OLS Models Predicting Main Outcomes by IDEA Service Receipt, Pooled Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Engagement		Conference Attendance		Satisfaction with School Supports		Overall Satisfaction	
VARIABLES	Disability Sample	Inter-action Model	Disability Sample	Inter-action Model	Disability Sample	Inter-action Model	Disability Sample	Inter-action Model
	(0.03)	(0.01)	(0.00)	(0.00)	(0.07)	(0.03)	(0.01)	(0.01)
School Location								
Urban	*Ref*	*Ref*	*Ref*	*Ref*	*Ref*	*Ref*	*Ref*	*Ref*
Suburban, or Adjacent to a Suburban or Urban Area	-0.10***	-0.08***	-0.00	-0.02***	0.01	-0.05	0.02	0.01
	(0.04)	(0.02)	(0.01)	(0.00)	(0.11)	(0.04)	(0.03)	(0.01)
Rural	-0.11*	-0.12***	-0.03***	-0.06***	-0.32*	-0.22***	-0.01	0.00
	(0.06)	(0.03)	(0.01)	(0.01)	(0.17)	(0.07)	(0.04)	(0.02)
Student Attends Private School	0.26***	0.17***	-0.02**	-0.01***	0.38**	0.19***	0.09**	0.05***
	(0.05)	(0.02)	(0.01)	(0.00)	(0.16)	(0.07)	(0.04)	(0.01)
School Size								
<150 students	*Ref*	*Ref*	*Ref*	*Ref*	*Ref*	*Ref*	*Ref*	*Ref*
150-299 Students	0.11	0.06*	0.01	-0.01	-0.15	-0.04	-0.03	-0.00
	(0.07)	(0.03)	(0.01)	(0.01)	(0.22)	(0.09)	(0.05)	(0.02)
300-499 Students	0.03	-0.00	0.01	-0.00	-0.03	0.08	0.00	0.03
	(0.07)	(0.03)	(0.01)	(0.01)	(0.21)	(0.09)	(0.05)	(0.02)
500-749 Students	0.07	-0.04	-0.00	-0.00	-0.11	0.06	-0.02	0.02
	(0.08)	(0.03)	(0.01)	(0.01)	(0.21)	(0.09)	(0.06)	(0.02)
>-750 Students	0.04	-0.07**	-0.02	-0.03***	-0.01	0.02	-0.04	0.02
	(0.08)	(0.04)	(0.01)	(0.01)	(0.23)	(0.10)	(0.06)	(0.02)
Proportion of Students of Color	0.00	0.00	0.00	0.00	-0.00	-0.00**	-0.00**	-0.00***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)

Table 3.3: Full OLS Models Predicting Main Outcomes by IDEA Service Receipt, Pooled Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Engagement		Conference Attendance		Satisfaction with School Supports		Overall Satisfaction	
VARIABLES	Disability Sample	Inter-action Model	Disability Sample	Inter-action Model	Disability Sample	Inter-action Model	Disability Sample	Inter-action Model
Proportion of Students Qualify for Free/Reduced Lunch	-0.00**	-0.00***	-0.00***	-0.00***	-0.00	-0.00***	-0.00***	-0.00***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Repeated Kindergarten	-0.05	-0.08**	0.00	-0.01	0.16	0.10	0.03	0.01
	(0.06)	(0.04)	(0.01)	(0.01)	(0.20)	(0.09)	(0.04)	(0.02)
Grade								
Kindergarten	*Ref*	*Ref*	*Ref*	*Ref*	*Ref*	*Ref*	*Ref*	*Ref*
First Grade	0.10***	0.14***	0.02***	0.02***	0.09	0.23***		
	(0.03)	(0.01)	(0.01)	(0.00)	(0.08)	(0.03)		
Second Grade	0.06*	0.10***	0.01*	0.02***			-0.04*	-0.03***
	(0.03)	(0.01)	(0.01)	(0.00)			(0.02)	(0.01)
Third Grade	0.07**	0.12***	0.01*	0.01**			-0.12***	-0.07***
	(0.03)	(0.01)	(0.01)	(0.00)			(0.02)	(0.01)
Fourth Grade	0.05	0.11***	0.01	0.00				
	(0.04)	(0.01)	(0.01)	(0.00)				
Fifth Grade	0.06	0.06***	-0.00	-0.02***	-0.79***	-0.56***	-0.15***	-0.12***
	(0.04)	(0.01)	(0.01)	(0.00)	(0.10)	(0.03)	(0.03)	(0.01)
Constant	3.03***	3.02***	0.83***	0.77***	10.77***	11.98***	3.61***	3.68***
	(0.20)	(0.09)	(0.05)	(0.03)	(0.49)	(0.21)	(0.11)	(0.05)
Observations	8,642	54,487	8,642	54,487	4,916	29,808	6,017	36,681

*** p<0.01, ** p<0.05, * p<0.1

Table 3.3 notes continued:
Robust standard errors clustered at the parent level in parentheses. Households with missing data for any covariate are excluded from these analyses. Models were analyzed separately. Disability sample models were restricted to students whose parents reported a diagnosed health condition. Interaction models included the full sample of students for whom all covariates were non-missing and included an interaction term combining parent-report of disability and IEP. Results presented as regression coefficients. Models also control for state fixed-effects.
Source: Author’s calculations from ECLS-K 2011

Table 3.4: OLS Models Predicting Main Outcomes by IDEA Service Receipt and Grade Level

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Engagement		Conference Attendance		Satisfaction with School Supports		Overall Satisfaction	
VARIABLES	Disability Sample	Inter-action Model	Disability Sample	Inter-action Model	Disability Sample	Inter-action Model	Disability Sample	Inter-action Model
				Kindergarten				
IEP	-0.12**	-0.19*	0.01	0.05	0.35***	0.25	0.05	0.01
	(0.06)	(0.11)	(0.01)	(0.03)	(0.13)	(0.27)	(0.03)	(0.06)
Disability		-0.00		0.02***		-0.08		-0.05***
		(0.02)		(0.01)		(0.06)		(0.01)
Disability X IEP		0.06		-0.03		0.10		0.03
		(0.12)		(0.03)		(0.30)		(0.07)
Constant	3.08***	3.07***	0.81***	0.80***	11.01***	11.92***	3.62***	3.66***
	(0.28)	(0.12)	(0.08)	(0.04)	(0.61)	(0.27)	(0.15)	(0.06)
Observations	2,470	12,636	2,470	12,636	2,470	12,636	2,470	12,636
				First Grade				
IEP	-0.22***	-0.23***	0.02**	0.01	-0.05	-0.15		
	(0.07)	(0.09)	(0.01)	(0.02)	(0.15)	(0.19)		
Disability		-0.01		0.02***		-0.17**		
		(0.03)		(0.01)		(0.07)		
Disability X IEP		0.03		0.01		0.14		
		(0.11)		(0.03)		(0.24)		
Constant	3.56***	3.28***	0.87***	0.79***	11.60***	12.31***		
	(0.37)	(0.14)	(0.09)	(0.04)	(0.79)	(0.29)		
Observations	1,446	10,018	1,446	10,017	1,446	10,018		

Table 3.4: OLS Models Predicting Main Outcomes by IDEA Service Receipt and Grade Level

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Engagement		Conference Attendance		Satisfaction with School Supports		Overall Satisfaction	
VARIABLES	Disability Sample	Inter-action Model	Disability Sample	Inter-action Model	Disability Sample	Inter-action Model	Disability Sample	Inter-action Model
Second Grade								
IEP	-0.01	-0.12	0.02	0.04**			0.04	0.02
	(0.07)	(0.08)	(0.01)	(0.02)			(0.04)	(0.05)
Disability		-0.06*		0.02**				-0.07***
		(0.03)		(0.01)				(0.02)
Disability X IEP		0.09		-0.02				0.02
		(0.10)		(0.02)				(0.06)
Constant	3.19***	3.17***	0.84***	0.77***			3.59***	3.63***
	(0.38)	(0.15)	(0.10)	(0.05)			(0.22)	(0.08)
Observations	1,326	8,705	1,326	8,704			1,325	8,701
Third Grade								
IEP	-0.13*	-0.16**	0.03**	0.02			0.04	0.02
	(0.07)	(0.07)	(0.01)	(0.02)			(0.04)	(0.05)
Disability		-0.04		0.03***				-0.07***
		(0.04)		(0.01)				(0.02)
Disability X IEP		0.04		0.00				0.02
		(0.09)		(0.02)				(0.06)
Constant	3.04***	3.21***	0.79***	0.79***			3.59***	3.63***
	(0.49)	(0.16)	(0.13)	(0.05)			(0.22)	(0.08)
	1,230	8,207	1,230	8,207			1,230	8,207

Table 3.4: OLS Models Predicting Main Outcomes by IDEA Service Receipt and Grade Level

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Engagement		Conference Attendance		Satisfaction with School Supports		Overall Satisfaction	
VARIABLES	Disability Sample	Inter-action Model	Disability Sample	Inter-action Model	Disability Sample	Inter-action Model	Disability Sample	Inter-action Model
Observations								
Fourth Grade								
IEP	-0.09	-0.05	0.01	0.05***				
	(0.07)	(0.06)	(0.01)	(0.01)				
Disability		-0.04		0.03***				
		(0.04)		(0.01)				
Disability X IEP		-0.03		-0.03				
		(0.09)		(0.02)				
Constant	3.06***	3.04***	0.95***	0.75***				
	(0.38)	(0.14)	(0.11)	(0.05)				
Observations	1,170	7,767	1,170	7,766				
Fifth Grade								
IEP	-0.07	-0.18***	0.04***	0.05***	0.36*	0.02	0.07	-0.06
	(0.07)	(0.06)	(0.02)	(0.02)	(0.19)	(0.17)	(0.05)	(0.04)
Disability		0.02		0.04***		-0.29***		-0.08***
		(0.04)		(0.01)		(0.10)		(0.03)
Disability X IEP		0.08		-0.02		0.30		0.11*
		(0.09)		(0.02)		(0.24)		(0.06)
Constant	2.51***	3.06***	0.82***	0.76***	7.85***	11.32***	2.99***	3.50***
	(0.41)	(0.17)	(0.13)	(0.06)	(1.15)	(0.41)	(0.27)	(0.10)
Observations	1,000	7,154	1,000	7,154	1,000	7,154	1,000	7,154

*** p<0.01, ** p<0.05, * p<0.1 Robust standard errors clustered at the parent level in parentheses. Models control for all relevant covariates (See Table 3.3 for full list), and state fixed-effects. Households with missing data for any covariate are excluded from these analyses. Models were analyzed separately. Disability sample models were restricted to students with a diagnosed health condition based on parent report. Interaction models included the full sample of students for whom all covariates were non-missing and included an interaction term combining parent-report of disability and IEP. Results presented as regression coefficients. Source: Author's calculations from ECLS-K 2011

Table 3.5: OLS Models Predicting Main Outcomes by IDEA Service Receipt, Moderation Analyses

Subgroups	(1) Engagement	(2) Conference Attendance	(3) Satisfaction with School Supports	(4) Overall Satisfaction
Low-Income	-0.10**	0.03**	0.25	0.12***
	(0.06)	(0.01)	(0.20)	(0.04)
Mean	[2.49]	[0.75]	[9.86]	[3.61]
Observations	2,440	2,440	978	1,385
High-Income	-0.08**	0.01***	0.25	-0.05
	(0.05)	(0.01)	(0.19)	(0.04)
Mean	[3.72]	[1.03]	[11.09]	[3.66]
Observations	2,658	2,658	1,059	1,535
White	-0.10**	0.02***	0.06	0.02
	(0.05)	(0.01)	(0.15)	(0.03)
Mean	[3.48]	[0.96]	[10.69]	[3.56]
Observations	3,977	3,977	1,579	2,284
Black	-0.11	0.04	-0.26	0.06
	(0.11)	(0.02)	(0.50)	(0.10)
Mean	[2.42]	[0.84]	[9.60]	[3.30]
Observations	616	616	235	340
Latinx	-0.03	0.02	0.67**	0.16**
	(0.09)	(0.02)	(0.30)	(0.07)
Mean	[2.40]	[0.55]	[7.99]	[4.65]
Observations	1,087	1,087	432	648
Other Races	-0.23	0.04**	-0.42	0.05
	(0.15)	(0.02)	(0.43)	(0.13)
Mean	[3.85]	[1.07]	[7.94]	[2.19]
Observations	492	492	200	280
Families of Color X Low-Income	-0.05	0.04***	0.38*	0.10**
	(0.07)	(0.01)	(0.20)	(0.05)
Mean	[2.52]	[0.59]	[8.85]	[3.52]
Observations	1,880	1,880	1,069	1,306
White Families X Low Income	-0.15**	0.02	0.19	0.09*
	(0.07)	(0.01)	(0.19)	(0.05)
Mean	[2.93]	[0.87]	[11.61]	[3.62]
Observations	1,587	1,587	936	1,103
Families of Color X High-Income	-0.11	0.00	0.06	0.10
	(0.13)	(0.02)	(0.34)	(0.08)

Table 3.5: OLS Models Predicting Main Outcomes by IDEA Service Receipt, Moderation Analyses

Subgroups	(1) Engagement	(2) Conference Attendance	(3) Satisfaction with School Supports	(4) Overall Satisfaction
Mean	[3.78]	[0.94]	[13.78]	[3.58]
Observations	772	772	447	553
White Families X High-Income	-0.06	0.02**	0.16	-0.02
	(0.05)	(0.01)	(0.17)	(0.04)
Mean	[3.13]	[0.94]	[11.42]	[3.69]
Observations	2,908	2,908	1,634	2,004

*** p<0.01, ** p<0.05, * p<0.1

Robust standard errors clustered at the parent level in parentheses. Low-income families include families with household income in the bottom two quintiles; high-income households are those with income in the top two quintiles. Families of color include all races other than white. Regression models run on sample of students who have a diagnosed health condition based on parent report. Models control for all relevant covariates (See Table 3.3 for full list), and state and grade fixed-effects. Households with missing data for any covariate are excluded from these analyses. Models were analyzed separately. Results presented as regression coefficients. Dependent variable means in brackets.

Source: Author’s calculations from ECLS-K 2011

Table 3.6: Quasi-Experimental Estimates of the Effect of IDEA Service Receipt on Main Outcomes

	(1)	(2)	(3)	(4)
VARIABLES	Engagement	Conference Attendance	Satisfaction with School Supports	Overall Satisfaction
		Fixed-Effects Estimates		
IEP	0.03	0.01**	0.03	0.03
	(0.02)	(0.01)	(0.08)	(0.02)
Constant	2.39***	0.97***	7.96***	3.70***
	(0.56)	(0.17)	(1.47)	(0.38)
Observations	56,742	56,742	31,129	38,248
Unique IDs	13,205	13,205	13,205	13,205
		IV Estimates		
IV = Birthweight	-0.78	0.05	0.39	-0.64*
	(0.48)	(0.12)	(1.72)	(0.36)
IV = Relative Age	-0.83***	-0.06	0.92	0.20
	-0.19	(0.05)	(0.64)	(0.14)

*** p<0.01, ** p<0.05, * p<0.1

Robust standard errors clustered at the parent level in parentheses. Models control for all relevant covariates (see Table 3.3 for full list). First stage IV estimates available upon request.

Source: Author’s calculations from ECLS-K 2011

Chapter 4. Does Non-Normative Parenting Increase the Risk of Parental Relationship Dissolution?: An Examination Using the NLSY-97

I. Introduction

Raising a child with a special need or disability often entails increased caregiving demands on parents. Increased parenting demands are associated with decreased overall parental well-being (Hartley et al., 2012; Murphy et al., 2007) which can in turn negatively impact parental relationship quality (Hartley et al., 2017; Hartley et al., 2011; Kersh et al., 2006). Many empirical studies find higher rates of divorce and relationship instability for parents raising children with disabilities (Corman & Kaestner, 1992; Hartley et al., 2010; Mauldon, 1992; Risdal & Singer, 2004; but, see Urbano & Hodepp, 2007). Although, about a third of all children experience a divorce, parental relationship dissolution may be more common for high-needs or special needs children, such as those who have disability or other healthcare need (Hartley et al., 2010; Wymbs et al., 2008). Some estimates suggest that having a child with special needs may increase the likelihood of divorce by up to twelve percentage points (Hartley et al., 2010), and reduce the likelihood that parents live together in the year following birth by ten percentage points (Reichman et al., 2004).

Given the relative disadvantage of children with special needs or disabilities overall (Parish & Cloud, 2006; Stabile & Allin, 2012), it is important to understand how and whether a child's special needs status may impact parental relationship stability, and, thus, a family's access to a range of resources. Parenting a child with special needs increases both economic costs (Generaux et al., 2015; Stabile & Allin, 2012) and caregiving responsibilities (Raina et al., 2004; Sawyer et al., 2010) for families; relationship dissolution may decrease the availability of both financial resources and shared caregiving support for families who may already have a greater need for both.

As the number of families raising a child with a disability increases (Houtrow et al., 2014) and social workers and policymakers continue to grapple with how best to support parents in their caregiving efforts, it is important to consider the association between a child's special needs status and family structure. In addition to the considerable repercussions on available resources for families, understanding how a child's unique needs may influence parental relationship stability can improve design and access to existing services, policies, and supports.

Prior studies investigating the role of child's health or special needs status on parental relationship quality have some important limitations. None is nationally-representative, most focus on one specific health condition, and others focus narrowly on the time immediately following the birth of a child with a special health need. As a result, there is no current nationally-representative study examining the association between child's special needs status and parental relationship stability. In this study, I use nationally-representative, recent data from the National Longitudinal Study of Youth 1997 cohort (NLSY97) to address this question. To reduce bias in my estimates, I first create a matched sample of parents who report caring for a child with special needs and those who do not. I then use event history methods to estimate the risk of relationship dissolution for married and cohabiting parents and find a strong association between the likelihood of relationship dissolution and the child's special needs status. When I investigate differences by marital status at birth, I find a statistically significant association between dissolution and child's special needs status for cohabiting couples. My estimates for married couples are not statistically significant but are relatively large in magnitude. In the paper that follows, I begin by outlining the pertinent theoretical frameworks that underpin the study, followed by a review of the relevant literature. I then outline the data and methods used and describe my findings. I close with a discussion of salient themes, with a focus on public policy applications.

II. Background

A. Theoretical Framework

“Non-normative parenting” describes the heightened caregiving responsibilities and resulting impacts on daily life and routines experienced by parents raising children with special needs (Hong & Seltzer, 1995; Seltzer & Ryff, 1994). Non-normative parenting places the parent’s experiences with and perception of caregiving in the foreground; it is the parental experience, rather than the child’s specific needs, that is definitional. The disability caregiving literature uses this frame frequently to focus on the stress associated with caregiving for children with a range of health conditions, including autism and autism spectrum disorders (Barker et al., 2011; Bluth et al., 2013); intellectual disabilities and other genetic syndromes (Abbeduto et al., 2004; Seltzer et al., 2011); behavioral or emotional diagnoses (Banks et al., 2012); mental illness (Seltzer et al., 2004); and disabilities and special healthcare care needs in general (Dillon-Wallace et al., 2014). Overall, studies suggest non-normative parenting is associated with negative parental health outcomes, with a particular focus on decreased mental wellness and sense of well-being (e.g. Barker et al., 2014; Ha et al., 2011; Seltzer et al., 2001; Seltzer et al., 2009).

One of the major sources of stress in non-normative parenting is the multiple roles parents must assume (Hong & Seltzer, 1995; Magaña et al., 2002). Caregiving for a child with a special need may require parents to provide medical care to their child or to coordinate complicated service logistics. This is in addition to regular parenting demands and any other responsibilities the parent has outside or inside the home, including the parent's role as partner in any romantic relationships. As Pearlin highlights in the stress process model—from which non-normative parenting is derived—the impact of the primary stress associated with caregiving combined with the secondary stress of role strain may lead to family conflict through multiple avenues, including conflicting views about the caregiving role and conflicting demands for time and attention (Pearlin et al, 1990). Indeed, a number of studies have attempted to build on and adapt Pearlin's model specifically for parents who are experiencing non-normative parenting due to caregiving for a child with a special need (Bluth et al., 2013; King et al, 1999).

The typical definition of non-normative parenting focuses on how the parenting experience and stress differ across the lifecourse, with a particular emphasis on the extended nature of high-needs parenting. This study focuses solely on the parental experience of stress in non-normative parenting. Thus a lot of the literature focuses on parental experiences as they age, and how that shapes their health and well-being in later life. This study, however, is focused on experiences of parenting during their children's early years. The principle contribution of this lens then is to focus attention on the increased challenges to maintaining parental romantic relationships as a result of increased parenting stress. Parents may feel both stress related to caregiving itself as well as discord related to division of responsibilities. In addition, parents may feel they have little time or energy to devote to their relationship or role as partner. Moreover, considering the ramifications of relationship dissolution through the non-normative parenting framework also emphasizes the vulnerability that these parents, and as a result their children, may face. If all families must adjust to new financial and social realities following parental relationship dissolution, this may be uniquely challenging for parents of children with special needs given non-normative parenting's long reach across a range of domains, including mental and physical health, social relationships, and financial well-being.

B. Literature Review

B.1 Relationship dissolution

There is some evidence that there may be selection into dissolution or divorce. That is, some studies suggest that specific individual characteristics and traits may increase risk of divorce, including depression, mental health concerns, and higher reports of negative life experiences (Amato, 2000; Davies et al., 1997). Because these characteristics may also be associated with non-normative parenting, this study must carefully consider how to mitigate selection bias.

Relationship dissolution, including divorce, is also linked to a variety of economic and demographic factors. Demographically, the evidence suggests divorce is associated with: younger age at first marriage; having a child prior to marriage; and whether one's own biological parents divorced (Amato, 2010; Bumpass et al., 1991; Cherlin, 2005; Faust & McKibben, 1999; Teachman, 2002). More recently, relationship scholars have focused on divergence in likelihood of dissolution based on race and socioeconomic status. These studies find higher rates of dissolution among people of color, those with lower levels of education, and those with lower incomes (McLanahan, 2004; Sweeney, 2002).

In addition to demographic associations, there are a variety of interpersonal and psychological factors that may increase the likelihood of relationship dissolution. These include levels of conflict, communication skills, levels of trust, intimate partner violence, and infidelity

(Amato & Hohmann-Marriott, 2007; DeMaris, 2000; Lawrence & Bradbury, 2001; Markman et al., 2010; Orbuch et al., 2002; Previti & Amato, 2004). In a meta-analysis, Le and colleagues (2010) find that nonmarital relationship dissolution is not associated with specific personality traits, and that social network support is particularly influential. Notably, higher levels of stress, and parenting stress specifically, have also been shown to be associated with relationship quality and dissolution (Lavee et al., 1996; Webster-Stratton, 1989).

The past few decades have seen a sharp increase in the number of cohabiting unions, and, with it, the number of children born to cohabiting parents (e.g., Bumpass & Sweet, 1989; Kennedy & Bumpass, 2008; McLanahan, 2004). Many of the early studies investigating the stability of cohabiting unions found them to be less stable than marital unions and, as a result, that children born to cohabiting parents have a much higher likelihood of experiencing parental relationship dissolution than do children born to married parents (Bumpass & Lu, 1999; Manning et al., 2004). More recent work, however, suggests some changes in the stability of cohabiting unions with children. Lamidi and colleagues (2019) find that cohabiting unions with children last longer than cohabiting unions with no children present, and that, compared to previous cohorts, more recent cohorts with a cohabiting birth are less likely to transition to marriage. Musick and Michelmore (2015) find that children whose parents are cohabiting at birth but who marry later have the same likelihood of experiencing parental relationship dissolution than children of married parents. Though many of the same factors are associated with the dissolution of cohabiting unions and marital unions, Tach and Edin (2013) find some predictors of stability differ slightly. In particular, they find that economic factors (e.g., earnings and education) and measures of relationship quality are more likely to impact marital relationships than nonmarital, but that demographic predictors do not vary between the two. Similarly, Tach and Halpern-Meekin (2012) find that parents with non-marital births are less likely to make decisions about dissolution based on relationship quality.

B.2 Non-normative parenting and parental relationships

Overall, parental relationship quality can suffer as a result of non-normative parenting experiences (Hartley et al., 2018; Hayes & Watson, 2013; Negash et al., 2015). Studies indicate that one of the main drivers is the increased stress related to non-normative parenting. In a study comparing parents of children with autism spectrum disorders (ASD) and parents of typically-developing children, Brobst and colleagues (2009) find that parents of children with ASD are similar to parents of typically developing children in levels of commitment, perceived support from their partner, and respect; however, parents of children with ASD report lower relationship satisfaction and higher levels of parenting stress. Harper and colleagues (2013) find that respite care is associated with lower stress and increased marital quality in parents raising children with ASD. A number of other studies similarly link increased caregiving stress to lower marital satisfaction (Hartley et al., 2011; Lavee et al., 1996).

Though estimates range in magnitude, there is also evidence that the experience of caregiving for a child with special needs (and any increased stress that results) is associated with a higher likelihood of relationship dissolution (Hartley et al., 2010; Joesch & Smith, 1997; Mauldon, 1992; Wymbs et al., 2008). In a meta-analysis, Risdall and Singer (2004) find a relatively small overall effect size (.21) of a child’s disability or special needs status on likelihood of divorce. This, however, disguises the wide range of effect sizes in the studies included; some populations of special needs—including developmental disabilities—are associated with higher likelihoods of divorce than others. Using an event history approach, Wymbs and colleagues (2008) find that parents of children with attention deficit hyperactivity disorder (ADHD) are more likely to divorce and have a shorter latency to divorce than do parents of children without ADHD. Taking a similar analytic approach, Hartley and colleagues (2010) find comparable results for parents of children with ASD. Unlike Wymbs and colleagues, they find that the likelihood of divorce remains elevated across childhood for these families, while the likelihood drops after early childhood for other families. Other studies, such as work by Freedman and colleagues (2012), find no association between child's special needs status and parental relationship dissolution. Similarly, using Tennessee birth records linked to marriage records, Urbano and Hodapp (2007) find that the likelihood of divorce for parents of children with Down syndrome is lower than for parents of children with no genetic syndromes, though divorce likelihoods of parents with children with other genetic syndromes are higher than those of typically-developing children. The differences in the estimates, including the null associations between special needs status and relationship dissolution, can be attributed to a few factors. First, the studies focus on different samples and subpopulations (only the Urbano & Hodapp study is a population-based study), and thus the results are not fully comparable or generalizable from one study to the other. Additionally, each operationalizes the child's special needs status differently, or focuses on a specific condition; caregiving stress is likely related to the severity and type of the child's condition, so differences in the likelihood of dissolution by specific diagnoses may be expected. Finally, each study likely contains some general measurement error. For example, the Freedman study (2012) was cross-sectional, rather than longitudinal, which limits understanding of the causal mechanisms.

Though most studies examining how children's special needs status impacts parental relationships are focused on divorce, there are a few that examine relationship dissolution more generally. In particular, Reichman, Corman, & Noonan (2004) examine how the birth of a child with special healthcare needs (defined as low birthweight) impacts the relationship status of new parents, and find that, in general, relationships are less stable following the birth of a child with special needs. These findings are echoed by Swaminathan, Alexander, and Boulet (2006). Taken together, the literature suggests that parents who experience higher caregiving responsibilities and stress are more likely to report lower relationship quality and higher levels of relationship dissolution overall, for both married and non-married parents.

B.3 Impact of relationship dissolution on child and family well-being in non-normative parenting families

Like divorce in general, there is a voluminous literature on the role of divorce and children's well-being (e.g., Amato, 2010; Demo & Acock, 1988) as well as the role of cohabitation (Bumpass & Lu, 2000; Dunifon & Kowaleski-Jones, 2002). I am aware of no study that focuses specifically on the impacts of dissolution for children with heightened caregiving needs. However, the literature on non-normative parenting and families raising children with special healthcare needs provides important context. In particular, these families are more likely to be economically disadvantaged across a variety of measures (Parish & Cloud, 2004; Stabile & Allin, 2012). Further, these families are more likely to have parental employment impacted as a result of their non-normative parenting experiences; parents, and mothers in particular, are less likely to work overall, and, if they do work, are more likely to work fewer hours (DeRigne & Porterfield, 2017; Powers, 2001). Thus, parental relationship dissolution and the potential loss of one parent’s income and financial resources, which can be disruptive for all families, may be particularly burdensome in the context of non-normative parenting. Additionally, women are more likely to bear the caregiving load in all families, and this is particularly true for non-normative parenting experiences (Baker & Drapela, 2010; Lemmon, 2015). Thus, the loss of financial resources and caregiving support through relationship dissolution may disproportionately negatively impact mothers, leaving these mothers with increased and unique caregiving responsibilities markedly vulnerable.

C. Current Study

Overall, the current body of evidence suggests an increased likelihood of parental relationship dissolution—both marital and nonmarital—driven at least in part by the intensity of caregiving responsibilities associated with non-normative parenting. Given the increased caregiving and economic load borne by families raising children with special needs, it is important to understand differences in family structure and how the experience of non-normative parenting may impact parental relationships. If a disproportionate number of families raising children with special needs are likely to experience relationship dissolution, and some of this increase may be related to caregiving stress, this may indicate that the current policy environment is not adequately supporting families in their caregiving efforts, perhaps due to limited access to supports such as paid leave or respite care. Additionally, if there is an increased risk of relationship dissolution beyond what may be expected in the general population, supports such as relationship education or co-parenting programs may be useful. Further, the child support program is intended to financially support single-parent families; understanding if adjustments are needed to account for child’s special needs status could be important. Overall, the disability, social work, and policy communities all have a stake in understanding how and whether non-normative parenting influences family structure.

This paper aims to provide some evidence about this association using nationally-representative data. In this paper, I ask: (1) Does the experience of non-normative parenting—through the presence of a child with a special need—increase the likelihood of parental relationship dissolution?; (2) Does the likelihood of dissolution change over time, and does this differ from parents of typically-developing children?; and (3) Does the risk of parental relationship dissolution differ by marital status at birth? Based on the theoretical framework and previous literature, I hypothesize that the experience of non-normative parenting increases the likelihood of relationship dissolution as a result of the increased stress and role strain involved. Given that non-normative parenting suggests parental stress patterns that differ from—and persist at higher rates for longer than—other parents, I also hypothesize that the risk of relationship dissolution will be longer than for other families; that is, I expect the likelihood of dissolution to remain elevated farther into childhood than is the case for families experiencing normative parenting. Finally, I hypothesize that both married and cohabiting parents will be at increased risk of relationship dissolution as a result of their non-normative parenting experiences.

Given the importance of these questions as well as the changing landscape of family structures and policy, it is crucial that we have current evidence on the role of non-normative parenting and relationship dissolution. The current knowledge base—which is highly suggestive of an association between child's special needs status and relationship dissolution—is limited in several important ways. First, because it is difficult to find a nationally-representative sample with information about parents' relationship status and child's special needs status, almost all of the current studies do not use a nationally-representative or generalizable sample. Additionally, many focus narrowly on the role of a specific health condition rather than on understanding how the parental experience of caregiving may impact relationship status. The current study seeks to fill this important gap. I focus broadly on the experience of non-normative parenting and do not limit my analysis to a specific developmental stage of childhood.

III. Data and Methods

A. Data

The National Longitudinal Survey of Youth 1997 cohort (NLSY97) is a nationally-representative, longitudinal survey that follows a cohort of youth through to adulthood. Respondents were first interviewed in 1997, when they ranged in age from 12-16, and were most recently interviewed in 2017-2018 (Round 18), when they ranged from 32-36 years of age. Interviews were conducted annually until 2011 (Round 15), at which point they were conducted biennially. At each interview, respondents are asked about their romantic relationships, fertility and child birth, labor market activity, and a variety of other information. A household roster is also collected as well as select information about other members of the household.[18]

The NLSY97 offers a unique opportunity to examine the association between non-normative parenting and relationship dissolution. To do so requires information about both a child's special needs status (or the parent's experience of the child's special needs status) and detailed information about the parent's relationship history over time. The NLSY97 is one of few data sets that has all necessary pieces to answer this important question. Specifically, these data

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[18] For more information about the NLSY97 sample or design, see the NLSY97 documentation maintained by the Bureau of Labor Statistics available at https://www.nlsinfo.org/content/cohorts/nlsy97.

include detailed monthly relationship status information for each participant, as well as information about each child the participant has, including whether the participant describes this child as having a special need.

B. Sample

[TABLE 4.1]

My sample is comprised of 4,564 NLSY97 participants who report having a child at any point through Round 18, and who reported either living with or being married to at least one of their children's other parents at the time of the child's birth (Table 4.1). Through Round 18, approximately 65% of the full NLSY97 sample have at least one child (N=5,765); respondents have between one and 12 children, for a total of 13,012 children represented in the NLSY97 sample. 30% of the NLSY97 respondents with children report multiple partner fertility; respondents report a total of 8,170 partners with whom they have children, some of whom they were cohabiting with or married to at the time of their child's birth. Specifically, 8,119 births occurred in a married or cohabiting relationship, representing almost two-thirds of all births. I choose to focus on births in a coresidential relationship for a few reasons. First, from a theoretical standpoint, non-normative parenting and related parenting stress, such as conflict around caregiving roles, may be most relevant for married and cohabiting couples who are both living with and negotiating caregiving responsibilities for the child. Additionally, the measure of a co-residing couple experiencing dissolution may be more clear than a measure of relationship dissolution outside of a coresidential union due to issues such as churning.

To answer the questions at hand, both child and parent attributes are relevant; I use parent-child dyad as the unit of analysis. Though it is possible to use child, this poses several concerns. A child-level analysis does not account for shared parents, which would likely bias estimates. Additionally, the NLSY97 contains rich parental data but less information on respondent's children. To ensure that siblings representing the same parental relationship status were not included, I select a focal child for the respondent. If a family has a child with a special need, that child is the focal child. For other families, and families who report more than one child with a special need, I randomly select the focal child, using Stata's random number generator. As a robustness check, I also conducted analyses on two different samples: one composed entirely of respondent's oldest children and the other composed entirely of respondent's youngest children. These estimates (not shown) are consistent with the findings reported.

C. Measures

C.1 Independent variable: Non-normative parenting

My independent variable of interest is a measure of whether the participant experiences their parenting as non-normative as the result of a child's special needs status. Beginning in Round 8 (2004), respondents are asked in each round whether any of their children have a "physical, emotional, or mental condition that demands a lot of your attention and makes it hard for you to go to school or work." Parents are then asked if the condition prevents the child from attending school, doing schoolwork, or participating in play or other activities. If a parent responds yes at any point to the first question, I consider them to be experiencing non-normative parenting. This measure differs from other measures and indicators used in the literature because it captures the parent's experience of stress at one-point in the child's life. Unlike previous studies that use a non-normative parenting lens, the measure does not account for an elongated period of stress and intensive parenting.

As is common with measures of child's special needs status, this can collapse many disparate conditions, which can make for a noisy, imprecise measure. Here, however, because the concept of interest is the parent's experience of caregiving—that is whether caregiving prevents the parent from engaging in work or education—rather than the child's specific condition or need, the self-report measure is capturing the parental experience of caregiving relatively cleanly. Contrast this to a measure of whether the child has a range of health conditions. While such a measure could ensure that the non-normative parenting was the result of a child's disability or health condition, it would provide no indication of the severity of the condition or whether it impacts the parental experience of caregiving on a daily basis.

Further, comparing the prevalence of the self-report of non-normative parenting to child disability prevalence in other nationally-representative surveys is somewhat reassuring. Thirteen percent of participants with children report experiencing non-normative parenting at some point across surveys (N=774) (Table 4.1). This is equivalent to approximately 18% of all of the children of all sample members. By comparison, approximately 23% of children in the Early Childhood Longitudinal Study- Birth Cohort, which includes children who are under seven years-old, are reported to have a specific diagnosed health condition at any point; in the Early Childhood Longitudinal Study- Kindergarten 2011 cohort, which includes children in elementary school, the equivalent proportion is 15%. Because I am interested in parents who experience caregiving stress, I would not expect that all parents of children with a diagnosed health condition report experiencing non-normative parenting as a result of that condition. Conversely, I would not expect that all parents who experience non-normative parenting would have a specific diagnosis for their child.

C.2 Dependent variable: Relationship dissolution

The dependent variable of interest is the first instance of dissolution of the child's biological parents' relationship. The NLSY97 contains a detailed monthly relationship history for each respondent making it possible to follow the relationship history for each child's parents. Every dyad has a series of relationship indicators for each month and year beginning in 1994 through to the participant's last interview. For my main analyses, I consider the start date of interest to be the month and year of the child's birth rather than the start date of the relationship itself. This allows my estimates to track with the child's age.

For marital relationships, defined based on whether parents were married at the time of the child's birth, I consider the relationship to have ended if the parent reports divorcing the other parent, whether or not they continue to report to live together. I code the relationship as dissolved the first month and year this is reported. I choose to use divorce to measure relationship dissolution rather than separation given its clear legal framework and policy-relevance for social programs such as the child support system. For cohabiting relationships, I consider the relationship to have ended once the participant reports no longer cohabiting with the other parent. Alternately, in cases where an originally-cohabiting relationship resulted in marriage (N=188 in my final sample), I then consider the relationship to have dissolved if the relationship ended in divorce. I exclude respondents who are widowed from my analysis. Because I am interested in the association between non-normative parenting and relationship dissolution for a child's biological parents, I do not include measures of remarriages, subsequent cohabitation, or relationship churning in these analyses. Future analyses could consider the overall relationship trajectory for parents of children with special needs.

C.3 Covariates

I include a number of variables that are likely to be associated with both a self-report of non-normative parenting experience and parental relationship status. These characteristics are measured at multiple levels, including household, parent, and child. In addition, many vary across time. At the parent level, I include measures of sex, race, age at first birth, parental health status, and parental education for the focal parent. For the other parent, I include measures of employment at the time of birth and education level. At the household level, I control for household poverty, rurality, census region, number of children under 18 in the household, and number of children under 6 in the household. At the child level, I control for sex and birth order. I select covariates that, based on prior literature and theory, I believe may influence parental relationship dissolution yet are still exogenous to parent report of non-normative parenting. For example, I considered measures of child's resident status (i.e., whether the child lives with the respondent) as well as household size; however, these are endogenous to my outcome of interest. When I do include child's resident status in the model, results remain consistent. I also aimed for parsimony to avoid over-controlling, which may bias estimates; thus, I tested some covariates in a step-wise fashion and retained mostly those that impacted my estimates or that were conceptually important.

D. Analytic Methods

[TABLE 4.2]

As evidenced in the first panel of Table 4.2, the sample of parents reporting non-normative caregiving for their children differ significantly across a number of factors from other parents in the sample. Overall, the sample of parents experiencing non-normative parenting is significantly more disadvantaged from other parents in the sample. This follows previous research about households raising children with special needs. Though these differences are to be expected, they raise some concerns about isolating the relationship between non-normative parenting and family structure; many of these measures of disadvantage are also likely to influence relationship stability. A major methodological concern with questions of relationship dissolution in general and particularly combined with a self-report question about parenting stress is the issue of selection bias. Parents who have experienced relationship dissolution or a difficult relationship may be more likely to report that their child has a specific condition that requires additional caregiving than are other parents.

Thus, in an effort to mitigate selection bias and to gain a greater foothold into causal inference, I first employ propensity score matching to create a matched sample of participants with both non-normative and normative parenting experiences. Using a matched sample allows for a comparison group of parents experiencing typical parenting to have similar observed characteristics to the group of parents experiencing non-normative parenting (Dehejia & Wahba, 2002; Ho et al., 2007; Rosenbaum & Rubin, 1983). In this way, my estimates are less likely to be biased by an unobserved characteristic that could influence both self-report of non-normative parenting and relationship dissolution. For example, I include a measure of optimism and self-efficacy in the matching model; this reduces the likelihood that differences in relationship dissolution are driven by differences in personality traits or outlooks.

To do this, I first estimate a probit model predicting “treatment”—in this case, the measure of non-normative parenting. In my probit model, I select covariates that theoretically influence whether a parent experiences non-normative parenting while taking care to exclude measures that may be endogenous to my eventual outcome of interest (relationship dissolution). To further ensure unbiased estimates, I include measures that were temporally taken before treatment (i.e., birth of a child with special needs); all measures are from the 1997 interview or the survey round from the year of the child's birth. The model, and resulting estimates, is included in Appendix Table 4.1. I use nearest-neighbor matching with a caliper of .1, and with replacement, and exclude observations with minimal overlap.[19] This results in each of my treated observations (i.e., parents who report non-normative parenting) being matched with the untreated observation with the closest propensity score. I use replacement matching because I have an adequate number of untreated observations available; this tends to minimize bias at the expense of precision (Calliendo & Kopeinig, 2008). The matching process substantially reduces differences in observed characteristics in the treated and untreated samples (Figure 4.1), resulting in an analytic sample with no significant differences in covariates (Table 4.2, second panel). The final sample is comprised of 984 parent/child dyads, 548 of whom reported experiencing non-normative parenting due to caring for a child with special needs.[20]

I use event history methods as my main analytic tool to investigate the association between non-normative parenting and parental relationship dissolution. First, as a baseline, I estimate standard logistic regressions predicting relationship dissolution by non-normative parenting status. However, standard regression models do not account for some important issues with these data and are not sufficient to address all of my research questions. Specifically, the

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[19] I also exclude 396 cases with missing data on measures included in the propensity score model. Following propensity score matching, I find that 26 treated observations do not meet the common support criteria and are dropped from the analysis. All untreated observations had adequate overlap to remain available for matching purposes.

[20] This results in an analytic sample that differs from the overall sample in some notable ways, including a higher proportion of marriages ending in divorce and a higher proportion of cohabiting births compared to marital births.

NLSY97 contains relationship data through 2017, but I do not observe my sample beyond this point. In all likelihood, some parents will continue to experience dissolution in future years, but I do not yet observe this in the data. This issue is known as right censoring. In contrast to traditional regression, event history models can properly account for right-censoring (Allison, 1984; Box-Steffensmeier & Jones, 2004). Additionally, event history methods account for timing, both in the measurement of the outcome variable as well as for covariates that may vary over time (Allison, 1984). Thus, to continue to address the question of whether non-normative parenting is associated with increased risk of dissolution, I turn to event history methods. First, I look descriptively at the data by non-normative parenting status, using the Kaplan-Meier estimator and the baseline hazard function. Because the baseline hazards do not appear to take a particular functional parametric form, I use a Cox proportional hazards model to estimate how the experience of non-normative parenting impacts the risk of relationship dissolution. The Cox model allows the baseline hazard to be an unspecified, nonparametric form, thus allowing for more flexible modeling (Box-Steffensmeier & Jones, 2004).[21] I also estimate discrete time models as a sensitivity test (results not shown). I then use an accelerated failure time (AFT) model to better understand how non-normative parenting influences the rate of relationship dissolution. To address Question 3, I then conduct these analyses separately for cohabiting and marital parents. I use child's birth date as the origin time to measure duration and likelihood of dissolution; results are similar if I instead use date of marriage or cohabitation. I select the former because it is theoretically more salient.

IV. Results

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[21] Appendix Figure 4.1 displays the Shoenfeld residuals, providing further evidence (in addition to the baseline hazard function, Figure 4.3) that the assumptions for proportional hazards is met.

As previous literature suggests, the families in my sample who report having a child with a special need differ significantly across multiple characteristics (Table 4.2, first panel). In particular, parents of children with special needs are less-likely to be married at the time of birth (34% compared to 55%), more likely to report being divorced at their last interview (23% compared to 13%), more likely to be female (77% compared to 49%), more likely to be Black (26% compared to 20%) or biracial, more likely to report having fair or poor health (63% compared to 37%). Both parents are also more likely to have lower levels of education, lower levels of employment, and respondents are likely to have had their first births at younger ages (21 compared to 25). At the household level, households with parents experiencing non-normative parenting are more likely to have had income below the poverty line at any point (81% compared to 66%), have slightly more children under 18 in the house, and slightly fewer children under six in the house. There are fewer differences that we can measure at the child-level, though children with special needs have lower birthweight than their counterparts. Following the implementation of propensity score matching, however, the samples are comparable on all relevant covariates (Table 2, second panel). Despite these now-similar baseline characteristics, the sample of parents reporting non-normative parenting is still statistically significantly and substantively more likely to report being divorced or separated at the time of their last interview.

A. Main Results

[TABLE 4.3]

I first use a basic logistic regression model to estimate the relationship between non-normative parenting and relationship dissolution while controlling for confounders; I find that the increased likelihood of dissolution persists, even when I control for relevant covariates (Table 4.3). Using the unmatched sample, the experience of non-normative parenting increases the likelihood of relationship dissolution by approximately 50%. Implementing matching, and no other covariates, the average treatment effect on the treated (ATT) estimate changes to eight percentage points, which is notably smaller in magnitude, though still a relatively large effect size. Finally, when I implement the logistic regression on the matched sample, the estimate of the impact of non-normative parenting on the likelihood of relationship dissolution is similar, though slightly smaller in magnitude, to using the unmatched sample.

[FIGURES 4.2 and 4.3]

To better understand the time-varying nature of the risk of dissolution and investigate Question 2, I first examine Kaplan-Meyer survival curves of relationship dissolution by child’s special needs status (Figure 4.2). These echo the estimates in the logistic regression. The rate of relationship survival (or, alternately, dissolution) is similar for parents experiencing normative and non-normative parenting for the early years of a child’s life. However, while the risk of dissolution begins to decrease around age three for parents raising children without special needs, the risk of dissolution continues at the same rate through the child’s seventh birthday and remains higher than the risk of dissolution for other parents throughout. To better understand these different patterns as well as identify how to parametrize my event history models, I examine smoothed baseline hazards (Figure 4.3). This reinforces the notion that the risk of dissolution for families with and without children with special needs is similar for the first few years of a child’s life and then diverges. The baseline hazard for parents experiencing non-normative parenting increases at a greater rate and for longer and reaches a higher hazard rate than parents with normative parenting experiences. This suggests that, in addition to having a higher risk of relationship dissolution, the rate of risk for both groups is not equal over time.

When I model the risk of relationship dissolution using a Cox proportional hazard model (Table 4.3, Models 4 and 5), I find that parents who experience increased caregiving responsibilities are 56% more likely than those with typical responsibilities to experience relationship dissolution as a baseline hazard. Finally, the Accelerated Failure Time model estimates that parents who report non-normative parenting experiences are likely to experience a shorter duration to relationship dissolution than other parents.

B. Marriage vs Cohabitation

[FIGURES 4.4a-4.4b and 4.5a-4.5b]

I repeat these analyses stratified by marital status at birth to investigate Question 3 and look at the difference in the risk of dissolution for married and cohabiting couples. Regardless of whether they later marry, couples who are not married but reside together at birth are considered to be cohabiting for this analysis. That there is distinct heterogeneity by marital status is clear in the Kaplan-Meier curves and baseline hazards for each type of birth (Figures 4.4a-4.4b, 4.5a-4.5b). Specifically, the Kaplan-Meier curves for cohabiting parents differ very little by normative parenting experience; these suggest a steep increase in risk in the early years of a child’s life with a divergence in risk levels in middle childhood where parents experiencing non-normative parenting have higher risk levels of dissolution. Conversely, the Kaplan-Meier curves for married parents are overall flatter (suggesting decreased risk of dissolution overall), diverge earlier (around age three), indicate a somewhat constant rate of risk of dissolution for married parents raising a child with special needs, and suggest decreased rate of survival for those experiencing non-normative parenting, beginning around age three. Notable, too, is the difference in the rate of survival between the two; cohabiting relationships have a sharper drop off, whereas marital relationships have a more gradual decline. Further the baseline hazard estimates display very different patterns of dissolution risk for married and cohabiting parents by child's special needs status which were not evident in the combined baseline hazards. For married parents who report non-normative parenting, the baseline hazard is less constant than the baseline hazard for other parents and indicates an increased hazard rate through approximately age seven, and a steeper increase in risk of dissolution in a child's early life. The smoothed hazard estimates for children of cohabiting couples suggest dissolution follows similar patterns for children with and without special needs, though with some elevated risk in middle childhood (ages five to ten).

[TABLE 4.4]

The Cox estimates indicate no statistically significant difference in the likelihood of relationship dissolution by normative parenting experience for married parents and an increase in the likelihood of dissolution for cohabiting couples who report increased caregiving responsibilities compared to those who do not. Notably, the estimate for married couples is positive and relatively large in magnitude (a 38-percentage point increase). Though this estimate does not reach statistical significance, the magnitude and the large standard error are suggestive of an association between increased likelihood of divorce and non-normative parenting. The AFT model estimates mirror the Cox estimates and suggest no statistically significant difference in the time to dissolution for married parents but a slightly shorter time to dissolution for cohabiting parents.

C. Alternate Specifications

These results are robust to a number of alternate specifications. Some parents reported a child's special needs status after relationship dissolution (N= 119). Results are robust when I exclude these families. I choose to include them in my main analyses for the practical matter of increasing sample size as well as for theoretical reasons. Children's conditions may go unnoticed or unreported for several years, or may manifest themselves differently throughout the life course (Delaney & Smith, 2012); it is possible that the condition, though unreported or undiagnosed, may still impact a parent's relationship quality. Moreover, the measure of timing of special needs status is imprecise; when the question first appeared in 2004, parents were asked about onset, but this information is not available in subsequent years. Thus, given that estimates are similar whether I include these parent-child dyads, I choose to leave them in my main analyses.

Additionally, I tested an alternate operationalization in which I included only parents who said that their children's condition prevented the child from attending school or conducting play or other typical activities in my independent measure. This was intended to proxy a more traditional estimate of childhood disability. Estimates are broadly consistent using this measure, with very little change. I also excluded cohabiting couples who eventually married from my analysis, which results in no difference in estimates. In addition, results are robust to using a sample with only first children only as focal children.

Results are also robust to differences in event history model specifications. I estimated models using the start date of the parent's relationship rather than child's birth date. I find no difference in results or patterns of baseline hazards; the estimates simply reflect a different time horizon. Finally, in addition to the estimates shown here, I also used discrete time models—which best model situations when time data are measured at discrete time points rather than continuously—and find similar results. The results are consistent with the Cox estimates.

V. Discussion

Overall, I find, like much of the previous literature, that non-normative parenting as the result of caregiving for a child with special needs is associated with an increased likelihood of relationship dissolution. I find that cohabiting unions are statistically significantly more likely to dissolve; I find no statistically significant association between dissolution of marital unions and caregiving for special needs children, though the direction and magnitude of the estimates are suggestive of an association. Further, the baseline hazard and the accelerated failure time models suggest that the timing of dissolutions differ for parents rearing special needs children compared to parents without these additional caregiving responsibilities. These suggest that parents with non-normative caregiving responsibilities move towards dissolution more quickly than other parents. This is true for both marital and nonmarital relationships.

The baseline hazard and Kaplan-Meier curves for dissolution suggest some differences in the timing of the risk of dissolution by normative parenting experience. In particular, the smoothed hazard estimates suggest that parents who report caregiving for a child with special needs have a steeper trajectory towards peak likelihood of dissolution in the early childhood years, and the hazard rate does not begin decreasing until around age seven. For other parents, the highest likelihood of dissolution occurs in the child’s preschool years and remains relatively stable or decreasing from then on. This timing reinforces the need to ground analyses in the experiences of parental caregiving; for parents with increased caregiving responsibilities, these heightened responsibilities often persist throughout a child's lifetime. It may also be indicative of differences in how childhood health conditions manifest themselves through different developmental periods or diagnostic timelines. This is unlike the stress of parenting young children, which eventually dissipates as a child becomes more independent. This confirms Hartley and colleagues' conclusion that parents raising children with special needs are at increased risk of marital dissolution.

There are several other competing explanations to consider, particularly as it relates to the self-report measure of non-normative parenting. Parents who report that their child has condition that limits their ability to work or go to school may be more likely to do so if they are single parents. Because results are robust to specifications when the report of child's special needs status comes chronologically before the parents' relationship dissolution, this eliminates some concern that parents may retroactively be assigning their relationship stress to a child's special needs, or that parents who are now experiencing higher-levels of stress as a result of being a single parent may be more likely to report that their child has a special need. An additional selection issue to consider is whether parents who find out prenatally that their child may have special needs change their relationship status as a result—that is, they are more likely to get married or cohabit at the time of the child's birth—or that some parents may be more likely to select into having a child with special needs through choosing not to terminate the pregnancy. There is little current evidence about either concern. Previous studies that include children with health conditions that can be identified in utero (e.g., Fragile X), however, find broadly similar results for risk of parental relationship dissolution (Abbeduto et al., 2004; Seltzer et al., 2011).

The pattern of findings suggests that having a child with special needs and the increased caregiving needs that come along with it may lead to decreased relationship stability for parents. While it is certainly not the case that all relationships should persist, this increased rate of dissolution may give us pause in the context of the support needs for parents who are raising kids with special needs. It is precisely the parents who report that their child has increased parenting needs who may be more likely to be trying to meet these needs alone or in the context of juggling a co-parenting, nonresidential relationship. Additionally, that female respondents in my sample overwhelmingly report having increased caregiving responsibilities may reflect that women are often disproportionately responsible for carework in the home, regardless of their employment status. Thus, this increased vulnerability as well as the potential gender imbalance it creates, and the particular vulnerability for mothers in this position, have important implications for policies to better support the needs of these parents and children.

First, there is some evidence that relationship education programs can confer social benefits to parents who are working together to co-parent (Halpern-Meekin, 2019). The curriculum in these programs has previously been adapted and could, perhaps, be adapted to focus on the unique needs and challenges of parenting children with special needs. Additionally, given the increased risk of dissolution for these families, we must ensure that the child support system adequately supports families balancing caregiving needs for high-needs children. This means ensuring that the support levels are high enough to account for extra expenses as well as ensuring that the support continues for as long as necessary (which may be longer than for typically- developing children). States currently differ in their treatment of support for children with special needs.

If parenting stress may be more likely to lead to dissolution, policymakers could consider the ways in which policy supports may lighten the parenting load. For example, several studies suggest that respite care is effective at lowering parental stress rates (Chan & Sigafoos, 2001; Harper et al., 2013). Policymakers could consider the ways in which respite care may relieve some of the burden of non-normative parenting as well as options to build in additional parenting or relationship supports, such as relationship education programs. Further ensuring families have access to needed supports—such as adequate child care or after-school care, appropriate medical care, special education services or similar supports—may also go a long way towards supporting parents.

These findings also have important implications for social work research and practice. In particular, social workers who are supporting children with special needs should consider the needs of the family system as a whole, even if the child is the identified client. This could mean referrals for family support to programs such as those mentioned above, or through forming family resource groups. Social workers also have a responsibility to advocate for stronger policies to support these families, such as paid family leave. Social work researchers can consider how best to develop and test interventions to support families to reduce parenting stress and potentially lessen the possibility of dissolution, or, perhaps more saliently, to support families during and after relationship dissolution.

VI. Limitations and Conclusions

Perhaps the biggest limitation with the current study is the concern of selection bias. Though I use propensity score matching and weighting in an attempt to mitigate this issue, I am still only able to match on observable characteristics, and some studies suggest that the use of matching may introduce additional bias rather than mitigate it (King & Nielsen, 2019). In addition, neither the propensity score model nor the event history models can account for endogenous characteristics that may influence non-normative parenting status, such as whether the child is residential. In addition, this analysis does not account for many relationship quality characteristics, and has limited information on the non-respondent parent all of which is based on the report of the respondent parent. This makes it difficult to unpack characteristics related to dissolution beyond demographic characteristics; previous literature, however, tells us that this excludes many important measures. Future research should strive to sort out the endogeneity concerns as well as to account for these sorts of characteristics.

Parental relationships are complicated, and this study does not account for many of the nuances in relationship trajectories. Notably, I use the time of divorce to measure relationship dissolution for marriage rather than separation. This has implications for findings related to timing; the timing of the separation may be more salient and may occur significantly earlier in a child's life than the official divorce. Additionally, not all couples choose to end their separation with legal divorce; this analysis then excludes those dissolutions. In addition, this study does not account for subsequent relationships of parents, which may be particularly important for parents who were cohabiting at the time of birth. Similarly, I do not account for each union transition of the parent, including towards more stable relationships. Additional research could build on this by following a parent's reported relationships across time.

Though the NLSY-97 offers crucial measures to investigate the association between non-normative parenting and relationship dissolution, its use at this point in time also limits our understanding in important ways. Respondents were last interviewed when they were in their mid-thirties, still well-within the years in which we might expect respondents to be marrying and having children. Thus, the current analysis misses the future parenting and relationship experiences of an unknown number of the NLSY97 sample members. Further, given evidence that higher levels of education are related to later marriage and childbearing (e.g., Lundberg et al., 2016; Sweeney, 2002), it is likely that these individuals differ systematically from sample members in this analysis who married and had children earlier. Future analyses can include later rounds of data collection with the NLSY97 to account for this limitation.

This study provides some of the first evidence of the relationship between non-normative parenting, such as parenting a child with a special healthcare need, and parental relationship dissolution at a national-level. Findings are suggestive of a relationship between child's special needs status and increased relationship disruptions, particularly for cohabiting relationships. This study also suggests that the timing of dissolution is different for parents raising children with special needs and other parents. These findings have important implications for policymakers and social workers. Understanding the range of impacts of a child's special needs status on the family system can help inform new policies and programs designed to support families as well as to improve upon existing supports.

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Tables

Table 4.1: Children, Multiple Partner Fertility, and Cohabitation/Marriage at Birth for the Full NLSY97 Sample and Respondents Reporting a Child with Special Needs

		Full Sample		Non-Normative Parenting/Special Needs	
		N	Proportion of Sample with Children	N	Proportion of Sample with Children/Special Needs Children
Total NLSY97 Respondents		8,924			
NLSY97 Respondents with One or More Children		**5,765**	**100%**	**774**	**13%**
NLSY97 Respondents by Number of Children					
	1	1,725	30%	110	14%
	2	2,052	36%	211	27%
	3	1,213	21%	229	30%
	4	497	9%	126	16%
	5	176	3%	53	7%
	More than 5	102	2%	45	6%
Total NLSY97 Parent/Child Pairs		**13,012**		**2,282**	**18%**
NLSY97 Respondents by Number of Other Parents					
	1	4,020	70%	358	46%
	2	1,192	21%	237	31%
	3	369	6%	111	14%
	More than 3	149	3%	65	8%
Total NLSY97 Respondent/Other Parent Relationship Pairs		**8,170**		**1,072**	**13%**
Number of Births to Married/Cohabiting Couples					
	0	1,469	25%	154	20%
	1	1,741	30%	203	26%
	2	1,612	28%	198	26%
	3	692	12%	147	19%
	4	194	3%	49	6%
	5	43	1%	17	2%
	More than 5	14	0%	6	1%
Total Number of Married/Cohabiting Births		**8,119**	**62%**	**1,363**	**17%**
Total Sample (Parent/Child) of Married/Cohabiting births		**4,564**		**620**	**14%**

Number of other parents measures the number of partners with whom the respondent reports having children. The bolded numbers in the last column present the proportion of children/respondents overall, while the nonbolded items measure the proportion of children/respondents with special needs. Source: Author’s calculations from NLSY97

Table 4.2: Selected Sample Characteristics by Special Needs Status, Pre- and Post-Matching

	Unmatched Sample			Matched Sample		
	Typically-Developing Children	Non-normative Parenting/Special Needs Child	Sig	Typically-Developing Children	Non-normative Parenting/Special Needs Child	Sig
	Mean/Proportion	Mean/Proportion		Mean/Proportion	Mean/Proportion	
Parent						
Married at Time of Birth (others cohabiting)	55.3%	34.0%	***	36.9%	35.4%	
Divorced/Separated Last interview	13.2%	23.2%	***	17.9%	22.4%	**
Female	49.2%	77.3%	***	76.3%	78.3%	
Age at First Birth	25.0	21.3	***	21.3	21.5	
Race/Ethnicity						
Not Black, Not Latinx	55.0%	48.9%	**	48.5%	49.6%	
Black	20.0%	25.8%	***	25.5%	24.3%	
Latinx	24.1%	23.5%		23.5%	24.6%	
Two or More Races	0.9%	1.8%	*	2.4%	1.5%	
Highest Grade Completed	13.8	12.2	***	12.7	12.6	
Ever in Poor or Fair Health	36.8%	63.4%	***	61.9%	61.1%	
Other Parent Employed	69.9%	64.2%	**	65.3%	66.4%	
Other Parent Highest Grade Completed	13.3	11.9	***	12.1	12.0	
Family	70.0%	64.2%	***			
Poverty Level	65.8%	80.5%	***	80.3%	79.2%	
Region						
Northeast	16.3%	18.1%		20.1%	18.4%	
North Central	24.1%	22.7%		22.1%	22.8%	
South	36.4%	38.2%		37.8%	38.1%	
West	23.2%	21.0%		20.1%	20.6%	
Rural	53.1%	50.5%		50.7%	50.9%	
Number of Children Under 18 in Household	2.0	2.5	***	2.3	2.5	
Number of Children Under 6 in Household	0.78	0.53	***	0.59	0.53	
Focal Child						
Female	48.8%	46.5%		48.7%	47.6%	
Oldest/Only	56.0%	56.5%		54.7%	57.1%	
Birthweight (lbs)	7.26	6.98	***	6.96	7.01	
N=	3944	620		436	548	
(Parent/Child)	4564			984		

*** p<0.01, ** p<0.05, * p<0.1

Sig column denotes whether there is a statistically significant difference between sample members who report non-normative parenting and those who do not for a given characteristic. Measures taken at the time of child's birth or the wave prior to child's birth unless otherwise noted.
Source: Author's calculations from NLSY97

Table 4.3: Non-Normative Parenting and Risk of Relationship Dissolution, Estimates from Logistic Regression and Event History Models

	(1) Logistic Regression (Coef): Not Matched	(2) ATT Estimate: Matched	(3) Logistic Regression (Coef): Matched	(4) Cox Model: Coefficient	(5) Cox Model: Hazard Rate	(6) AFT Model
Non-Normative Parenting	0.40***	0.09**	0.45***	0.4461***	1.5622***	-0.0015***
	(0.18 - 0.62)	(0.05 - 0.12)	(0.14 - 0.76)	(0.1482 - 0.7441)	(1.1597 - 2.1045)	(-0.0026 - -0.0004)
Constant	1.02		5.14			7.5964***
	(-0.97 - 3.02)		(-2.01 - 12.29)			(7.5914 - 7.6013)
Observations	4,457	984	984	10,229	10,229	10,229

*** p<0.01, ** p<0.05, * p<0.1

95% confidence intervals in parentheses. All models include controls for: sex, race, age at first birth, employment status, highest grade completed, and self-reported health status of respondent; household poverty level, census region, rurality, number of children in household under six; and sex and birth order of focal child. Models 4 and 5 allow for time-varying measures; all other models contain measures from the wave of the child’s birth. Model 2 presents the ATT estimate from Stata’s PSMATCH2 command. Cox models use Efron method for ties. AFT model assumes an exponential function.

Source: Author’s calculations from NLSY97

Table 4.4: Non-Normative Parenting and Risk of Relationship Dissolution, Estimates from Logistic Regression and Event History Models by Marital/Cohabitation Status at Birth

	(1) Logistic Regression (Coef): Matched	(2) Cox Model: Coefficient	(4) AFT Model
Cohabiting Births			
Non-Normative Parenting	0.39**	0.4302***	-0.0019**
	(0.04 - 0.73)	(0.1282 - 0.7322)	(-0.0035 - -0.0004)
Constant	5.65		7.5988***
	(-3.50 - 14.80)		(7.5920 - 7.6056)
Observations	725	6,226	6,226
Marital Births			
Non-Normative Parenting	0.66***	0.3424	-0.0009
	(0.16 - 1.16)	(-0.1759 - 0.8608)	(-0.0022 - 0.0005)
Constant	5.89		7.5935***
	(-5.34 - 17.11)		(7.5876 - 7.5993)
Observations	371	4,003	4,003

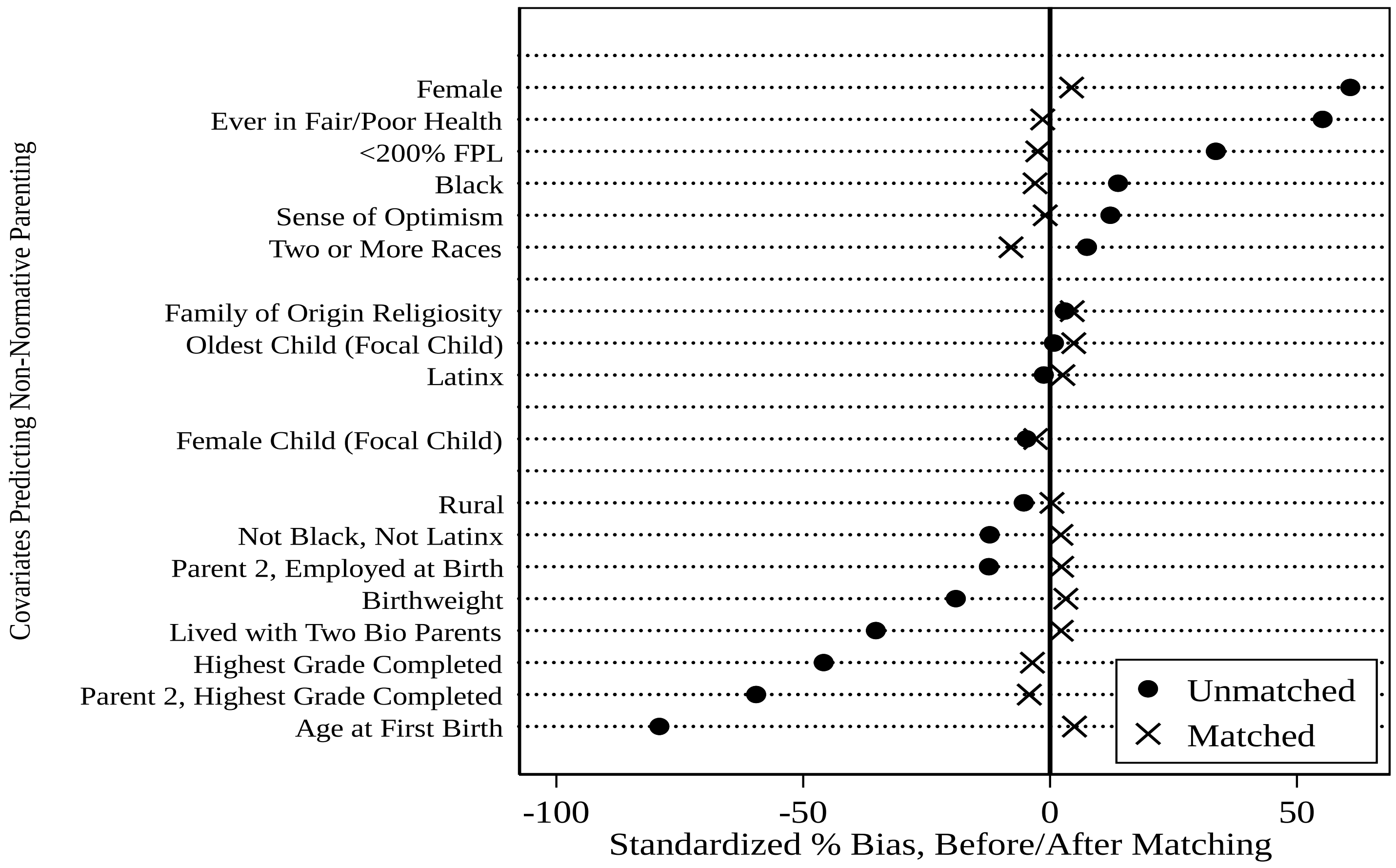
*** p<0.01, ** p<0.05, * p<0.1

95% confidence intervals in parentheses. All models include controls for: sex, race, age at first birth, employment status, highest grade completed, and self-reported health status of respondent; household poverty level, census region, rurality, number of children in household under six; and sex and birth order of focal child. Cox models allow for time-varying measures; all other models contain measures from the wave of the child's birth. Cox models use Efron method for ties. AFT model assumes an exponential function.

Source: Author's calculations from NLSY97

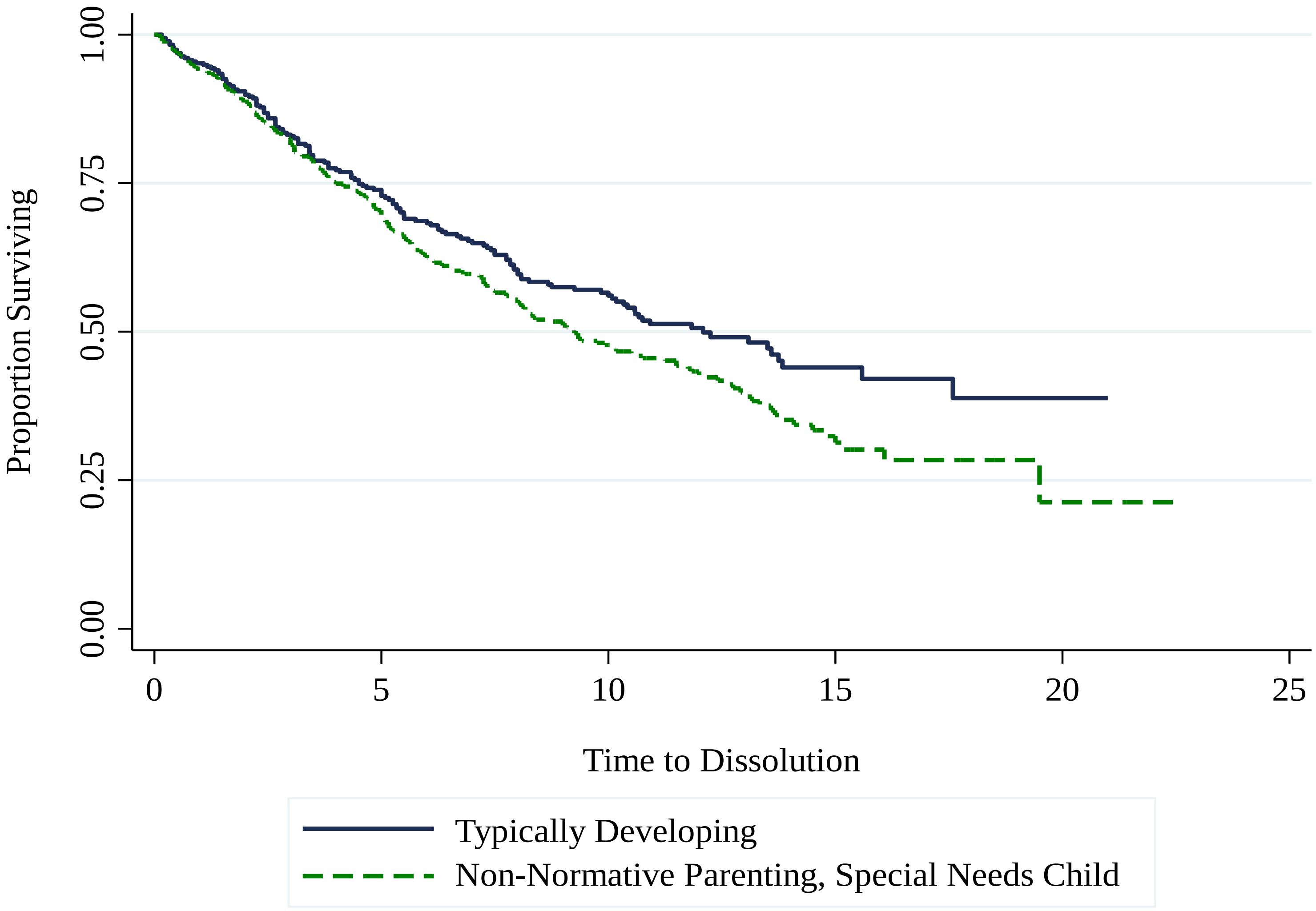
Figures

Figure 4.1: Standardized Bias on Covariates Predicting Non-Normative Parenting Before and After Matching



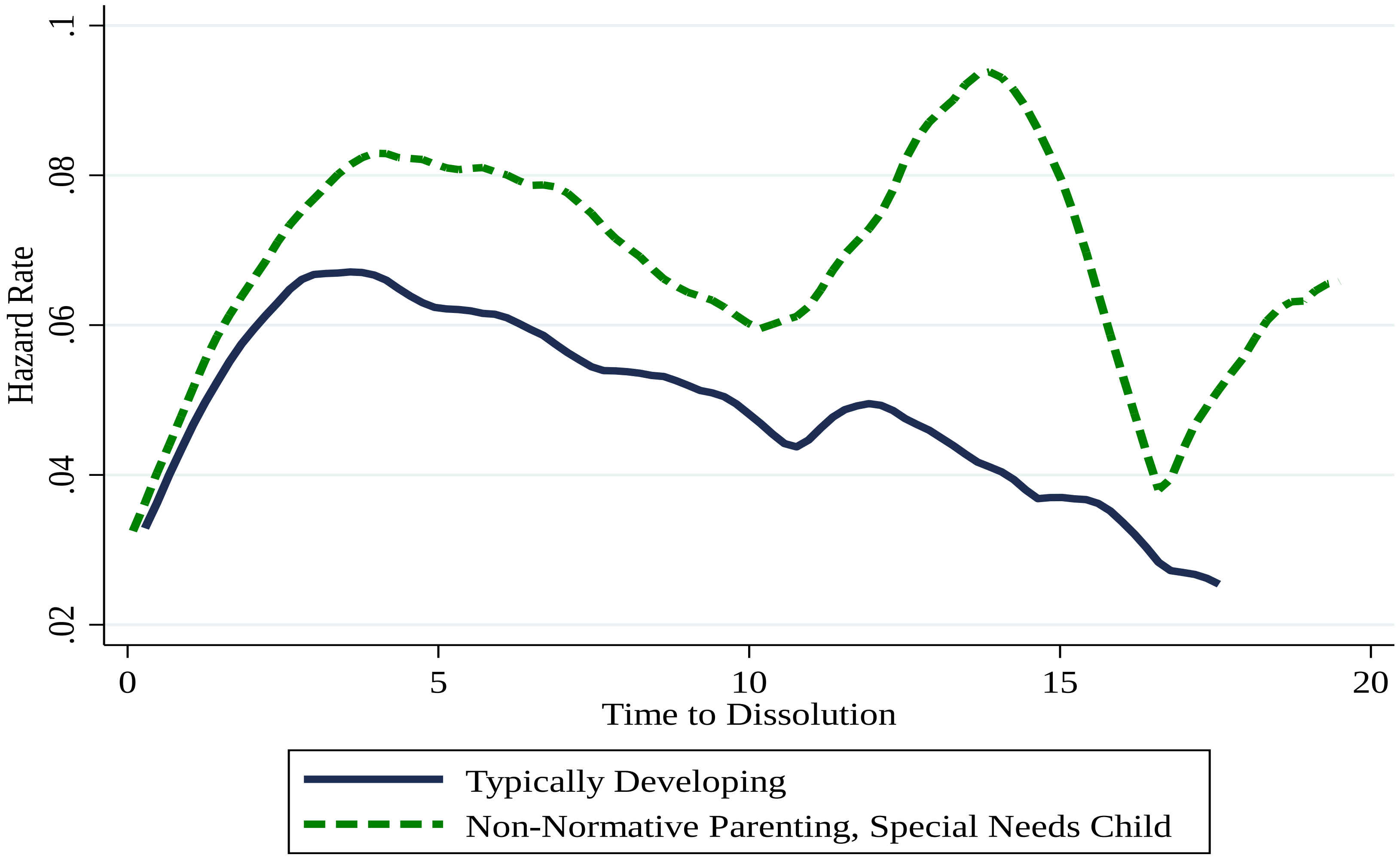
All covariates measured at the time of child's birth, with exception of Sense of Optimism, Family of Origin Religiosity, and whether the respondent lived with two biological parents during young adulthood, which are taken from the 1997 interview wave.
Source: Author's calculations from NLSY97

Figure 4.2: Kaplan-Meier Survival Estimates of Relationship Dissolution by Non-Normative Parenting Status



Source: Author’s calculations from NLSY97

Figure 4.3: Baseline Hazards of Relationship Dissolution by Non-Normative Parenting Status



Source: Author's calculations from NLSY97

Figure 4.4a: Kaplan-Meier Survival Estimates of Relationship Dissolution by Non-Normative Parenting Status, Cohabiting at Birth

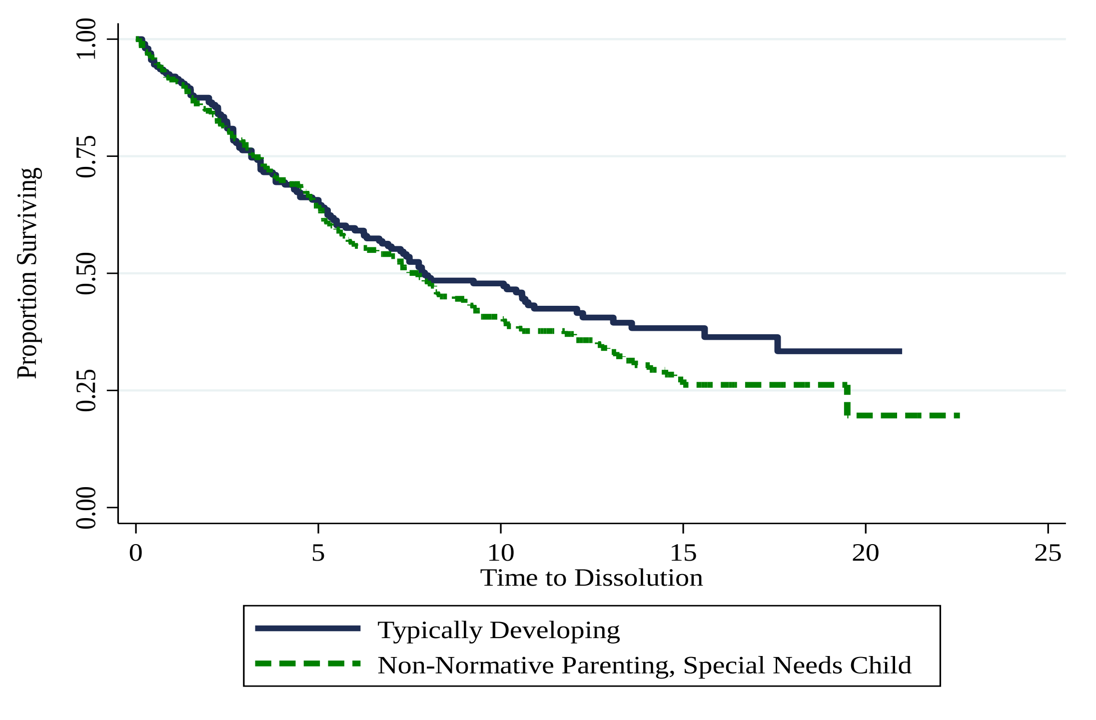
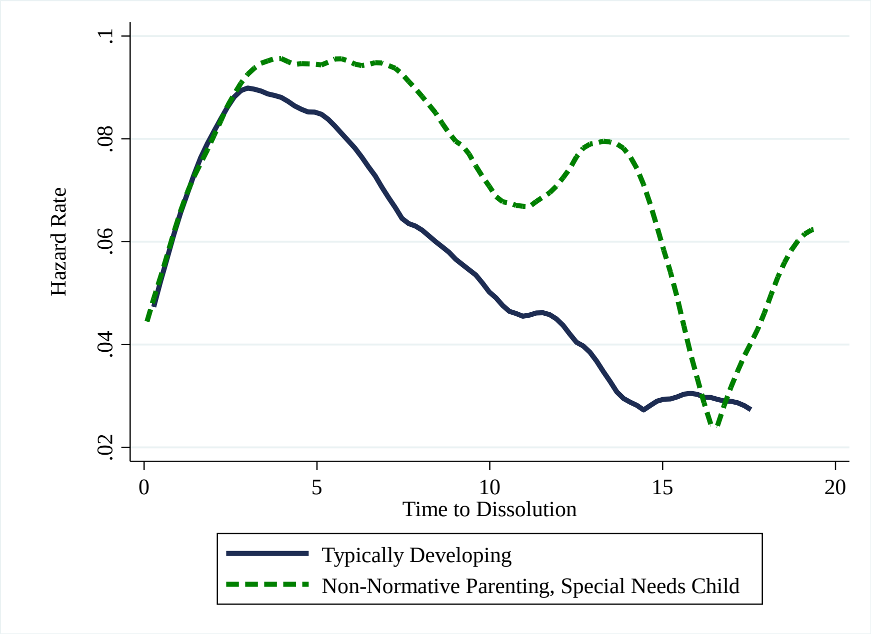


Figure 4.4b: Baseline Hazards of Relationship Dissolution by Non-Normative Parenting Status, Cohabiting at Birth



Source: Author’s calculations from NLSY97

Figure 4.5a: Kaplan-Meier Survival Estimates of Relationship Dissolution by Non-Normative Parenting Status, Marital Birth

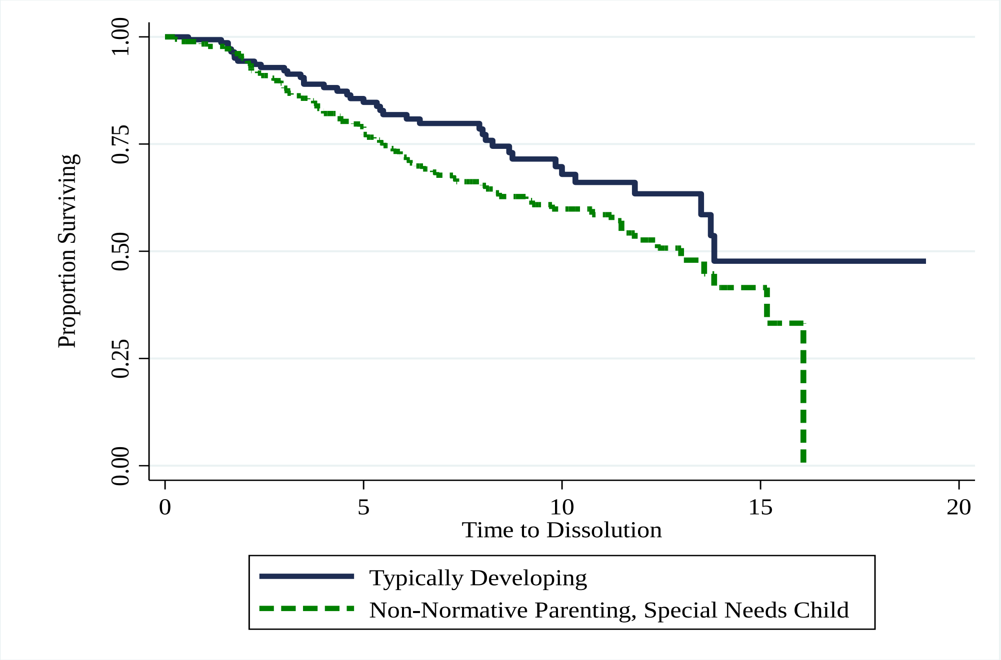
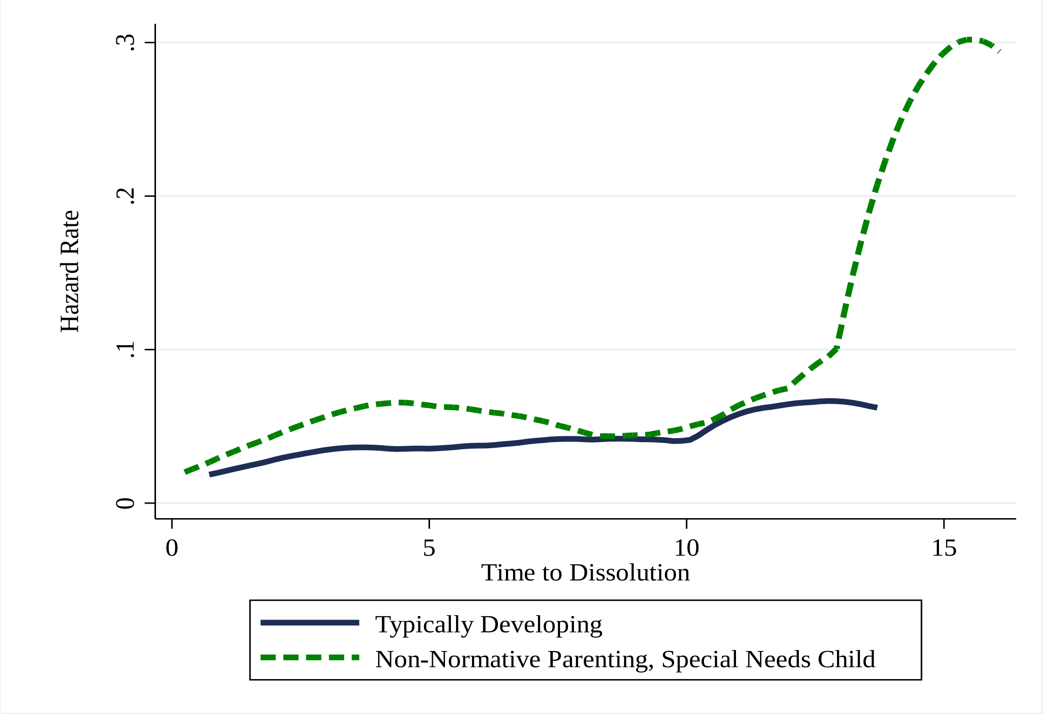


Figure 4.5b: Baseline Hazards of Relationship Dissolution by Non-Normative Parenting Status, Marital Birth



Source: Author’s calculations from NLSY97

Appendices

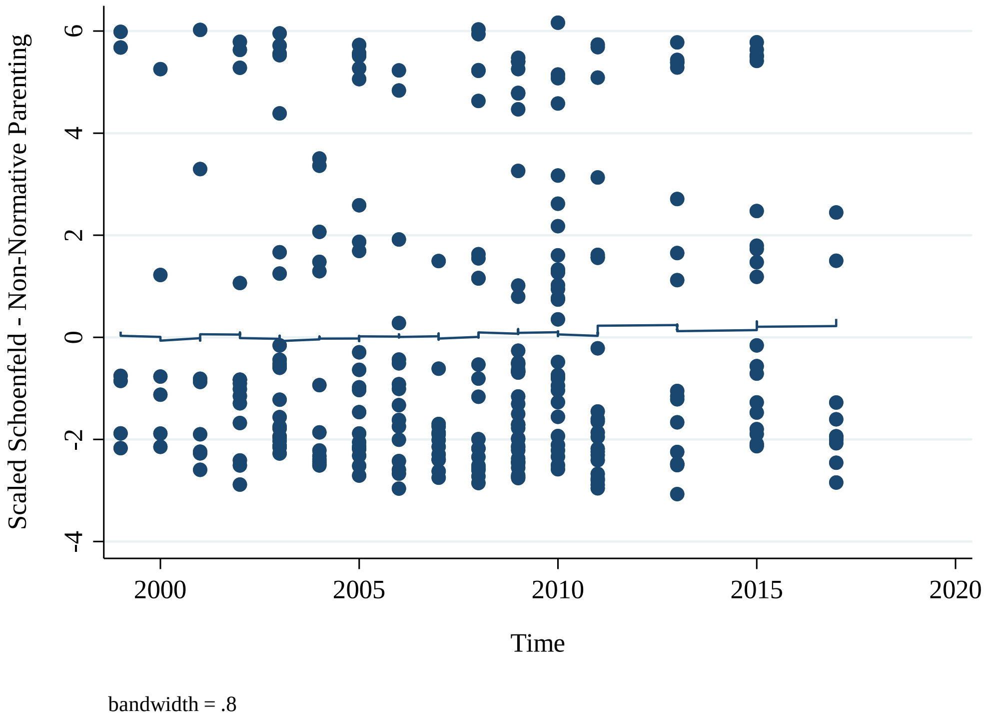
Appendix Table 4.1: Probit Propensity Score Model Predicting Non-Normative Parenting

VARIABLES	(1) Non-Normative Parenting
Female	0.66***
	(0.53 - 0.78)
Race/Ethnicity	
Not Black, not Latinx	(reference)
Black	-0.16**
	(-0.31 - -0.01)
Latinx	-0.19**
	(-0.34 - -0.04)
Two or More Races	0.38
	(-0.10 - 0.86)
Sense of Optimism	0.02
	(-0.04 - 0.09)
Religiosity of Family of Origin	0.00
	(-0.03 - 0.04)
Lived with Two Bio Parents During Childhood	-0.11*
	(-0.23 - 0.00)
Ever in Fair/Poor Health	0.37***
	(0.26 - 0.48)
Region	
Northeast	(reference)
North Central	-0.18**
	(-0.35 - -0.01)
South	-0.19**
	(-0.34 - -0.03)
West	-0.24***
	(-0.41 - -0.06)
Rural	-0.08
	(-0.19 - 0.04)
Number of Kids in HH at Focal Child's Birth, Squared	0.02***
	(0.02 - 0.03)
Age at First Birth	-0.05***
	(-0.07 - -0.03)
Highest Grade Completed	-0.02
	(-0.04 - 0.00)
Focal Child is Oldest	0.31***
	(0.19 - 0.43)
Focal Child is Female	-0.15***
	(-0.26 - -0.04)
Focal Child Birthweight	-0.05***
	(-0.09 - -0.02)
Other Parent, Highest Grade Completed	-0.05***
	(-0.07 - -0.02)
Other Parent, Employed at Time of Birth	-0.14**

	(-0.26 - -0.02)
Constant	0.74**
	(0.16 - 1.32)
Observations	4,168

*** p<0.01, ** p<0.05, * p<0.1 95% confidence intervals in parentheses. All measures taken from time of child's birth except Sense of Optimism, Religiosity of Family of Origin, and Respondent Lived with Both Bio Parents in child hood, which are from the 1997 wave of data. Source: Author's calculations from NLSY97

Appendix Figure 4.1: Test of Proportional Hazard Assumptions for Risk of Dissolution by Non-Normative Parenting Status (Schoenfeld Residuals)



Source: Author’s calculations from NLSY97

Chapter 5. Conclusion

Taken as a whole, the three studies in this dissertation examine how a child's disability or special healthcare need can influence a variety of parental outcomes; two of the studies explicitly account for policy's role in these outcomes while the third seeks to provide a broader understanding of family context to inform relevant policies. The first two studies span child development from early childhood through elementary school, and the third considers the full range of childhood years. I use three different nationally-representative longitudinal survey sets and a range of quantitative methods, including regression analyses, difference-in-difference, fixed effects, instrumental variables, propensity score matching, and event history methods. I also use hierarchical linear modeling and multiple imputation in sensitivity analyses. Findings have the potential to inform policies and social work practice to support families raising children with disabilities.

The first paper uses a two-pronged approach and attempts to understand whether families with young children with disabilities are able to access early childhood education and child care. First, using regression analyses, we look descriptively at child care arrangements by disability status. We find that at age four, children with disabilities are more likely to be in nonparental care, more likely to be in care part-time, more likely to use center-based care, and more likely to pay less for care than typically-developing children. Next, we examine whether changes in maternal employment rates at kindergarten enrollment are similar for moms raising children with and without disabilities. We find that, if anything, moms of children with disabilities are entering the labor force at lower rates than moms of kids without disabilities, suggesting that the lack of child care before elementary school may not be a large barrier to employment. At first glance, these findings may indicate that policy is successfully supporting children with disabilities in accessing child care; however, a closer look calls for a more nuanced understanding. For example, maternal labor supply may be more static for moms raising kids with disabilities given their increased caregiving responsibilities and the overall lack of supports in balancing employment and caregiving (e.g., paid leave, out-of-school time) during a child's elementary school years.

The second paper looks closely at the role of the Individuals with Disabilities Education Act (IDEA) and its role in promoting parental engagement with their child's education. Using OLS, household fixed effects, and instrumental variable models, I find that IDEA increases parental attendance at conferences, but, overall has either no effect on parental engagement or, in less precise models, slightly lowers parental engagement. I find little evidence of impact on parental satisfaction with children's school. Findings are consistent across racial and socioeconomic subgroups. Given that annual parent-teacher conferences are required under IDEA, these findings indicate that explicit mandates in the policy may be having an impact. The overall pattern of findings indicate that IDEA is not encouraging parents to engage in other ways at higher rates than parents of children who are not receiving services under IDEA, including parents of children with disabilities who are not receiving services under IDEA. However, in a departure from some previous studies, findings also suggest that IDEA itself is not linked to decreased parental involvement, and I find little evidence of difference by parental race and socioeconomic status.

The final paper looks less explicitly at policy and considers how a parent report of non-normative parenting—that is, that a child requires additional caregiving responsibilities as a result of a healthcare need—is associated with parental relationship stability. I use propensity score matching to attempt to mitigate some of the selection bias involved in the report of nonnormative parenting and relationship dissolution. I then use event history methods to examine how the risk of dissolution differs by non-normative parenting status, and how that is similar or different across parents who were cohabiting or married at birth. I find an overall increased risk of relationship dissolution as the result of nonnormative parenting; this risk is a statistically significant for cohabiting parents but is not for married parents. I also find overall different patterns of risk, with parents of children with increased needs experiencing higher-levels of risk of dissolution for an increased period of time through childhood. Findings can inform policies related to supporting families raising children with disabilities as well as those intended to support the general population of parents, including relationship education and co-parenting programs as well as respite care.

Though each study has its own limitations, they share some broad methodological considerations. First, the definition of disability is not consistent across surveys, programs, policies, contexts, or the studies in this dissertation. It is important to understand precisely what is being measured and how that may bias estimates. The first paper attempts to use two related definitions to bound estimates, and these bounded estimates also underscore the importance of thinking through the construct in each study. Though it may seem that the second paper has fewer measurement issues to contend with due to the use of the policy-relevant (and less subjective) measure of receipt of IDEA services, the same issues arise in considering the correct comparison group. Finally, the third study uses a parent self-report measure of how a child's health diagnosis impacts parenting, which, while similar, measures a different concept altogether. Though different measures are used across all three studies, each one is a composite that combines a range of conditions, severities, and needs; heterogeneity in effects is likely. For example, differences in patterns by child's diagnostic groups in Chapter 2 emphasize the importance of considering a child's particular health condition. Though these three studies have carefully attended to the definitions selected and sought to explicate the ways in which each operationalization may bias estimates, the issue of definition is an important contextual piece in interpreting findings. Future work must continue to thoughtfully engage with the operationalization of disability and how differences across context, discipline, and time may be important for policymakers and social work researchers to understand child and family needs.

An additional shared methodological concern across all three studies is endogeneity and selection bias. Untangling the relationship between childhood disability status and family outcomes is complicated, and each study in this dissertation has different, but related, endogeneity and selection concerns. All three studies attempt to mitigate these concerns, partially though the use of longitudinal data, but also through techniques such as fixed-effects models and instrumental variables (Chapter 3), as well as propensity-score matching (Chapter 4). Each chapter also contains a discussion about endogeneity and how it may impact results in each particular study. This methodological challenge remains a concern that all future studies in this area will need to contend with. In particular, researchers should continue to think through theoretically valid instruments that may help with selection bias.

Despite these limitations, there is much we can take from these studies individually and as a whole. Each chapter contains a discussion of that study's specific policy implications, so here I highlight some of the overall themes of the dissertation. First, the first two studies suggest that some existing policies may be acting to support families in at least minimal ways. Findings that children with disabilities are in child care, and are in center-based care, at higher rates as well findings suggesting that IDEA service receipt is associated with higher parental conference attendance are indications that the umbrella of policies supporting children with disabilities in early and elementary education may be affecting some change. The totality of the findings suggests there is more to uncover, however. Children are accessing child care but are doing so at part-time rates; mothers are not changing their work behavior at different rates than mothers of typically-developing children at kindergarten enrollment, but mothers do work overall at lower rates. Similarly, parents are attending conferences, but are not more engaged overall. The question of overall adequacy of the bundle of policy supports also lingers over the third study. The finding that parental relationships for parents of children of disabilities are more likely to dissolve than for parents of typically-developing children suggests that not only may parents be facing broader challenges and increased stress, but that caregiving demands may have far-reaching outcomes for parents and children.

Overall, all three studies paint a picture of families in need of supports. Even in the cases where we find the potential for effective policies (Chapter 2 and Chapter 3), employment levels remain low and children remain in part-time care. Parents remain less engaged overall. This suggests families could use broader supports compared to families of typically-developing children. Considering the current literature suggests the policy infrastructure for all families with children may be insufficient (e.g., Boushey, 2016), a finding that has been reinforced during the current COVID-19 pandemic, these increased needs are striking. Policymakers and social work practitioners should attend specifically to the needs of families raising children with disabilities.

Taken together these findings also emphasize the need to consider the full package of supports available to families raising children with disabilities. Though these papers suggest some indication of the effectiveness of policies, they also raise questions about other supports families may need but are not receiving. If, for example, there was sufficient support for maternal labor market participation through paid leave, or, if families had respite care more readily available, would we see a different story related to relationship dissolution? Thus, the overall package of policies and supports available may be undermining otherwise helpful policies. Moreover, findings emphasize the need to think broadly about access to supports. This may be particularly relevant for the field of social work. Practitioners may wish to consider avenues to ensure that families are aware of and can access a cohesive set of policies and programs that support families broadly across a variety of domains. For example, early intervention social workers may wish to consider parental relationship needs as well.

Another key point is the gender inequality in caregiving, emphasized particularly in Chapters 2 and 4. We find that moms have lower labor market participation, and we also find that moms are more likely to report having a child with special needs. Both are indicative of the increased likelihood that women are taking on the main burden of this carework, echoing much of the prior literature (e.g., Scott, 2010). In addition, if parents of children with disabilities are more likely to experience relationship dissolution, and moms are most likely to have taken on this increased caregiving work, the economic vulnerability related to raising a child with a disability may fall disproportionately on women. Of course, gender inequality in caregiving and economic vulnerability of women is not limited to children with disabilities. One outstanding question that future research should attend to is whether inequality in caregiving by gender is different in families raising children with disabilities compared to families with typically-developing children.

Taken together the papers in this dissertation begin to provide a quantitative, current evidence base about policy and parents raising children with disabilities. The studies included here are at the intersection of family policy and disability studies; much of the previous work in both areas has focused elsewhere. Though relevant prior work exists, it is often dated or focused largely on a specific health condition. These studies represent an important building block for future research in this area and emphasize the important overlap of family policy and disability studies broadly.

As starting points, the papers in this dissertation highlight some potential avenues for future work. In particular, future work should attend to other major policies that could support families, such as paid family leave. Future work should also continue to attend to the role of race and socioeconomic status. Finally, in order to truly understand the role of policy in the lives of these families, better data are needed. National data collection efforts should account for childhood disability. As more families are navigating the needs of raising a child with a disability, it will be increasingly important to understand how a child’s health status can impact parents, and the role that policy and social work can play in supporting these parents and children.

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