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**SINGLE WITH CHILDREN: EXPLORING THE LINKS IN FAMILY  
STRUCTURE, CONCERTED CULTIVATION, AND CHILDREN'S ACADEMIC  
ACHIEVEMENT**

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## Abstract

Academic achievement differentials by family structure are well documented in research. This paper studies achievement differentials between children in single mother and children in single father families using three waves of data from the Early Childhood Longitudinal Study – Kindergarten cohort. Due to gendered parenting norms, I examine whether single mothers and single fathers engage in different types of parenting behaviors, specifically in terms of “concerted cultivation.” I test whether concerted cultivation – measured early in childhood – significantly predicts later academic achievement, and whether differences in concerted cultivation by family structure mediate family structure differences in children’s later academic achievement. Results indicate that single fathers are significantly less likely to engage in concerted cultivation parenting practices when the focal child is in 1<sup>st</sup> grade. Further, concerted cultivation is significantly related to academic achievement. Children in single mother families perform significantly better in reading but not math achievement. Concerted cultivation partially explains why children in single mother families perform better in reading in the 3<sup>rd</sup> and 5<sup>th</sup> grades, but significant differences remain. This study concludes that other processes related to family structure are at work to explain achievement differentials.

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## INTRODUCTION

Early educational achievement is particularly important for future life chances and success in modern societies (Kerckhoff, Raudenbush, and Glennie 2001). Success in school has implications for educational attainment (Kerckhoff 1995; Parcel and Dufur 2001) and early and later occupational status (Sewell, Haller, and Ohlendorf 1970). Given the importance of academic achievement, it is quite problematic that achievement disparities exist. Academic achievement varies by race (Portes and Wilson 1976; Roscigno and Ainsworth-Darnell 1999), socioeconomic status (Alexander, Entwisle, and Olson 2007; Covay and Carbonaro 2010), and family structure (Carlson and Corcoran 2001; Fomby and Cherlin 2007; Frisco, Muller, and Frank 2007; Heard 2007; Martin 2012).

An overwhelming body of literature highlights the association between family structure and children's academic achievement. Research consistently finds that children belonging to non-traditional family structures underperform academically relative to children reared under the traditional two-biological married parent family structure (Amato 2005; Biblarz and Raftery 1999; Cavanagh, Schiller, and Riegle-Crumb 2006; Fomby and Cherlin 2007; Martin 2012; McLanahan and Percheski 2008; McLanahan and Sandefur 1994; Sandefur and Wells 1999). Among alternative families, scholars have given much attention to children raised in single parent families. This particular family structure has garnered much attention, given that over half of today's children are expected to belong to a single parent at some point in their lives (Bumpass and Lu 2000). Research finds that children of single parent families have lower academic achievement relative to two married biological parents (Amato 2001; Carlson and Corcoran 2001; Cavanagh and Fomby 2012; Mulkey, Crain, and Harrington 1992).

Among single parents, however, scholars have primarily paid attention to children of single mother families. Yet, research suggests that there is variation among single parent families according to the sex of the parent (Hawkins, Amato, and King 2006). Research finds that children of single mothers outperform children of single fathers in measures of academic achievement such as GPA (Heard 2007) and math and reading test scores (Downey, Ainsworth-Darnell, and Dufur 1998). Therefore, it is important to look at parent sex when assessing the relationship between single parent family structures and children's well-being.

From 1970 to 2003, single mother families have proportionally increased from 12% to 26% while single father families have increased from 1% to 6% (Fields 2003). Thus, single custodial fathers are a growing demographic (Bronte-Tinkew, Scott, and Lilja 2010; Downey 1994), growing at a faster pace than single mother families. Research on single fathers is becoming increasingly important as scholars, teachers, social workers, and policy analysts need information regarding the well-being of children of single fathers and how this growing family structure operates.

Differences in children's achievement in single mother and single father households may be the result of differential parenting behaviors, including parental involvement (Dufur, Howell, Downey, Ainsworth-Darnell, and Lapray 2010; Hawkins, Amato, and King 2006) and concerted cultivation (Bodovski and Farkas 2008; Lareau 2002; Lareau 2003). Not only is parenting and parental involvement vitally important in determining early and ongoing academic achievement (Cheadle 2008), but prior research indicates that parenting activities are highly gendered (Hook and Chalasani 2008): mothers and fathers, irrespective of family arrangements, are expected to engage in different tasks (Risman 1986) and subsequently participate in different tasks. Mothers are more involved in fostering children's development (Reay 2000) and fathers more involved in

play (Hall, Walker, and Acock 1995). As such, I hypothesize that these gendered differences in parenting expectations help explain differential academic achievements between children of single mother and single father families.

Given that parenting behaviors – including concerted cultivation – has links with children’s academic achievement (Bodovski and Farkas 2008; Cheadle and Amato 2011; Lareau 2003) and given that children of single mother households fare better than children of single father households in academic achievement (Downey, Ainsworth-Darnell, and Dufur 1998; Heard 2007), perhaps concerted cultivation *mediates* differences in academic achievement between children in single mother households and children in single father households. The purpose of this paper is to answer the following questions: do single mothers and single fathers parent differently, specifically in terms of concerted cultivation? If they do parent differently, does this differential parenting explain differences in children’s academic achievement? I seek to compare differences in the parental involvement of single mothers and to single fathers, specifically by focusing on concerted cultivation. While I understand that there are other forms of parenting, I focus solely on concerted cultivation. Although Martin (2012) studied adolescents, to date, no research has examined the links among concerted cultivation, family structure, and academic achievement for young children. This paper aims to provide answers and fill this gap by comparing the concerted cultivation efforts among single fathers and single mothers using the Early Childhood Longitudinal Study – Kindergarten Cohort (ECLS-K).



## **LITERATURE REVIEW**

### **Academic Achievement and Attainment**

Success in school is especially important in determining future life chances and success. Scores on academic achievement at any level of schooling predicts academic success at the next level (Entwisle, Alexander, and Olson 1997). Those who achieve success in school are less likely to drop out of high school and more likely to attend two-year and four-year colleges (Alexander, Entwisle, and Olson 2007). Success in academic achievement and attainment in turn means later success in the labor market in terms of earnings and occupational attainment (Blau and Duncan 1967; Kerckhoff, Raudenbush, and Glennie 2001). Thus, educational achievement, starting at a very young age, is particularly important for future life chances and success. Yet, research shows that observable achievement differentials exist at every stage of schooling and persist and accumulate throughout childhood and adolescence (Alexander, Entwisle, and Olson 2007).

### **Family Structure and Children's Academic Achievement**

The increasing diversity of different family arrangements in the United States has produced a wealth of scholarly literature exploring the association between family structure and children's achievement. A growing literature finds that children in traditional biological two-married parent families outperform children in nontraditional family arrangements in academic achievement (Amato and Kieth 1991; Carlson and Corcoran 2001; Cavanagh, Schiller, and Riegle-Crumb 2006; Downey 1995; Fomby and Cherlin 2007; McLanahan and Percheski 2008). Compared to children in two biological married parent families, children in alternative family structures are more likely to be in lower-achieving academic tracks (Condron 2007), have lower

grades (Heard 2007; Mulkey, Crain, and Harrington 1992), and score lower on standardized tests (Entwisle and Alexander 1995) such as math, reading, science, and history (Downey 1995).

Among alternative family arrangements, scholars have paid much attention to the academic deficits of children in single parent households. Compared to children reared with two biological married parents, children raised in single parent families continue to remain disadvantaged on many measures of academic achievement (Amato 2001), completing fewer math courses (Cavanagh, Schiller, and Riegle-Crumb 2006), having lower GPAs (Frisco, Muller, and Frank 2007; Heard 2007; Mulkey, Crain, and Harrington 1992) and scoring lower on standardized tests (Carlson and Corcoran 2001) such as math and reading test scores (Cooksey 1997; Downey, Ainsworth-Darnell, and Dufur 1998; Fomby and Cherlin 2007; Martin 2012).

Despite the considerable scholarly attention on children of single parent households, the majority of the literature has either combined single mother and single father households or excluded single fathers, opting instead to focus on single mothers. Relative to research looking at single mothers, there is still much to learn about single fathers (Bronte-Tinkew, Scott, and Lilja 2010; Downey 1994). The relatively smaller population size of single father families (6% of all households in the U.S., see Fields 2006) makes them more difficult to study in nationally representative datasets due to issues of statistical power. Due to either lack of interest or limitations of data, single fathers are relatively understudied. There appears to be growing consensus that previous research has failed to account for heterogeneity among single parents, creating the need for more studies on single father households (Crosnoe and Cavanagh 2010; Downey 1994).

Research using nationally representative data suggests that single fathers are a distinct family structure and different from single mothers and married fathers. Single fathers differ from single mothers in regards to sociodemographic characteristics (Bronte-Tinkew, Scott, and Lilja 2010), parenting styles and behavior (Dufur et al. 2010; Hall, Walker, and Acock 1995; Hook and Chalasani 2008). Compared to single mothers, single fathers have fewer and younger children (Hook and Chalasani 2008), are less likely to be poor, more likely to be employed (Bronte-Tinkew, Scott, and Lilja 2010), and have more education (Downey, Ainsworth-Darnell, and Dufur 1998).

Research exploring differences between children in single father and single mother families have examined differences in educational and occupational attainment (Amato and Booth 1991; Biblarz and Raftery 1999; Downey, Ainsworth-Darnell, and Dufur 1998), school engagement and the experience of school disciplinary sanctions (Heard 2007), and academic achievement (Martin 2012; Mulkey, Crain, and Harrington 1992). In terms of educational and status attainment, children of single mothers are more likely to have a higher occupational status and more education relative to children of single fathers (Amato and Booth 1991; Biblarz and Raftery 1999). Net of socioeconomic status, children of single mothers are more likely to be engaged in school and are more likely to graduate high school compared to children of single fathers (Amato and Booth 1991; Amato and Kieth 1991; Downey, Ainsworth-Darnell, and Dufur 1998).

With respect to academic achievement, Downey (1994) found that youth in single father families are advantaged in standardized achievement measures in math, reading, science, and history scores at the bivariate level comparing means using the National Education Longitudinal Study (NELS). Downey, Ainsworth-Darnell, and Dufur (1998) extend this finding also by using

NELS: they find that once SES, number of siblings in the household, and race are controlled, children of single mother families actually score significantly higher in math and reading achievement relative to children in single father families. Mulkey, Crain, and Harrington (1992) find that children of single mother families have higher GPAs and score higher on vocabulary and reading tests after controlling for family income and race. This suggests that once background sociodemographic characteristics are controlled, children in single mother families are advantaged in regards to academic achievement in multivariate analyses.

In a longitudinal study, Heard (2007) finds that compared to children who experienced a biological father exit, children who experienced mother exits early in the life course are less attached to school, have lowered college expectations, reduced GPA, and experience more school discipline such as expulsion or suspension. Heard's (2007) study finds that the effect of a biological mother transitioning out of a child's life (specifically in early childhood) are far more detrimental than a biological father transitioning out of the child's life across all outcomes of her study. This suggests that being reared in a single mother household has long-term advantages compared to being raised in single father households. With the exception of one study (Dufur et al. 2010), research generally finds that mother absence seems to be more detrimental for children's academic achievement compared to father absence.

However, results do not always agree with this finding. Similar to Downey (1994), Dufur et al. (2010) find that children of single fathers academically outperform children of single mothers at the bivariate level. However, once sex-based parenting behaviors (such as quality time with children, number of days eating breakfast, and disciplining children) and sociodemographic controls are added, the statistical difference is null.

## **Theoretical Explanations**

### Two Biological Married Parent Families versus Single Parent Families

Scholars have proposed several explanations as to why children of single parents continue to underperform academically compared to children of two married parents. One common explanation is the economic hardship or deprivation hypothesis (Downey 1994; Mulkey, Crain, and Harrington 1992). This explanation assumes that children's success depends on the economic resources provided by their parents (Becker and Tomes 1986). Compared to two-married parents, single parents lack an additional adult that could provide another source of income. The material goods that facilitate and promote children's healthy cognitive development – books, computers, private lessons, and tutoring – are less accessible in single parent families where income is lower. In addition, less income also suggests that basic material needs such as food, clothes, and shelter will also be more precarious for single parent families.

Another possible explanation is the instability hypothesis. This hypothesis posits that instead of prolonged family structure effects, single parent families are more vulnerable to disruption and instability, which undermines children's well-being (Cavanagh, Schiller, and Riegle-Crumb 2006; Fomby and Cherlin 2007). Children of single parent families are susceptible to more disruption due to increased residential mobility (Amato 2005) and the remarriage or repartnering of the child's parent (Cavanagh, Schiller, and Riegle-Crumb 2006). These disruptions in turn create emotional distress in children attempting to adjust, creating barriers to children succeeding in school. In other words, disruption creates deficits in children's academic achievement and not necessarily having one parent.

A third explanation for the underachievement of children in single parent families compared to children in two-parent families is quality of parenting. Single parents may find it difficult to competently parent and cater to their children's needs while simultaneously juggling the tasks of a job and making ends meet. The tasks that could be shared between two parents (cooking or preparing food, bathing their children, breadwinning, etc.) are left to only one parent. This likely leads to inconsistent parenting (Heatherington, Cox, and Cox 1978) and less supervision (Thomson, McLanahan, and Curtin 1992), perhaps creating more interpersonal conflict with children (Amato, Loomis, and Booth 1995).

A fourth explanation is the issue of selection. Membership in different family structures does not reflect a random process (Frisco, Muller, and Frank 2007; Sandefur and Wells 1999) and some would argue that SES determines family structure (McLanahan and Percheski 2008). Perhaps parents who divorce or separate or have children out of wedlock are already incompetent parents with low socioeconomic status. The implications of this selection effect are biased estimates (Manski 1989), overestimating the effect of family structure on children's academic achievement.

All four explanations may all partially be at work. Therefore, for each of these reasons, either alone or in combination, children of single parents are expected to have worse outcomes than children in two biological parent families. In short, single parent families possess fewer economic and material resources (Crosnoe and Cavanagh 2010) and are more susceptible to family disruption and instability (Fomby and Cherlin 2007; Heard 2007), making parents more stressed leading to inconsistent and less competent parenting, which are cumulatively detrimental to children's academic achievement.

## Single Mother Families versus Single Father Families

Differences in achievement between children in single mother and children in single father families may be due to differences in parenting behavior between single mothers and single fathers. Some have argued that parent gender is a vital factor in determining parent's involvement with their children (Hawkins, Amato, and King 2006; Liu 2005). Specifically, parenting expectations are different for mothers and fathers. Irrespective of family structure and time availability, social constructions shape mother's and father's involvement with their children. Gender is a social construction that permeates society, limiting the choices that individuals are able to make and confining one's actions to a set of prescribed behaviors (Risman 1986). Despite increasing egalitarian ideologies, "gendering" may still be most pervasive in the family (Dufur et al. 2010), evidenced by sex-based differences in the behaviors of mothers and fathers. Mothers are still expected to be the primary caregiver and fathers are expected to be the primary breadwinner (Doherty, Kouneski, and Erickson 1998; Hook 2010). While past work suggests that mothers do a larger share of parenting, recent studies indicate that father contributions in parenting are increasing among all father "types" in different family structures (Doherty, Kouneski, and Erickson 1998; Dufur et al. 2010). Yet despite these shifts, large gaps remain (Craig 2006; Hall, Walker, and Acock 1995; Hook 2010; Hook and Chalasani 2008; Pleck and Nasciadrelli 2004; Sayer, Bianchi, and Robinson 2004).

In addition to the quantitative differences in the amount of time mothers and fathers spend with children, mothers and fathers also engage in different types of parenting activities (Biblarz and Stacey 2010; Dufur et al. 2010; Hall, Walker, and Acock 1995; Risman 1986). Mothers in all family arrangements are more involved in shopping, clothing, bathing, and feeding children compared to their male counterparts (Hall, Walker, and Acock 1995; Pleck and

Nasciadrelli 2004). Fathers are more involved in play, recreational, and athletic activities with children (Hall, Walker, and Acock 1995; Pleck and Nasciadrelli 2004; Sayer, Bianchi, and Robinson 2004).

Despite the reduced opportunity to “do” gender in single parent families, it appears that parent gender is still shaping parental involvement among single parent households (Hall, Walker, and Acock 1995; Hawkins, Amato, and King 2006; Hook and Chalasani 2008; Pleck and Nasciadrelli 2004; Sayer, Bianchi, and Robinson 2004). Single mothers are more involved in a wider range of activities and interactions with their children compared to single fathers (Hall, Walker, and Acock 1995; Hawkins, Amato, and King 2006; Hook and Chalasani 2008). For example, Hall, Walker, and Acock (1995) find that single mothers spend more time with children relative to single fathers. Further, they find that single mothers behave and parent in ways that are consistent with “mothering” such as helping with homework and having private talks whereas single fathers parent in ways that are consistent with “fathering” such as leisure and play inside and outside the home. They attribute these findings to gendered expectations in parenting and suggest that the meaning of parenting is intimately tied to ideologies of gender.

Reay (2000) argues that because mothers spend the most time with children, they are the parent most directly involved in the transfer of cultural capital to their children. Cultural capital refers to non-financial skills, resources, and knowledge that promote success and give individuals advantages in institutions such as education or the labor market. Cultural capital is acquired over time as parents ensure their children’s success by transmitting the cultural capital necessary for their children to succeed in school, either through character, mannerisms, or way of thinking (Bourdieu 1973; Bourdieu 1986; Coleman 1988). Compared to single fathers, single mothers spend more time doing activities that transfer cultural capital to children such as helping



with homework (Hall, Walker, and Acock 1995), helping with school projects and talking about social events, personal problems, grades, and school related topics (Hawkins, Amato, and King 2006), and making phone calls to and from educational institutions (Hook and Chalasani 2008). Therefore, in terms of parental involvement, single fathers and single mothers are different quantitatively *and* qualitatively.

As such, I expect single mothers to engage in a time-intensive form of cultural capital transmission – concerted cultivation – at greater levels compared to single fathers. The concept of “concerted cultivation” comes from a very influential ethnography from Lareau (2003). Her study examined families’ interactions with their children on a daily basis and found two forms of parenting strategies that parents take in raising their children: “concerted cultivation” and “the accomplishment of natural growth.” Concerted cultivation is a parenting strategy whereby parents actively attempt to “develop” their children’s talents through intense involvement with schools and teachers, variations in language use, and highly organized leisure activities. She argues that children in these families develop skills and gain a sense of entitlement that results in institutional advantages in school and in the future when they enter the world of work. In essence, concerted cultivation can be seen as a parental strategy to transfer cultural capital to their children, ensuring success in institutions such as education or the labor force.

Given that single mothers spend more time with children (Sayer, Bianchi, and Robinson 2004) and engage in more activities that promote cultural capital relative to single fathers (Hook and Chalasani 2008), I test whether concerted cultivation differs by the gender of the single parent. Specifically, I test the following hypothesis:

*(H1). Single mothers engage in a greater level of concerted cultivation compared to single fathers.*

### **Parental Investments and Concerted Cultivation**

Concerted cultivation may explain differential achievement between children in single mother and children in single father households. Research shows that concerted cultivation matters for academic achievement (Bodovski and Farkas 2008; Cheadle 2008; Cheadle 2009; Lareau 2011). In her update 10 years later, Lareau (2011), found that the children (now adults) of parents who engaged in greater levels of concerted cultivation generally achieved more education relative to the children of parents who engaged in the accomplishment of natural growth. Although Martin (2012) looked at adolescents, she finds that single mothers engage in more concerted cultivation relative to single fathers and that concerted cultivation is positively associated with adolescent achievement. Quantitative results confirm the finding that concerted cultivation predicts early student achievement such as reading scores and teacher's perception of language and literacy competency (Bodovski and Farkas 2008), general knowledge achievement tests (Cheadle 2009), and math and reading growth from kindergarten through the third grade (Cheadle 2008).

Parental involvement has been defined and measured in numerous ways in the literature (Lee and Bowen 2006). Thus, it is important to note that there are previous studies that have captured elements of "concerted cultivation" where parents actively transfer cultural capital to their children without using Lareau's label of "concerted cultivation." Consistent with Lareau's (2003; 2011) and other scholars' findings (Bodovski and Farkas 2008; Cheadle 2008; Cheadle 2009), Lee and Bowen (2006) find that children of parents who more frequently talked to their

children about what they did and learned during school, discussed current events in the newspaper or TV, encouraged and rewarded hard work ethic in school, and ensured “homework time” scored higher in reading and math scores. Additionally, children also fared better academically if their parents were more involved with their school such as attending parent teacher conferences or volunteering at the school (Lee and Bowen 2006). Bourdieu (1973) argues that cultural activities such as doing theater, dance, and music or visiting museums improves educational outcomes. Therefore, the transfer of cultural capital is critically important for children’s success in school.

The results of tests on concerted cultivation conclude that concerted cultivation does have a substantial effect on young children’s achievement. Thus, I also test the following hypothesis:

*(H2). Children of parents who engage in greater levels of concerted cultivation perform better academically.*

However, this hypothesis is not new. Research has already shown that concerted cultivation strongly predicts academic achievement (Bodovski and Farkas 2008; Cheadle 2009; Martin 2012). However, this hypothesis sets up the third and final hypothesis:

*(H3). Concerted cultivation mediates academic achievement differences between children of single mothers and children of single fathers.*

In short, I hypothesize that concerted cultivation, influenced by parent sex, explains the academic deficits of children in single father families compared to children in single mother families.

## **Alternative Explanations and Additional Considerations**

Although this research aims to explore the mediating role of concerted cultivation on children's academic achievement by family structure, other theoretical explanations have been proposed in the literature. These explanations include SES and selection.

### **SES**

An alternative explanation for the observed trends in academic achievement between children in single mother and single father families are socioeconomic differences between single mothers and single fathers (Downey 1994). SES predicts achievement (Alexander, Entwisle, and Olson 2007) and concerted cultivation (Bodovski and Farkas 2008; Cheadle 2008; Cheadle 2009; Cheadle and Amato 2011; Lareau 2003; Lareau 2011; Martin 2012), but it does not explain the observation that children of single mothers outperform children of single fathers because single fathers have higher socioeconomic status, are less likely to be poor, more likely to be employed (Bronte-Tinkew, Scott, and Lilja 2010), and have more education (Downey, Ainsworth-Darnell, and Dufur 1998) than single mothers. Further, single mother's higher rates of unemployment and low status jobs compared to single fathers (Biblarz and Raftery 1999) create more difficulties in educational investments such as hiring tutors, scheduling private lessons, or buying educational products like books and computers. Thus, children's academic achievement are penalized due to poverty and/or the lowered earnings of women due to the gender gap in pay (Downey 1994). Given that SES is higher among single fathers compared to single mothers (Bronte-Tinkew, Scott, and Lilja 2010) and the possibility that SES may drive the effects of concerted cultivation, I control for SES in the following analyses by including a composite SES

measure that is derived from family income, parent educational attainment, parent occupation, and parent prestige score provided by the ECLS-K data.

### Selection Issues

Lastly, it is important to consider the issues of selection bias. The process that selects children into single mother households and single father households may be different. That is, the events that produce a child belonging to a single mother may be different than the events that produce a child belonging to a single father. Given that single mothers represent an overwhelming majority of single parents overall, this suggests that children in single mother families are more normative among single parent family formations. Thus, following divorce, separation, or even in nonmarital childbearing, children typically reside with their mothers. For children under 21 years of age whose other parent lived somewhere else, 5 out of 6 custodial parents are mothers (Grail 2003). In the relatively rare case that fathers have custody, mothers might be unfit to care for her child, as she may be deceased, incarcerated, hospitalized, or in rehabilitation from alcohol or drugs.

For example, an early study (Greif 1985), using data from people responding to a questionnaire published in a magazine targeted toward parents without partners, found that an overwhelming majority of single fathers had custody of their children because their ex-wives did not want or could not have custody due to personal, emotional, or financial reasons. Therefore, the events that produce a child belonging to a single father family inherently have more disruption and/or trauma, which undermine the health, development, and well-being of children (Amato 2005; Fomby and Cherlin 2007). Additionally, the traumatic events that produce a child belonging to a single father family will also introduce significant stressors that will likely affect

the parenting behavior of the single father. Early nonrepresentative studies indicate that single fathers experience more role adjustment and uncertainties with respect to their parental roles compared to single mothers upon marital dissolution (Gasser and Taylor 1976; Mendes 1976). Additionally, these nonrepresentative studies suggest significant differences in parental expectations between single father and single mothers with children (Petronio and Endres 1986).

Thus, there are many complications surrounding the preceding events and different pathways that lead to single mother or single father families. These complications may have significant implications for the experiences of being a single mother or father *and* for the experiences and well-being of children in these respective family structures.

To control for possible selection effects, I control for whether the child's non-custodial biological parent is deceased. Due to the rarity of single custodial fathers, children of single fathers may be likely the result of parental death. Parental death may have significant implications for the single parent (now with sole custody and responsibility of the child) and for the child's experiences. For the parent, they have to deal with the stressors associated with having to cope and mourn from the death of their spouse. In addition to mourning and having to adjust from experiencing a traumatic event, these parents also have to adjust from loss of income, companionship, social support, and loss of a primary caretaker for their child. These added stressors, all compounding one another, might lead to ineffective or inconsistent parenting, which would in turn hinder children's academic achievement. For the child, certainly there are few experiences that can be more traumatic than losing a parent through death. Long-term effects for young children who experienced a parental death include depression and increased anxiety (Moody 1997). These long-term effects may include disengagement from school and underperforming in academic achievement. Experiencing parental death is also more traumatic

and more difficult for young children compared to adults and adolescents (Kulka and Weingarten 1979), as Baker and Sedney (1996) notes that parental death interrupts children's normal developmental and cognitive processes. In addition, children take more time to grieve compared to adults and have inadequate cognitive maturity to fully comprehend death (Baker and Sedney 1996). This myriad of factors may influence academic achievement.

Alternatively, parental death may not be a sufficient control. Parental death, while traumatic, may not be as problematic for children's academic achievement relative to other forms of parental loss (e.g. parental loss due to hospitalization or rehabilitation). In fact, parental death might create more group cohesion and solidarity as the aftermath of familial tragedy often unites families together. For the child, this may mean that they may receive care and resources from more people (such as grandparents, aunts, and uncles). Thus, while children who experience parental death may lose a primary caretaker, they may receive even more attention pooled across other family members. Parental death might even have additional, compensatory benefits such as from the receipt of life insurance. In addition, children who have a living, non-custodial parent may be exposed to more parental conflict, more traumas, and more instability than children with one deceased parent. Unfortunately, the limitations of the data do not allow me to ascertain other reasons that lead to single mother or single father families.

Additionally, among children with a living nonresidential biological parent, nonresidential parental involvement may also differ by the parent's sex. That is, perhaps due to gendered notions of what it means to be a father or mother, nonresidential father involvement in single mother families may differ from nonresidential mother involvement in single father families. For example, research suggests that nonresidential mothers maintain close ties with their children over time and are much more likely to visit non-custodial children than

nonresidential fathers (Hawkins, Amato, and King 2006). Also, previous research finds that nonresidential fathers gradually drift apart from their biological children over time (Cheadle, Amato, and King 2010). Children who belong in families with joint custody or have frequent nonresidential parental contact or support may have resources similar to children with intact biological parent families.

On the other hand, frequent nonresidential parental involvement may expose children to more conflict, trauma, and instability. For example, nonresidential mothers, who are typically more involved with their biological children relative to nonresidential fathers (Hawkins, Amato, and King 2006), may likely be “unfit” mothers, given that they are not given custody of children. Consequently, any contact or involvement with nonresidential mothers might expose children to incompetent parenting, more challenges, more conflict, and more parenting inconsistencies compared to children with nonresidential fathers. These factors create unstable environments that certainly undermine children’s success in school. Thus, frequent nonresidential parental contact – which varies by parent sex – can be good or bad for young children’s achievement. Unfortunately, the data lacks appropriate measures that capture nonresidential parental involvement.

To minimize the threat of spurious effects, I add additional controls for factors that may influence family structure, concerted cultivation, or academic achievement by controlling for parent age, number of siblings, race/ethnicity of the child, child sex, and child age. Parent age and number of siblings in the household is correlated with family structure and achievement because single fathers are older and have fewer children (Hook and Chalasani 2008) and additional children may diminish resources that are available, undermining academic achievement. Academic achievement varies by race and ethnicity of the child (Portes and Wilson



1976; Roscigno and Ainsworth-Darnell 1999). Child's sex and age have links with family structure and parental involvement, as fathers are typically more involved with older children (Seltzer 2000) and are more involved with sons than daughters (Bronte-Tinkew, Moore, Capps, and Zaff 2006).

## **THE PRESENT STUDY**

In sum, I highlight and build upon previous studies and apply Lareau's concepts by assessing whether a specific form of parenting culture – “concerted cultivation” – is less prevalent among single fathers compared to single mothers and whether concerted cultivation partially explains the lowered academic achievement for children in single father families relative to single mother families. Specifically, I assess the “concerted cultivation” efforts between single fathers and single mothers and its implications for young children's achievement longitudinally using data from Early Childhood Longitudinal Study – Kindergarten Cohort (ECLS-K) by looking at children's experiences in the 1<sup>st</sup> grade (Wave 4), 3<sup>rd</sup> grade (Wave 5), and 5<sup>th</sup> grade (Wave 6). To date, the links between concerted cultivation and family structure – particularly single mother and single father households – have not been explored looking at young children. This study aims to fill that gap.

## **DATA AND METHODS**

ECLS-K is a nationally representative sample following kindergarteners from the initial entry into kindergarten in the fall of 1998 through the eighth grade and focuses on early school experiences and transitions into middle school. The data contains information from teachers, schools, and parents and provides detailed information regarding parenting strategies and children's behavior, achievement, and overall well-being. Specific questions regarding children's

participation in organized activities, parent's activities with children, and parent's relationship and interactions with social institutions make it the most applicable dataset for the present analysis. Additionally, with the exception of Martin (2012), previous studies that have attempted to quantitatively replicate Lareau's (2003) findings or operationalize "concerted cultivation" have also used the ECLS-K (Bodovski and Farkas 2008; Cheadle 2008; Cheadle 2009; Cheadle and Amato 2011) because it contains many measures that adequately captures the concept of "concerted cultivation." Thus, I also use it here.

I use three waves (Waves 4-6) of the ECLS-K data, which correspond to the spring semester of 1<sup>st</sup> grade (Wave 4), 3<sup>rd</sup> grade (Wave 5) and 5<sup>th</sup> grade (Wave 6). I use the fourth wave of the ECLS-K (the spring semester of 1<sup>st</sup> grade) to identify single fathers. Much research on single fathers in the past has been limited due to a small sample size, since single custodial fathers represent such a small portion of the population. While the second wave of the ECLS-K (the spring semester of kindergarten) contains the largest sample of identified single fathers (340 single custodial fathers versus 283 single custodial fathers in spring of 1<sup>st</sup> grade), it lacks all the appropriate measures that capture "concerted cultivation." All the variables that are required to construct "concerted cultivation" do not appear until the children are in the spring semester of 1<sup>st</sup> grade (wave 4). Thus, I use the fourth wave as my baseline sample to identify family structure and measure concerted cultivation. To measure academic achievement, I use IRT achievement measures from 3<sup>rd</sup> grade and 5<sup>th</sup> grade in order to assess the effect of concerted cultivation over time. I limit my analyses to all single parents (N=3,132).

## Missing Data

Given that sample size is an issue, I did not want to further reduce the sample size due to missing values (either due to sample attrition or survey item nonresponse). The ECLS-K has a sizeable attrition rate, dwindling from 21,409 respondents in the base year to 17,481 respondents in wave 4 to 15,305 respondents in wave 5 to 11,820 respondents in wave 6 when respondents should be in the 5<sup>th</sup> grade.

As a result of attrition, missingness is particularly high on academic achievement measures captured at wave 5 and 6. Approximately 18% of the wave 5 (3<sup>rd</sup> grade) and 36% of the wave 6 (5<sup>th</sup> grade) achievement measures were missing for the entire baseline (wave 4) sample due to attrition. With respect to item non-response, the largest source of missing was the ECLS-K composite SES measure, which has a non-response rate of 23.9%. Other variables that contributed to missing data due to item non-response were concerted cultivation (missing on 14.9% of the entire data), a dummy variable identifying all first time kindergartners at wave 1 (missing on 14.4% of the entire data), parent educational expectations (11.2%), and parent age (11.0%). Item non-response for other variables are below 11% for the entire sample (please refer to the Appendix A for a breakdown of missingness in the data).

To deal with missing data, I use STATA to impute for attrition after wave 4 and survey item non-response using multiple imputation. Of the many methods that deal with missing data, multiple imputation is considered one of the state of the art methods (Acock 2005; Schafer and Graham 2002), yielding the most accurate estimates in the presence of missing data. Specifically, to impute the data, including the dependent variables (Little and Rubin 2002; Schafer and Graham 2002), I use “mi impute” in STATA 12, which assumes that the data is multivariate

normal. I created five imputed datasets and estimated the analyses using “mi estimate” to present pooled estimates across all five imputed datasets in order yield accurate standard errors.

I imputed all the variables presented in the analyses. I include 50 relevant auxiliary variables to inform the imputation equations such as earlier measures (from waves 1 to 3) of achievement, SES, and correlates of family structure such as whether respondents moved due to family problems (such as marital separation, divorce, or death in the family), mother’s age at first birth, and age of non-residential mother and father. In addition, I also created interactions between family structure and all achievement variables, SES, and concerted cultivation in order to inform the imputation procedure. After imputation, I recoded the minimum and maximum values of the imputed data to the original minimum and maximum values of the original sample. To ensure that the data were imputed well, I checked the original means of the variables (the original sample with missing data) with the means of the full imputed sample. Compared to the original sample, the imputed sample has slightly lower concerted cultivation, SES, and academic achievement but higher percentages reporting a deceased non-custodial biological parent. Appendix A contains the means of the original sample to the means of the imputed sample.

## **Variables**

### Academic Achievement

The analyses use IRT scaled math and reading scores provided by the ECLS-K measured in the spring of 3<sup>rd</sup> grade and 5<sup>th</sup> grade. I use math and reading achievement as these are two distinct forms of achievement. I use IRT assessments as they are adapted and tailored specifically to evaluate children’s academic abilities over a broad range of difficulty. The math assessments calculates children’s mastery over number sense, properties, and operations,

geometry, spatial imagination, patterns, probabilities, measurement, functions, and algebra. The reading assessments evaluate children's ability to sight words, comprehend words in a sentence, evaluate complex syntax, and use literal inference.

### Concerted cultivation

I use the same approach as Bodovski and Farkas (2008) in constructing concerted cultivation using a scale of 29 items measured when the child is in the spring of 1<sup>st</sup> grade (Wave 4). Lareau (2003) conceptualizes the cultural parenting practice of concerted cultivation as parent's involvement with their children, active engagement and interaction with social institutions, sophisticated language use around their children (negotiating and reasoning rather than orders and directives), and children's participation in highly organized leisure activities.

To measure parent's involvement with their children, the following variables were coded 1 for yes and 0 for no: whether a parent tells child stories, sing songs, teach about nature, do arts and crafts, read books to child, help with homework, encourages child to express opinions, listen to child even if busy, play games, build things with toys, play sports or exercise together, and practice numbers and letters. Cronbach's alpha, which is a commonly used measure of internal reliability or consistency, reports a coefficient of 0.73 for parent's involvement with children. To measure children's participation in organized or leisure activities, the following variables were coded 1 for participation and 0 for no participation: whether child participated in music lessons, arts lessons, dance lessons, organized clubs, organized performing arts, and athletic activities; and whether child has visited the library, zoo, museum, and concert or live show with a family member. Cronbach's alpha coefficient for children's participation in leisure activities was 0.78. To measure parent's interaction and involvement with social institutions (specifically the child's

school), variables were coded 1 for yes and 0 for no if parent participated in an open house, PTA meeting, parent teacher conference, school fundraiser, school event, or acted as a volunteer for the child's school. Cronbach's alpha coefficient for parent's interaction and involvement with social institutions was 0.69. While the ECLS-K does not contain measures that capture parent's language use around children, the next best measure was the number of children's books in the home, which is likely to have a high correlation with language use (Cheadle and Amato 2011). To avoid the possibility of outliers affecting the analyses, I recoded all values greater than 200 equal to 200.

To give each aspect of concerted cultivation equal weight, I summed the items belonging to each aspect and standardized the total. Across subscales, Cronbach's alpha reports a coefficient of 0.75, indicating relatively good reliability. I summed the different aspects of concerted cultivation, and then standardized the sum. This resulted in a concerted cultivation measure with a mean of 0 and a standard deviation of 1.

### Family structure

The original family structure variable in Wave 4 contained nine categories (*biological mother and biological father, biological mother and other father, other mother and biological father, biological mother only, biological father only, two adoptive parents, one adoptive parent and a step parent, unrelated guardians, and related guardians*). I limit my analyses to all single parents (*biological mother only and biological father only*). Before imputation, the data identified 2,849 single mothers and 283 single fathers, comprising a total analytic sample of 3,132, which represents 17.92% of the wave 4 baseline ECLS-K sample. Single father families comprise 9.04% of all single parent families but only 1.81% of the ECLS-K wave 4 sample.

Single mother families comprise 90.96% of all single parent families and 18.23% of the ECLS-K wave 4 sample.

It is important to acknowledge that the analyses presented here identify family structure at one point – at Wave 4 when children are in the 1<sup>st</sup> grade. However, family arrangements are subject to change at any point in time. For example, from 1<sup>st</sup> grade (Wave 4) to 3<sup>rd</sup> grade (Wave 5), 5.5% of the entire sample, 21.5% of single father families, and 15.3% of single mother families transitioned from one family arrangement to another. From 1<sup>st</sup> grade (Wave 4) to 5<sup>th</sup> grade (Wave 6), 6.27% of the entire sample, 26.5% of single father families, and 16.0% of single mother families transitioned from one family arrangement to another. Given this instability among single parent families across time, I conducted supplementary analyses of the final models and included a dummy variable indicating whether the respondent experienced a family structure transition in the intervening window. The results, reported in Appendix B, indicate that accounting for family structure changes between 1<sup>st</sup> grade and 3<sup>rd</sup> grade or between 1<sup>st</sup> grade to 5<sup>th</sup> grade make virtually no difference to the results presented in the main body of this paper.

### Control Variables

Control variables include socioeconomic status (a continuous scale provided by the ECLS-K is derived from a logarithm of family income, parent occupation, prestige score, and educational attainment), number of siblings, the child's age (measured in months) at time of the ECLS-K assessment, whether the child was held back in school as a kindergartner (coded 0 for no and 1 for yes), and whether or not the child's non-custodial biological parent is deceased (coded 1 for yes and 0 for no). I also control for race (*white, black, Hispanic, Asian, and other*)

and child respondent gender (coded 1 for female and 0 for male). In the analyses, I use white male children as the reference group.

Beyond these general controls, I also control for parent's expected educational attainment for the child (responses include *less than high school, high school diploma, two or more years of college, college degree, Master's degree, and Ph.D, M.D or other higher degree*). I control for educational expectations as I expect that educational expectations should predict both concerted cultivation and academic achievement. Parents with higher educational expectations for their child should be more likely to be actively involved in their children's schooling. This active involvement could include activities such as helping with homework, hiring tutors, or reading to children. Similarly, children who feel higher expectations from their parents to attain more education are likely going to make more conscientious efforts to work harder and perform better in school.

### **Plan of Analysis**

Using imputed data, I use "mi estimate" in order to employ ordinary least squares (OLS) regression to predict concerted cultivation achievement. The results are weighted using the "svy" prefix in STATA 12. The weights adjust for differential selection probabilities into the study and attrition over time. To test the first hypothesis, I first regress concerted cultivation just on family structure. Then, in Model 2, I add indicators of selection (whether the respondent's non-custodial biological parent is deceased). In Model 3, I add race and SES as controls. In the final model predicting concerted cultivation, Model 4, I add the rest of the control variables. To model academic achievement, I use this same method. However, after adding all the controls, I test my second and third hypothesis with an additional model, Model 5, which includes concerted



cultivation. Model 5 tests the relationship between academic achievement and concerted cultivation *and* whether concerted cultivation mediates the effects of family structure on academic achievement net of all controls.

## RESULTS

Table 1 reports the weighted means and percentages of all the variables in this study for the imputed sample and the original listwise deletion sample. Within each of these two samples, I report descriptive statistics for all ECLS-K children, children of single mother families, and children of single father families. In both the imputed and listwise deletion samples, single mother and single father families on average have lower academic achievement, concerted cultivation, socioeconomic status, and fewer siblings relative to the full ECLS-K sample. In addition, single mothers and single fathers have lower educational expectations for their children compared to the full ECLS-K sample.

In the imputed sample, children of single fathers have significantly lower math achievement scores relative to children of single mothers ( $p < .05$ ). More children of single fathers in the sample have a deceased non-custodial biological parent (6.7%) compared to children of single mothers (3.2%;  $p < .01$ ). As expected, single fathers have significantly higher SES ( $p < .05$ ), are significantly older (35.4 years old versus 32.0 years old;  $p < .001$ ), and have significantly fewer kids (0.908 versus 1.36;  $p < .001$ ). In addition, there are racial differences between single mothers and single fathers. Single fathers are significantly much more likely to be white; 62.2% of single fathers are white compared to 39.8% of single mothers ( $p < .001$ ). Single mothers are significantly more likely to be black; 34.1% of single mothers are black compared to 13.4% of single fathers ( $p < .001$ ). These patterns for the imputed data generally

Table 1: Weighted Means or Percentages by Family Structure

Variable	Imputed Sample			Listwise Sample		
	Single Mothers (n=2,849)	Single Fathers (n=283)	Full Sample (N=17,481)	Single Mothers	Single Fathers	Full Sample
<u>Dependent Variables</u>						
Concerted Cultivation	-0.3810	-0.4685	-0.0423	-0.37 (0.957)	-0.4687 (0.924)	0.000 (1.000)
3rd Grade IRT Reading Scores	117.14	118.12	125.68	118.35 (27.459)	118.39 (26.327)	126.96 (27.972)
3rd Grade IRT Math Scores	90.41*	94.02	98.04	91.20*** (24.182)	94.11 (23.187)	98.93 (24.68)
5th Grade IRT Reading Scores	140.73	141.44	148.64	141.65 (27.222)	142.09 (25.945)	150.26 (26.349)
5th Grade IRT Math Scores	113.99*	118.27	122.19	114.87*** (25.734)	118.67 (23.491)	123.82 (24.763)
<u>Indicator for Selection</u>						
Deceased Non-Custodial Biological Parent	3.2% **	6.7%	1.0%	3.2% (0.175)	6.7% (0.251)	0.7% (0.083)
<u>Controls</u>						
Socioeconomic Status	-0.458*	-0.356	-0.054	-0.427 <sup>+</sup> (0.743)	-0.329 (0.686)	0.000 (0.809)
Parent Educational Expectations	3.8	3.8	4.0	3.8 (1.203)	3.8 (1.17)	4.0 (1.101)
Child's Age (in months)	87.0	87.0	86.9	86.9 (4.244)	87.0 (4.32)	86.9 (4.284)
Parent's Age	32.0***	35.4	34.6	32.0*** (6.064)	35.4 (6.92)	34.7 (6.587)
Child Gender (1=Female)	49.7% **	41.0%	48.8%	49.7% ** (0.500)	41.0% (0.493)	48.8% (0.5)
Number of Siblings	1.36***	0.91	1.53	1.36*** (1.209)	0.91 (0.992)	1.52 (1.165)
Held Back	94.0%	94.0%	94.6%	95.0% (0.219)	94.9% (0.22)	95.5% (0.207)
<u>Race</u>						
White	39.8% ***	62.2%	56.5%	39.8% *** (0.490)	62.2% (0.486)	56.5% (0.496)
Black	34.1% ***	13.4%	14.3%	34.1% *** (0.474)	13.4% (0.342)	14.2% (0.349)
Hispanic	17.3% *	12.7%	17.4%	17.3% * (0.379)	12.7% (0.334)	17.4% (0.379)
Asian	3.1%	4.9%	7.5%	3.1% <sup>+</sup> (0.172)	4.9% (0.217)	7.5% (0.263)
Other Race	5.7%	6.7%	4.4%	5.7% (0.232)	6.7% (0.251)	4.4% (0.205)

Note: Standard Deviations in Parentheses; the following denotes significant differences between single mothers and single fathers:

<sup>+</sup> p < .10 \* p < .05 \*\* p < .01 \*\*\* p < .001

hold for the listwise deletion sample, with two exceptions. First, in the listwise deletion sample, single mother and single father families do not significantly differ in whether or not children had a deceased non-custodial biological parent. Second, in contrast to the imputed sample, single mother and single father families do not differ significantly with regard to SES in the listwise deletion sample.

Table 2 reports the OLS estimates predicting concerted cultivation. Model 1 assesses the bivariate relationship between family structure and concerted cultivation and finds that, without any controls, single fathers and single mothers do not significantly differ with respect to concerted cultivation. Model 2 adds the indicator of selection – whether the child’s non-custodial biological parent is deceased. This leads to an increase in the magnitude for the coefficient for single fathers, but it remains statistically nonsignificant. Model 3 adds race and SES, which are highly linked to concerted cultivation (Bodovski and Farkas 2008; Cheadle 2009; Cheadle and Amato 2011). The difference in concerted cultivation between single fathers and single mothers is now highly statistically significant and the coefficient even doubles in magnitude. Therefore, net of race and SES, single fathers are significantly less likely to engage in concerted cultivation behaviors. Socioeconomic status and race are highly significant predictors of concerted cultivation. As Lareau (2003) found, concerted cultivation is typically a middle-class child-rearing strategy. Additionally, non-white single parents engage in significantly less concerted cultivation compared to white single parents.

Adding additional controls in Model 4 increases the magnitude of the difference for single fathers (-0.227) without changing the coefficient’s statistical significance. Thus, net of race, SES, number of siblings, child gender and age, parent age, parental educational expectations, and whether the child was ever held back in kindergarten, single fathers engage in

about a quarter of a standard deviation less in concerted cultivation relative to single mothers. Number of siblings is negatively associated with concerted cultivation; every additional child reduces concerted cultivation by approximately a tenth of a standard deviation net of all controls. Parents who have higher educational expectations for their children are also significantly more likely to engage in more concerted cultivation. These results support the first hypothesis and suggest that single fathers do engage in lower levels of concerted cultivation compared to single mothers.

Table 2: Ordinary Least Squares Regression Coefficients Predicting Concerted Cultivation (N=3,132)

	Model 1	Model 2	Model 3	Model 4
Single Father Families	-0.088 (0.063)	-0.090 (0.063)	-0.207** (0.062)	-0.215** (0.060)
Deceased Non-Custodial Biological Parent		0.08 (0.095)	0.109 (0.087)	0.125 (0.086)
Socioeconomic Status			0.501***	0.406***
Race (Omitted=White)			(0.024)	(0.027)
Black			-0.288*** (0.039)	-0.312*** (0.040)
Hispanic			-0.314*** (0.048)	-0.377*** (0.048)
Asian			-0.426*** (0.091)	-0.493*** (0.089)
Other Race			-0.180* (0.068)	-0.170* (0.067)
Number of Siblings				-0.059*** (0.013)
Child Age				-0.002 (0.004)
Child Gender (1=Female)				0.079* (0.032)
Parent Age				0.000 (0.003)
Parent Educational Expectations				0.139*** (0.014)
Held Back				0.024 (0.078)
Constant	-0.381*** (0.018)	-0.384*** (0.019)	0.021 (0.026)	-0.366 (0.397)

Note: Standard Errors in Parentheses;   +  $p < .10$    \*  $p < .05$    \*\*  $p < .01$    \*\*\*  $p < .001$

Table 3 provides the OLS estimates predicting IRT math scores in 3<sup>rd</sup> and 5<sup>th</sup> grade. Model 1 looks at the bivariate association between IRT math achievement and family structure for both 3<sup>rd</sup> and 5<sup>th</sup> grade. Consistent with previous research (Downey 1994; Dufur 2010; Downey 1998), children of single fathers perform significantly better compared to children of single mothers in Model 1 for math achievement in 3<sup>rd</sup> and 5<sup>th</sup> grade before adding sociodemographic controls. Specifically, children of single father families have a math score that is 3.605 and 4.284 points higher than single mothers in 3<sup>rd</sup> and 5<sup>th</sup> grade (respectively). Model 1 indicates that, without any controls, children of single fathers have a math score that is 0.13 and 0.18 standard deviations higher than children of single mothers in 3<sup>rd</sup> and 5<sup>th</sup> grade (respectively). Even after adding the indicator for selection in Model 2, family structure differences remain relatively unchanged; children of single fathers still score significantly higher in math achievement in both grades.

However, after controlling for SES and race in Model 3, children of single father families are no longer predicted to have significantly higher mathematics achievement test scores in grades 3 and 5. SES is strongly related to achievement; a standard deviation increase in SES is predicted to increase math achievement by 0.33 and 0.34 standard deviations in 3<sup>rd</sup> and 5<sup>th</sup> grade (respectively). After adding the rest of the control variables in Model 4, the coefficient for living with a single father remains statistically nonsignificant in predicting both 3<sup>rd</sup> and 5<sup>th</sup> grade mathematics achievement scores. Race and SES remains highly significant. Interestingly, number of siblings is significantly related to 3<sup>rd</sup> and 5<sup>th</sup> grade achievement. Girls score significantly lower in math achievement for both waves compared to boys.

Table 3: Ordinary Least Squares Regression Coefficients Predicting IRT Math Scores (N=3,132)

	3rd Grade IRT Math Scores					5th Grade IRT Math Scores				
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 1	Model 2	Model 3	Model 4	Model 5
Single Father Families	3.605*	3.567*	-0.377	-0.900	-0.614	4.284*	4.313*	0.144	-0.806	-0.498
	(1.708)	(1.701)	(1.680)	(1.596)	(1.564)	(1.955)	(1.946)	(1.846)	(1.754)	(1.730)
Concerted Cultivation					1.327**					1.436**
					(0.502)					(0.521)
Deceased Non-Custodial Biological Parent		1.064	1.528	1.190	1.025		-0.792	-0.157	-0.695	-0.875
		(2.528)	(2.312)	(2.259)	(2.262)		(2.869)	(2.627)	(2.590)	(2.584)
Socioeconomic Status			10.318***	8.512***	7.975***			11.154***	9.032***	8.451***
Race (Omitted=White)			(0.575)	(0.714)	(0.709)			(0.615)	(0.663)	(0.681)
Black			-13.214***	-13.442***	-13.026***			-14.047***	-14.228***	-13.779***
			(1.806)	(1.120)	(1.125)			(0.994)	(1.002)	(1.009)
Hispanic			-6.500***	-7.573***	-7.073***			-3.978**	-5.087***	-4.546**
			(1.180)	(1.190)	(1.213)			(1.312)	(1.320)	(1.350)
Asian			-2.694	-3.539	-2.883			2.034	0.708	1.416
			(2.329)	(2.297)	(2.298)			(2.673)	(2.599)	(2.620)
Other Race			-11.132***	-11.003***	-10.777***			-11.166***	-10.893***	-10.648***
			(1.762)	(1.730)	(1.737)			(1.775)	(1.750)	(1.753)
Number of Siblings				-0.504	-0.426				-0.983*	-0.899*
				(0.362)	(0.364)				(0.426)	(0.425)
Child Age				0.499***	0.502***				0.243 <sup>+</sup>	0.245 <sup>+</sup>
				(0.101)	(0.101)				(0.121)	(0.121)
Child Gender (1=Female)				-3.266***	-3.369***				-4.614***	-4.726***
				(0.814)	(0.814)				(0.841)	(0.845)
Parent Respondent's Age				0.086	0.085				0.132 <sup>+</sup>	0.131 <sup>+</sup>
				(0.074)	(0.074)				(0.076)	(0.076)
Parent Educational Expectations				2.906***	2.722***				2.923***	2.723***
				(0.372)	(0.378)				(0.412)	(0.419)
Held Back				8.111***	8.079**				9.034***	9.002***
				(2.091)	(2.100)				(2.015)	(2.009)
Constant	90.410***	90.377***	101.461***	38.286***	38.756***	113.989***	114.014***	125.152***	83.091***	83.605***
	(0.487)	(0.502)	(0.734)	(10.411)	(10.379)	(0.577)	(0.608)	(0.794)	(11.404)	(11.343)

Note: Standard Errors in Parentheses; +  $p < .10$  \*  $p < .05$  \*\*  $p < .01$  \*\*\*  $p < .001$

Table 4: Ordinary Least Squares Regression Coefficients Predicting IRT Reading Scores (N=3,132)

	3rd Grade IRT Reading Scores					5th Grade IRT Reading Scores				
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 1	Model 2	Model 3	Model 4	Model 5
Single Father Families	0.978	0.945	-3.442 <sup>+</sup>	-3.911*	-3.538*	0.709	0.664	-3.442 <sup>+</sup>	-4.343*	-4.009*
	1.899	(1.901)	(1.824)	(1.785)	(1.774)	(1.851)	(1.863)	(1.802)	(1.847)	(1.821)
Concerted Cultivation					1.732***					1.563*
					(0.538)					(0.598)
Deceased Non-Custodial Biological Parent		0.930	1.657	1.495	1.277		1.277	2.075	1.779	1.585
		(2.971)	(2.748)	(2.641)	(2.616)		(3.260)	(3.034)	(2.938)	(2.905)
Socioeconomic Status			13.012***	10.021***	9.320***			12.995***	10.060***	9.429***
Race (Omitted=White)			(0.655)	(0.676)	(0.705)			(0.653)	(0.682)	(0.694)
Black			-13.050***	-12.464***	-11.923***			-13.112***	-12.562***	-12.074***
			(1.199)	(1.246)	(1.257)			(1.309)	(1.282)	(1.252)
Hispanic			-7.848***	-8.430***	-7.777***			-6.401***	-7.054***	-6.463***
			(1.442)	(1.451)	(1.491)			(1.264)	(1.251)	(1.297)
Asian			-6.930*	-7.420**	-6.566*			-5.737*	-6.517**	-5.747*
			(2.663)	(2.600)	(2.635)			(2.561)	(2.463)	(2.465)
Other Race			-16.445***	-15.054***	-14.759***			-14.368***	-13.023***	-12.756***
			(1.955)	(1.909)	(1.909)			(2.070)	(2.088)	(2.070)
Number of Siblings				-2.528***	-2.426***				-2.556***	-2.464***
				(0.415)	(0.413)				(0.454)	(0.452)
Child Age				0.564***	0.568***				0.349*	0.352*
				(0.116)	(0.117)				(0.134)	(0.134)
Child Gender (1=Female)				6.004***	5.868***				4.835***	4.714***
				(0.879)	(0.882)				(1.033)	(1.035)
Parent Respondent's Age				0.206*	0.205*				0.217*	0.217*
				(0.090)	(0.090)				(0.084)	(0.084)
Parent Educational Expectations				3.363***	3.122***				3.084***	2.867***
				(0.416)	(0.421)				(0.433)	(0.460)
Held Back				9.719***	9.680***				10.413***	10.378***
				(2.140)	(2.136)				(2.114)	(2.114)
Constant	117.144***	117.115***	130.010***	51.258***	51.884***	140.726***	140.686***	153.185***	93.910***	94.456***
	(0.542)	(0.560)	(0.800)	(11.338)	(11.325)	(0.519)	(0.541)	(0.740)	(12.760)	(12.695)

Note: Standard Errors in Parentheses; +  $p < .10$  \*  $p < .05$  \*\*  $p < .01$  \*\*\*  $p < .001$

Model 5 finally adds concerted cultivation, which is significantly and positively related to math achievement. A standard deviation increase in concerted cultivation leads to a 0.06 and 0.05 standard deviation increase in math achievement in 3<sup>rd</sup> and 5<sup>th</sup> grade (respectively). Further, adding concerted cultivation does not change the significance of living with a single father and does not significantly alter the effect of other variables. Overall, for math achievement, the second hypothesis is supported but support for the third hypothesis has not been confirmed because, contrary to expectations, children of single fathers do not have lower mathematics achievement compared to children of single mothers, even after accounting for sociodemographic controls. I return to this point in my discussion.

In Table 4, I employ the same modeling strategy as Table 3 to predict IRT reading scores in 3<sup>rd</sup> and 5<sup>th</sup> grade. Contrary to bivariate results in Model 1 of Table 3 predicting math achievement, the bivariate associations in Model 1 of Table 4 indicate that children of single fathers do not significantly differ from children in single mother families in reading achievement. Adding in the variable for parental death as a selection variable in Model 2 does little for family structure differences. After controlling for SES and race in Model 3, the relatively lower reading achievement scores for children of single fathers approach statistical significance for 3<sup>rd</sup> grade and become marginally significant for 5<sup>th</sup> grade ( $p < .10$ ). Model 3 predicts that children of single fathers score 0.09 standard deviations lower in reading achievement in the 5<sup>th</sup> grade compared to children in single mother families net of race and SES. After adding in more control variables in Model 4, children of single fathers now score significantly lower in their reading test scores than children of single mothers. Similar to Downey, Ainsworth-Darnell, and Dufur (1998), significant achievement differences between children of single mothers and children of single fathers do not occur until controlling for SES, number of siblings, and race. Specifically,



net of all controls, children of single fathers score 0.15 and 0.13 standard deviations lower than children of single mothers in reading achievement in 3<sup>rd</sup> and 5<sup>th</sup> grade (respectively).

Model 5 of Table 4, which finally adds concerted cultivation, mediates some of the family structure advantage given to children of single mothers in reading achievement. Concerted cultivation mediates 10.6% and 7.7% of the family structure advantage given to single mother families in reaching achievement (mediation effect = ((Model 4 coefficient – Model 5 coefficient) / (Model 4 coefficient)) x 100) in 3<sup>rd</sup> and 5<sup>th</sup> grade (respectively). In addition, the Sobel test of mediation (Sobel 1982) indicates that, while small, this mediation effect is statistically significant (where  $Z = 2.39$  in 3<sup>rd</sup> grade and  $Z = 2.61$  in 5<sup>th</sup> grade); family structure has a significant indirect effect on reading achievement that operates *through* concerted cultivation. However, children of single father families still score significantly lower than children of single mothers in reading achievement in 3<sup>rd</sup> and 5<sup>th</sup> grade. That is, the difference in reading achievement between children of single mother and children of single father families remain statistically significant even net of all controls and mediators.

## DISCUSSION

I test whether single father families and single mother families are associated with differing levels concerted cultivation. In addition, I assess whether concerted cultivation predicts young children's early mathematics and reading achievement and whether concerted cultivation mediates the association between living with a single mother and academic achievement.

Overall, the results indicate that single mothers do engage in more concerted cultivation compared to single fathers. In terms of achievement, the results indicate that family structure has different implications for reading and math achievement. Findings presented in previous research

(Downey 1994; Downey, Ainsworth-Darnell, and Dufur 1998; Dufur et al. 2010; Mulkey, Crain, and Harrington 1992) indicate that children of single fathers are advantaged in academic achievement at the bivariate level without any controls. However, the results of this study find single father family structure advantages at the bivariate level only for math achievement and not for reading achievement. For reading achievement, similar to past research (Downey, Ainsworth-Darnell, and Dufur 1998; Mulkey, Crain, and Harrington 1992), I find that children of single mothers are advantaged upon including sociodemographic controls such as race and SES. Concerted cultivation mediates some effects but statistically significant differences remain in 3<sup>rd</sup> and 5<sup>th</sup> grade reading achievement. For achievement in mathematics, similar to findings from Dufur et al. (2010), I find that differences in achievement are null once sociodemographic controls are included. Thus, concerted cultivation does not seem to be meaningful in accounting for family structure differences in math achievement between children of single mothers and children of single fathers.

To account for selection effects, I included a dummy variable that indicates whether or not the child's noncustodial biological parent is still alive. I expect that single father families are more likely to be created as a result of parental death relative to single mother families. In addition, parental death likely introduces trauma and emotional pain, which would in turn hinder academic achievement. On the other hand, parental death may not be as detrimental as other parental losses, as it may create group unity and allow children to receive pooled resources across different family members. Yet, this variable was never significant in any model. This indicates that this variable does not appropriately account for selection into these two family types. While children of single fathers on average have a higher percentage of reporting a deceased biological mother compared to children of single mothers reporting a deceased

biological father, it does not seem to affect academic achievement. Given that this variable is measured when children are in the spring semester of the first grade, this finding might imply that children at this stage are too young for such an experience to affect their academic achievement. Thus, this might be a timing issue.

In revisiting my hypotheses, I come to three conclusions.

**Do single mothers engage in a greater level of concerted cultivation compared to single fathers?**

First, the results support the hypothesis that single mothers significantly engage in more concerted cultivation behaviors compared to single fathers. This finding coincides with previous studies that suggest that single fathers are generally less involved with their children than single mothers (Downey 1994; Hawkins, Amato, and King 2006). Compared to single mothers, single fathers spend less time with their children (Hook and Chalasani 2008) and when they do spend time with their children, they are often more involved in play and recreational activities while single mothers are more involved in activities that are consistent with concerted cultivation such as helping children with their homework (Hall, Walker, and Acock 1995) and talking about grades and school related topics (Hawkins, Amato, and King 2006). Including findings presented in this paper, research supports the notion that single father parent differently from single mothers quantitatively and qualitatively.

Thus, while “doing” gender is less available for single mothers and single fathers who may experience the same disadvantages due to lacking an additional caretaker and economic resources, the implications of this study indicate that gendered ideologies create gender differences in parenting behavior. The act of concerted cultivation is heavily time-intensive on

parents. According to Lareau (2003), concerted cultivation is already greatly demanding and strenuous for two married parents. Activities such as attending parent-teacher conferences and enrolling children to athletic teams and music lessons requires much free and available time, something that all single parents lack irrespective of parent gender. Father's lower involvement in concerted cultivation compared to mothers suggests that gender role ideologies are ever-present and pervasive in the family, even in the absence of a spouse or partner.

### **Do children of parents who engage in greater levels of concerted cultivation perform better academically?**

Second, the results presented here confirm previous findings that concerted cultivation is significantly, positively related to academic achievement (Bodovski and Farkas 2008; Cheadle 2008; Cheadle 2009; Martin 2012). Whether it is encouraging children to enroll in extracurricular activities in school or sports and musical activities outside school, taking trips to museums or libraries, parental involvement in these parenting behaviors is associated with improvements in children's academic achievement.

### **Does concerted cultivation mediate academic achievement differences between children of single mothers and children of single fathers?**

Third, concerted cultivation partially mediates the relative advantage experienced by children of single mothers with regard to their reading test scores. Yet, even net of concerted cultivation, children of single mothers have significantly greater reading scores than single fathers in 3<sup>rd</sup> and 5<sup>th</sup> grade. Thus, other processes related to family structure account for this remaining difference in reading achievement, including issues related to selection (articulated further in the discussion of limitations below) or other forms of parenting. Concerted cultivation

is a form of parenting that is very active in fostering children's development but neglects other critical factors such as emotional closeness or parental discipline. Research shows that mothers provide more emotional support relative to fathers (Downey 1994; Reay 2000), and that these forms of support positively influence academic achievement (Becker and Luthar 2002). Fathers are also more likely to discipline their children (Day, Peterson, and McCracken 1998), which may have implications with academic achievement as research suggests that different forms of discipline matter for academic outcomes (Baumrind 1978). Thus, other gender-related aspects of parenting could influence achievement and explain the remaining gap in reading achievement for children in single father families.

The results for mathematics achievement, however, are different. In fact, children of single fathers are estimated to have better mathematics test scores than children of single mothers. Once statistically significant controls are included, children of single mothers and single fathers are not statistically different from each other in math test scores. Thus, there are no statistically significant differences in mathematics achievement to explain. These findings suggest that family structure may have different implications for the different kinds of achievement in early childhood. It also suggests that math and reading are two distinct forms of achievement.

### **Limitations**

As with all research, this study is not without limitations. Decisions on measurement and operationalization of variables, results, and biases can always be challenged. As Bodovski and Farkas (2008) reported, the ECLS-K does not contain measures that capture parent vocabulary use with children, an important component of concerted cultivation according to Lareau.

It is important to acknowledge that family structure is not static. This measure of family structure, captured in the spring of 1st grade, is simply a snapshot at one point in time and family structure trajectories may better predict academic achievement. That said, the results do not change significantly when I account for subsequent family structure change with a control variable (see Appendix B). Additionally, joint custody of children between separated or divorced fathers and mothers is becoming increasingly common (Halla 2009; Johnston, Kline, and Tschann 1989). In addition, even if children reside only with their single father or mother, nonresidential parents may still have contact with their biological children. As such, these children's lived experiences may be more complicated than what I can measure. Unfortunately, I cannot ascertain the effects of these complications, as the ECLS-K does not have data on non-residential parental involvement or joint custody arrangements. Thus, these families may be different in other, unobserved ways that may influence achievement.

Again, there are still factors that select fathers and mothers into custody that are not included in this that may complicate the present analyses. It is important to again consider the types of children who live with their fathers instead of their mothers. Custody of children is overwhelmingly given to mothers rather than fathers (especially for young children). There are many reasons why the mother may not have custody; she may be deceased, in jail, in the hospital, or in rehabilitation from alcohol or drugs. Either way, these options suggest that the mother is unfit to care for her child. While I do control for whether children's non-custodial biological parent is deceased, the data does not permit controls for other reasons why children's biological mothers or fathers may be missing. Further, this control does not appear to be particularly effective if the selection effects are strong because it never is a statistically significant predictor of children's 3<sup>rd</sup> and 5<sup>th</sup> grade mathematics and reading achievement scores.

Thus, single mother and single father families are still likely to be formed through different processes, but I do not have information about these alternatives.

### **Conclusion**

To better understand children's early and ongoing academic success, life chances, and opportunities, research has focused on how resources and experiences provided by families shape children's outcomes. Families are the primary institutions for raising children. Particularly problematic are single parents, who possess fewer resources (financial or emotional) compared to two parent married biological parents to fully ensure their children's success. Early cognitive skill disparities – associated with family structure – are consequential for later life outcomes in adolescence and adulthood (Alexander, Entwisle, and Olson 2007). As a result, research is well-documented on academic achievement disparities across various family structures (Cavanagh and Fomby 2012; Cavanagh, Schiller, and Riegle-Crumb 2006; Cooksey 1997; Frisco, Muller, and Frank 2007; Heard 2007).

Here, I focused my analyses of family structure differences in comparing children in single mother and children in single father families. Instead of focusing on economic or emotional resources, I argue that the transmission of achievement advantages occurs through differential parenting practices by gender of the single parent. The present paper focuses on early childhood, an especially important time as the stratification process starts in early childhood and disadvantages compound and gaps widen over time (Alexander, Entwisle, and Olson 2007). It is therefore important to understand early life stratification processes in order to have a better understanding of the link between early life achievement and later life achievement.

Further exploration of the relationships proposed in this study produces a better understanding of the associations among family structure, gender, parenting, and children's academic achievement. Working within Lareau's conceptual framework, this paper contributes to the literature regarding the childrearing tactics utilized by single fathers and single mothers and how these childrearing tactics relate to early childhood achievement. In particular, this paper finds that single mothers are more likely to engage in concerted cultivation relative to single fathers. In turn, concerted cultivation – which is significantly and positively related to academic achievement – partially explains why children in single mother families score higher in reading scores. By focusing on parents and their children, this study expands the understanding of the relationship between parenting and early childhood, an important and vital stage in children's lives that has implications for adolescence and emerging adulthood (Corsaro 2005).



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## APPENDIX A

Amount of Missingness and the Weighted Means and Percentages for each Variable in the Original and Imputed Samples (N=17,481)

Variable	<u>Missingness</u>		<u>Means and Percentages</u>	
	Missing Cases	% Missing	Original Sample	Imputed Sample
<u>Dependent Variables</u>				
Concerted Cultivation	2,600	14.9%	0.0000	-0.0423
3rd Grade IRT Reading Scores	3,201	18.3%	126.96	125.68
3rd Grade IRT Math Scores	3,107	17.8%	98.93	98.04
5th Grade IRT Reading Scores	6,216	35.6%	150.26	148.64
5th Grade IRT Math Scores	6,207	35.5%	123.82	122.19
<u>Family Structure</u>				
Two-Married Biological Parent	1,857	10.6%	66.7%	66.7%
Single Mother	1,857	10.6%	18.2%	18.8%
Single Father	1,857	10.6%	1.8%	1.8%
Other Family Structure	1,857	10.6%	13.2%	13.3%
<u>Indicator for Selection</u>				
Deceased Non-Custodial Biological Parent	1,866	10.7%	0.7%	1.0%
<u>Controls</u>				
Socioeconomic Status	4,173	23.9%	0.000	-0.054
Parent Educational Expectations	1,958	11.2%	4.0	4.0
Child Age	803	4.6%	86.9	86.9
Parent Age	1,926	11.0%	34.7	34.6
Child Gender (1=Female)	11	0.1%	48.8%	48.8%
Number of Siblings	1,857	10.6%	1.52	1.53
Held Back	2,523	14.4%	95.5%	94.6%
<i>Race</i>				
White	39	0.2%	56.5%	56.5%
Black	39	0.2%	14.2%	14.3%
Hispanic	39	0.2%	17.4%	17.4%
Asian	39	0.2%	7.5%	7.5%
Other Race	39	0.2%	4.4%	4.4%

## APPENDIX B

### Additional Sensitivity Analyses

	IRT Math Achievement				IRT Reading Achievement			
		3rd Grade		5th Grade		3rd Grade		5th Grade
Single Father Families	-0.614 (1.564)	-0.621 (1.580)	-0.498 (1.730)	-0.492 (1.732)	-3.538* (1.774)	-3.994* (1.819)	-4.009* (1.821)	-3.994* (1.819)
Concerted Cultivation	1.327** (0.502)	1.325** (0.503)	1.436** (0.521)	1.432** (0.522)	1.732*** (0.538)	1.559** (0.600)	1.563* (0.598)	1.559* (0.600)
Deceased Non-Custodial Biological Parent	1.025 (2.262)	1.064 (2.264)	-0.875 (2.584)	-0.902 (2.589)	1.277 (2.616)	1.548 (2.911)	1.585 (2.905)	1.548 (2.911)
Socioeconomic Status	7.975***	7.980***	8.451***	8.454***	9.320***	9.431***	9.429***	9.431***
Race (Omitted=White)	(0.709)	(0.708)	(0.681)	(0.679)	(0.705)	(0.692)	(0.694)	(0.692)
Black	-13.026*** (1.125)	-13.012*** (1.115)	-13.779*** (1.009)	-13.790*** (1.010)	-11.923*** (1.257)	-12.090*** (1.253)	-12.074*** (1.252)	-12.090*** (1.253)
Hispanic	-7.073*** (1.213)	-7.062*** (1.215)	-4.546** (1.350)	-4.555*** (1.351)	-7.777*** (1.491)	-6.476*** (1.301)	-6.463*** (1.297)	-6.476*** (1.301)
Asian	-2.883 (2.298)	-2.864 (2.301)	1.416 (2.620)	1.401 (2.627)	-6.566* (2.635)	-5.769* (2.468)	-5.747* (2.465)	-5.769* (2.468)
Other Race	-10.777*** (1.737)	-10.792*** (1.734)	-10.648*** (1.753)	-10.644*** (1.753)	-14.759*** (1.909)	-12.746*** (2.073)	-12.756*** (2.070)	-12.746*** (2.073)
Number of Siblings	-0.426 (0.364)	-0.429 (0.364)	-0.899* (0.425)	-0.902* (0.425)	-2.426*** (0.413)	-2.467*** (0.449)	-2.464*** (0.452)	-2.467*** (0.449)
Child Age	0.502*** (0.101)	0.501*** (0.101)	0.245* (0.121)	0.245* (0.121)	0.568*** (0.117)	0.352* (0.134)	0.352* (0.134)	0.352* (0.134)
Child Gender (1=Female)	-3.369*** (0.814)	-3.368*** (0.813)	-4.726*** (0.845)	-4.724*** (0.846)	5.868*** (0.882)	4.717*** (1.034)	4.714*** (1.035)	4.717*** (1.034)
Parent Respondent's Age	0.085 (0.074)	0.086 (0.073)	0.131 <sup>+</sup> (0.076)	0.131 <sup>+</sup> (0.076)	0.205* (0.090)	0.217* (0.084)	0.217* (0.084)	0.217* (0.084)
Parent Educational Expectations	2.722*** (0.378)	2.720*** (0.377)	2.723*** (0.419)	2.722*** (0.418)	3.122*** (0.421)	2.866*** (0.459)	2.867*** (0.460)	2.866*** (0.459)
Held Back	8.079** (2.100)	8.067*** (2.101)	9.002*** (2.009)	9.012*** (2.010)	9.680*** (2.136)	10.397*** (2.116)	10.378*** (2.114)	10.397*** (2.116)
Experienced Family Structure Change between 1st Grade and Respective Grade		0.623 (2.138)		-0.434 (1.239)		-0.598 (1.253)		-0.598 (1.253)
Constant	38.756*** (10.379)	38.768*** (10.360)	83.605*** (11.343)	83.683*** (11.346)	51.884*** (11.325)	94.512*** (12.683)	94.456*** (12.695)	94.512*** (12.683)

Note: Standard Errors in Parentheses; +  $p < .10$  \*  $p < .05$  \*\*  $p < .01$  \*\*\*  $p < .001$