"Impacts of Children's Schooling on Parenting: Evidence from U.S. School-Entry-Age Rules"

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March 2019

Abstract

Experts consider parenting to be the major determinant of life success. There is a public interest in promoting quality parenting due to its positive externalities and its role in the intergenerational transmission of inequality. Using school-entry-age rules, we identify the effects of children's school tenure on parenting. We find that beneficial aspects of parenting, affection and behavioral control, increase with tenure-for-age in a nationally representative sample. Effects are highly heterogeneous with respect to child, maternal, and household characteristics. Effects are most salutary for younger siblings. Affection increases for many, but not all groups, while children in all groups except those of single mothers experience an increase in positive behavioral controls. When behavioral control increases without a change in affection, more parenting stress is a common co-occurrence.

Highlights

- The Survey of Income and Program Participation (SIPP) provides extensive background and parenting information on a large, nationally representative sample of U.S. households.
- Causal effects of children's school tenure-for-age on the quality of parenting are estimated with a school-entry-age identification strategy.
- On average, tenure increased indices of affection and positive behavioral control (called "authoritative" parenting). There were differences in responses by sex, race, and age of the child, race and education of the mother, household structure, and income.
- Our findings suggest that extending formal education to younger ages, such as via Universal Pre-Kindergarten, may improve lifetime outcomes through better parenting. Our findings for low-income and low-education households suggest that an earlier start to formal learning may be inequality-reducing overall.

Key Words

parenting, school start age, child development, parenting stress, affection, behavioral control, socioeconomic status, inequality

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Introduction

In economic models of child investment (Becker & Thomes, 1976; Cunha & Heckman, 2007), parents maximize unitary utility through the application of costly inputs to a complex and many-margined child development production function. While Cunha & Heckman (2007) noted the centrality of "parental influences," as "key factors governing child development," many modes of parental investment remain little studied by economists. Our research contributes to a nascent economics literature on parenting.

Roughly put, parenting is the collective expressions of caring, protection, training, teaching, and interaction with children. There is wide consensus among child development experts, based largely on associational evidence, that parenting is the most crucial factor engendering life success. Parenting is associated with the antecedents of school success and academic socialization (Aunola & Nurmi, 2005; Spera, 2005; Onatsu-Arvilommi, Nurmi, & Aunola, 1998; and Glasgow, Dornbusch, Troyer, Steinberg, & Ritter, 1997), academic achievement from early childhood through adolescence (Houtenville & Conway, 2008; Spera 2005; and Radziszewska, Richardson, Dent, and Flay, 1996), behavioral-emotional problems (Bertrand & Pan, 2013; Berlin, Ispa, Fine, Malone, Brooks-Gunn, et al., 2009; Aunola & Nurmi, 2005; Meteyer & Perry-Jenkins, 2009; and Dooley & Steward, 2007), and adolescent depression, criminality, and smoking (Dooley & Stewart, 2007 and Radziszewska, et al., 1996).

In this view, parenting is important family capital, Its value may exceed even that of economic and school resources (Dooley & Stewart, 2007; Houtenville & Conway, 2008). Not only does the parenting capital of one generation play a large part in determining the socioeconomic position of the subsequent one, parenting itself may be intergenerationally transmitted (Bluestone, Tamis-LeMonda, 1999; Chen & Kaplan, 2001), so that the relative wealth positions of family dynasties are self-reinforcing. "Poverty, unstable environments, lack of education and child-rearing knowledge, and lack of emotional and instrumental social support, as well as parental personality and psychopathology, powerfully influence parenting behavior (Deater-Deckard, Sewell, Petrill, & Thompson, 2010, p. 76)." Many studies note that both parenting and the returns to parenting differ along many dimensions. These include race and ethnicity (Berlin, Ispa, Fine, Malone, Brooks-Gunn, Brady-Smith, et al., 2009; Jackson-Newsom, Buchanan, & McDonald, 2008; and Nomaguchi & House, 2013), family structure (Berger, 2007), household income (Lugo-Gil & Tamis-LeMonda, 2008; Berger, 2007; Spera, 2005), maternal educational attainment (Bluestone & Tamis-LeMonda, 1999), maternal work schedule (Grzywacz, Daniel, Tucker, Walls, & Leerkes, 2011), maternal mental health and IQ (Bluestone & Tamis-LeMonda, 1999; Deater-Deckard, et al. 2010; Baydra, Reid, & Webster-Stratton, 2003), and how parents were themselves parented (Chen & Kaplan, 2001). These associations raise concern that parenting inequality is a contributor to the intergenerational transmission of societal inequality (Carolan & Wasserman, 2015).

Education is the major public investment in children around the world, and in the U.S. approximately 90% of primary and secondary students are enrolled in public schools (NCES, 2018, Figure 1). Children's school experiences likely influences parenting in multiple ways, including cognitive and noncognitive investment crowd-out and crowd-in, endogenous responses to the child's developmental growth (Burton & Phipps, 2002), increased knowledge about child

development and learning, an expanded network of teachers, fellow parents, and other actors, and changes to family schedules and routines.

Our research quantifies the impact of children's school experience on parenting. We apply a well-known identification strategy to a very large sample of K-8 children. The istrategy leverages the exogenous variation in school tenure generated by cross-state policy differences, policy changes over time within states, differences in children's birth dates. In our case, effects are further identified (compared with the prior literature) by the random sampling of outcomes with respect to child age. Working from the dominant taxonomy of the child development literature, which posits four major domains of parenting, we estimate the effects of children's school tenure on indices of the domains, an index of a particularly beneficial style combining two domains, and a complete' index constructed over all domains. We also conduct analyses for heterogeneous groups by family structure and SES.

To preview our findings, beneficial parenting—a combination of increased affection and positive behavioral control—is increasing in school tenure-for-age for both reduced form and instrumental variable estimates for the entire sample. When we examine important subgroups we find effects that are quite heterogeneous. Only high-education mothers exhibit no parenting response at all to their children's school experience. Younger children, girls, younger siblings, and children in low-income households or with low-education mothers experience the most beneficial patterns of effects. Findings for boys, black and Hispanic children, first-born and only children, and children in two-parent households suggest a combination of increased positive behavioral control but also increased parent-child conflict. The parent-child relationship for younger siblings appears to improve most, while single mothers become more affectionate and less stressed.

Few studies have estimated the causal effects of any factors on parenting (Brooks-Gunn & Markman, 2005). Two studies of home visiting programs for very young children generated mixed evidence on their effectiveness. St. Pierre & Layzer (1999), in a rigorous evaluation of the Comprehensive Child Development Program, found no effect on parenting skills. In contrast, a randomized trial of Child FIRST, a home-based intervention focusing on parental warmth and positive parent-child interaction, found a reduction in maternal parenting stress and less involvement of child protective services (Lowell, Carter, Godoy, Paulicin, & Briggs-Gowan, 2011). Two studies found evidence of a positive causal effect of family economic resources on parenting. Berger (2007), controlling for child fixed effects, found that income and family structure affected the incidence of very poor parenting, and Epps & Huston (2007), leveraging the New Hope Project, found evidence that the experimental treatment, which increased employment and child care, improved parenting of boys. Two studies have attempted to assess the simultaneity of child behavior with parenting. Burton, Phipps, & Curtis (2002), using an IV approach, concluded that "observed parenting behavior is influenced both by stresses in the parent's life and by the child's behavior." In contrast, Aunola & Nurmi (2005) argued from longitudinal patterns that parenting caused child behavior but not *vice versa*. Limitations of these studies include small, non-representative samples.

Three studies analyze the effects of children's educational experiences on parenting, the specific topic of this paper. Gelber and Isen (2013) and Bitler, Hoynes, and Domina (2014) assessed the results of a nationally representative random assignment evaluation of Head Start enrollment on several indicators of parenting, as did a government report by Puma, et al. (2010). Head Start provides both quality early-childhood education and parent education and involvement outreach. Gelber and Isen (2013) found that parents of 3 and 4-year-olds randomly admitted to Head Start were more likely to establish TV-watching rules for their children, do enriching activities with them, and track the child's learning progress more closely than parents in the control group. Bitler, Hoynes, and Domina (2014) found that indices of parent-child closeness improved in the year of Head Start enrollment, while the parent was more likely to perceive the parent-child relationship positively at first grade. Puma Bell, Cook, and Heid (2010) found more reading to the child while they were enrolled in Head Start, less spanking in Kindergarten, and a reduction in "time outs" in Kindergarten and first grade.

Two studies have attempted to isolate the separate effects of the education and outreach components of early childhood programs on parenting. A random assignment of a particular preventive parenting curriculum to Head Start centers found that parenting skills were strengthened for mothers who initially displayed poor parenting (Baydar, Reid, Webster-Stratton, 2003). Brooks-Gunn & Markman (2005) found some evidence that parents of preschoolers became less "child-blaming" when children participated in a school-readiness intervention.

The existing literature on the effects of children's early education on parenting has limitations. Samples are small.[1] Each study addresses a narrow slice of the child population, i.e. very young children in special programs at high risk for poor development. While widely known, in fact Head Start provides only enough slots for 6% of 3-5-year-olds.[2]

Our work makes several important contributions to knowledge. At the most basic level, we add to the very small set of causal estimates of the effect of *any* factor on parenting. Our data set is superior insofar as it contains an expansive variable set, including not only demographic and socioeconomic characteristics, birth month-year, and state of residence, but parenting variables from the four major domains of parenting as they have been developed in the child development literature. We are able to examine a nationally representative sample of the U.S. child population as well as subgroups. Our sample sizes of 20,000-30,000 children (depending on specification) are many times those of the prior literature.

Our research complements and extends the works by Bitler, Hoynes, and Domina (2014) and Gelber and Isen (2013). Our K-8 setting has several differences with and some advantages over the Head Start setting. We contribute to knowledge of parenting of an older and wider age range

[1] Gelber & Isen and Bitler, Hoynes, and Domina (2014) conducted estimation on samples of fewer than 3,500 children. Baydar, Reid, and Webster-Stratton (2003) examined a sample of approximately 900 children.

[2] Calculated for 2016 from https://www.nhsa.org/files/resources/2017-fact-sheet_national.pdf and https://nces.ed.gov/programs/digest/d17/tables/dt17_202.10.asp. (2017 National Head Start Profile, National Head Start Association and Table 202.10: 3-5-year-old population in 2016).

of children. Public school is the most common educational setting, making our findings applicable to roughly 90% of U.S. children. In contrast to public school, age 3-5 care and education programs lack uniformity, while Head Start is of higher quality than the typical 3-5 care setting. By examining K-8 education, we are better able to hold curriculum, workforce, and quality constant, generating findings with greater external validity. Unlike Head Start, K-8 does not have an explicit parenting outreach component, enabling us to better identify the collateral benefits of children's schooling *per se.* We add to knowledge on the important public economics topic of the crowd-out of private child development investments by public investments. Finally, our detailed examination of effect heterogeneity adds to research on the role of parenting in economic inequality (Doepke & Zilibotti, 2019).

We also make multiple contributions to the body of literature that leverages school entry rules. First, this methodology has not been previously applied to parenting. Second, in studies of academic achievement, the students are typically tested on a given date in a particular grade. Some students perform better because they are more physically mature than others, giving rise to the "age-at-test" identification problem. Because the interview dates in our sample are randomized, the outcomes we study are orthogonal with respect to children's age and grade cohort, removing this major source of confounding bias. Lastly, we add further supporting evidence that inequality in home environments may help to explain the black-white and low-high SES achievement gaps across students (Elder & Lubotsky, 2009).

The paper proceeds as follows. The next section provides background on parenting and discusses how their children's K-8 experience may influence parents. The following section lays out our data and approach. We then present and discuss our descriptive statistics and our major estimation findings. The paper concludes with a summary and discussion of the findings.

Background

Parenting

Developmental psychologists refer collectively to parents' practices and the creation of the emotional climate in which parent-child interactions take place as "parenting" (Spera, 2005). A paradigm in developmental psychology defines the major domains of parenting as *affection, behavioral control, practices, and stress*.

Parental affection includes having fun with the child, praising the child, hugging and kissing the child, and doing special activities together (Brooks-Gunn & Markman, 2005). *Behavioral control* refers to parents' toolkit for achieving desired behavior. Positive behavioral control is characterized by clear rules and consistent enforcement. Rules' purposes are explained to the child, and the child's point of view is taken into account. Negative behavioral control (also termed "overreactive", "reactive," or "harsh" parenting) is characterized by unclear rules, inconsistent application, inconsistent responses to transgressions, lack of discussion, and coercive physical control like spanking. *Practices* are behaviors that parents use to socialize their children. These including helping with homework, reading time, attending school functions (Spera, 2005), car seat

use and cleanliness (Case & Paxson, 2002), and eating meals together (Fiese & Marjinksky, 1999). *Parenting stress* is the perceived difficulty of parenting and the parent's degree of frustration with their parental role and the parent-child relationship.

Affection and parenting stress govern the "emotional climate" of the parent-child relationship. Affection also enhances the effectiveness of the other parenting domains. Of all the domains, affection may be most amenable to policy (Brooks-Gunn & Markman, 2005). Affection varies with child age, race, family socioeconomic status, and maternal mental health. Systematic racial and socioeconomic differences in affection are well documented. White parents measure higher on affection scales than African American and Hispanic parents (Jackson-Newsom, Buchanan, & McDonald, 2008). Maternal depression is also associated with low affection (Arellano, Harvey, & Thakar, 2012).

Parenting stress has received much attention in the literature not only because of its role in emotional climate but due to its close association with depression, which also has an adverse association with parenting. Parenting stress is associated with 5-7-year old's maladaptive school strategies (Onatsu-Arvilommi, Nurmi , Aunola, 1998) and predicts future child neglect reports in poor families (Slack, Holl, McDaniel, Yoo, Bolger, 2004). Evidence suggests that parenting stress is changeable. Lowell, Carter, Godoy, Paulicin, & Briggs-Gowan (2011)'s evaluation of a randomized trial found that teaching parenting skills reduced reported levels of parenting stress. Parenting stress is highly interactive with the other parenting domains, but the interactions of parenting stress with parenting quality are ambiguous *a priori*. On the one hand, less effective parenting styles engender more conflict, increasing stress. However, expending more effort to parent better could also increase stress. Multiple studies find that parenting stress is higher for parents exercising poor behavioral control (e.g., Dooley & Stewart, 2007; Meteyer & Perry-Jenkins, 2009) as well as for parents who combine high behavioral control with low affection ("authoritarian"), which engenders more frequent parent-child conflict (Dixon, Brooks-Gunn, and Graber, 2008; Nomaguchi & House, 2013).

Parenting stress varies widely across groups. Nomaguchi & House (2013) find that African American and Hispanic mothers reported more parenting stress than white mothers of Kindergarteners and third graders. African American and Hispanic mothers reported more stress than whites due to both structural disadvantage (lower incomes, less education, and more single-parent families) and more authoritarian parenting values (Nomaguchi & House, 2013). Depressive symptoms, closely associated with parenting stress, were also much higher for African Americans than whites and Hispanics. Poor parents also experience greater parenting stress (Berger & Font, 2015). Evidence on parenting stress and maternal education is mixed (Nomaguchi & House, 2013). On the one hand, more educated mothers may have more stress due to higher standards of parental investment and greater work-family conflict (Hoff, Laursen, & Tardif, 2002), but they suffer less from existential financial worry and have better knowledge of child development. Structural disadvantage was associated with increased stress for low-education mothers (Nomaguchi & House, 2013).

Parents' *behavioral control* is important for children's socialization. The television schedule is an important regulator of sleep in adults (Hamermesh, Myers, & Pocock, 2008), and restrictions on children's nighttime viewing are consistent with having a bedtime, a beneficial practice (Case & Paxson, 2002). Behavioral control, although less amenable to manipulation than affection, appears to respond to formal interventions, (Asscher, Dekovic, Principe, & Hermanns, 2008; Puma, Bell, Cook, and Heid 2010). There are pronounced differences in behavioral control across race and SES groups. Spera (2005) found that whites scored highest for "rules and routine," followed by Hispanics and African Americans, and that African American mothers had rates of physical punishment that were 50% higher than Hispanics and whites. On the other hand, African American parents set more school-night TV rules (Robinson and Harris, 2013). Low-SES parents are more likely to enforce strict rules while failing to implement positive behavioral control strategies (Spera, 2005). However, low-income parents are inconsistent in their parenting and many fail to impose rules. Low-income parents' lack of restrictions on television (relying on television as a 'babysitter') predicted later criminal child neglect (Slack, Holl, McDaniel, Yoo, & Bolger, 2004). Finally, over-reactive parenting during the preschool years is associated with maternal depression (Arellano, Harvey, & Thakar, 2012).

Practices are specific activities that can be carried out regardless of parenting style, although having more practices is highly correlated with better parenting along other domains. The two aspects of practice available in our data are reading together and taking meals together. There is little evidence in the literature on practices. Darling & Steinberg (1993) found that affection and practices interact positively and that African-American families had lower incidences of family mealtimes.

The dominant paradigm (Baumrind, 1966), gives preeminence to the domains of affection and behavioral control. In Baumrind's typology, *authoritative* parents combine high affection with high behavioral control, while *authoritarian* parents combine low affection with high behavioral control. The other categories are inattentive (low affection and low behavioral control) and permissive (high affection and low behavioral control).

While the child development literature has expanded beyond rigid implementations of Baumrind's paradigm, the accumulation of evidence from a multitude of studies is that authoritative parenting is a hallmark of successful parenting, while authoritarian parenting is counterproductive. Since the literature suggests that both affection and behavioral control may be influence-able, it may be possible to engender more authoritative parenting.

While the majority of African American parents display an authoritative style, the incidence of the authoritarian style is higher for African Americans than whites (Raver, Gershoff & Aber, 2007; Bluestone & Tamis-LeMonda, 1999; and Jackson-Newsom, Buchanan, & McDonald, 2008).[3] In

[3] These differences may reflect different human capital production functions for children from different groups: Jackson-Newsom, Buchanan, & McDonald (2008) found that African American parents who displayed less warmth and Hispanic parents who displayed more behavioral control achieved similar adolescent developmental outcomes as whites who displayed more warmth and less behavioral control.

a twins study, higher-IQ mothers were less "reactive" to child behavior, a feature associated with less authoritarian parenting (Deater-Deckard, Sewell, Petrill, & Thompson, 2010).

A comprehensive review concluded that the primary types of parenting in low-SES households were authoritarian and over-reactive, while higher-SES parents were primarily authoritative (Hoff, Laursen, & Tardif, 2002; Spera, 2005). However, low-SES parents were also inconsistent in their behaviors and were more likely than others to also be inattentive (Spera, 2005). Maternal depression during the preschool years was also associated with inattention (Arellano, Harvey, & Thakar, 2012).

Mechanisms

Children entering school are exposed to a barrage of new social and cognitive challenges. School socialization is critical to learning success. Parenting has a major influence on the adoption of maladaptive problem-solving strategies that are associated with poor educational outcomes, including "helplessness, failure expectations, task-irrelevant behavior, lack of persistence, and the search for social support in the classroom setting (Onatsu-Arvilommi, Nurmi, & Aunola, 1998)." Children's externalizing behaviors (a cluster of related behaviors that includes antisocial behavior, conduct disorders, and general aggression; Campbell, Shaw, and Gilliom, 2000) are also a major impediment to learning (Asscher, Dekovic, Prinzie, & Hermanns, 2008).

Parenting may change because of the way that the child's school experience – both its timing and duration—affect development. The economics literature focuses on five major channels from schooling to child development: Critical and sensitive periods, the gift of time, tenure effects, and peer effects. A "critical period" is an optimal time for the introduction of new skills, while investment is relatively more productive during a "sensitive period" (Cunha & Heckman, 2007). Older children's school performance is advantaged by their greater physical development and accumulation of experiences, or the "gift of time" (Cook & Kang, 2018). "Peer effects" occur when classmates influence each others' performance. Kim (2001) and Houtenville and Conway (2008) found evidence of substitution of public investment in schooling for private nonpecuniary parental investments, including direct child care time and parenting effort with regard to children's education.

School also directly affects parents. School provides respite time, particularly for parents for whom childcare is less affordable (Cascio & Schanzenbach, 2013). Respite reduces parenting stress, which may lift other aspects of parenting. There is evidence that parents of very young children (ages 2-5) increase the quality of parent-child time when the child's time in non-parent care increases (Cascio & Schanzenbach, 2015, and Gelber & Isen, 2013). Therefore, the mere fact that the child spends increased time away from the parent may improve parenting. While the school schedule may engender more parent-child conflict, it might also be an impetus for more positive behavioral controls, such as setting bedtimes. School-work scheduling conflicts may increase parenting stress and make it more difficult to coordinate enough parent-child time. Finally, parents may learn more about child development and better parenting modes from the school and fellow parents.

Data, Variables, and Empirical Methods

Our primary data source is the Survey of Income and Program Participation (SIPP). The SIP has multiple advantages for this project. First, the SIPP discloses necessary birth date information, year and month. While SSA studies customarily rely upon exact birth day, school-eligibility-cutoff dates usually fall on the first or last day of a month, meaning that it is no more possible for parents to time the birth month than birth day to the school-eligibility date. Second, the SIPP collects information needed to compute school tenure. Third, except for lightly populated states, the state of residence is disclosed. The overwhelming majority of observations can be matched to state-level school-entry policies from published sources. Fourth, the SIPP's Child Well-Being Topical Module contains a variety of information about parenting.[4] Fifth, we pool multiple SIPP panels to obtain large samples of children.

The SIPP also has a major advantage over grade-cohort data sources, such as ECLS-K. Many studies of the influence of early school experience on development use test scores from grade-cohort data. A major limitation of this framework is that all observed students have the same school tenure at the time of the test. Thus grade-cohort data are best for estimating "early start" effects, but cannot provide tenure effects. There is variation in tenure in our data generated by the random assignment of households to sample periods. Another problem with grade-cohort studies is that when students are tested on the same date, they differ in age. An "age-at-test" or "maturity" effect upward-biases (downward-biases) the effect of school start age (school tenure for age) on cognitive development. Due to the random sample design of the SIPP, we can examine variation in parenting outcomes holding children's ages constant.

We combine child-level data from the SIPP with policy information on public-school-entry ages across the U.S. from a variety of sources. We restrict our analyses to children whose ages exceed their corresponding statutory school entry age. For instance, we analyze children aged older than 5 for the states with a school entry age of 5, because children younger than the statutory school entry ages have not yet been 'randomized' for school entry. We include state and time fixed effects in our empirical model to control for any selection introduced by this method. We delete household children older than 15 because this is the upper bound of the universe defined for the parenting questions.

Our sample draws from the 1996, 2001, 2004, and 2008 SIPP panels, which together cover the calendar years 1997, 1998, 2003, 2004 and 2009. Children are observed in the months of January, February, March, April, August, September, October, November and December. Thus all of the

[4] The module does not contain information on the child's emotional or cognitive development, aside from such broad information as being held back in school, serious health conditions that may delay development, and functional limitations.

children were in school at the time that the parenting questions were asked. The 2008 SIPP is the last panel to contain the child topical module.

Explanatory Variables

The key explanator is school tenure. The SIPP collects information on the age in months at which a child started kindergarten or first grade. Our original intention was to use this information in combination with the exact year and month of birth to compute actual months of school tenure in a straightforward way. However the information on age in months at school entry proved of little use.[5]

We instead imputed months of school tenure as of the interview date from information on current (in-sample) grade attended, grade repetition, and the interview reference month. Because we lacked information on the first day of school each year, we followed all the other U.S. school start studies in assuming a first day of school of September 1, regardless of state of residence. For example, if a child was in second grade as of the interview date and had started school by attending kindergarten, then the child was assumed to have stayed in school for 2 years (kindergarten and first grade) plus the difference between the interview month and September. The measure of school tenure was increased by 12 months for every grade repeated.

In addition to (statutory) school tenure, we controlled for characteristics of children and mothers affecting parenting. Parents' interactions with children evolve as children age. For example, praising small children for doing mundane tasks is developmentally appropriate but is less so as such tasks become expected. Continuous months of age and age-in-years dummies are included to capture the effect of children's month-of-age within each year-in-age group. We include child, mother, and household explanators in all specifications. These include sex, race (White, Black and Hispanic-origin), marital status (married and never married), and education level (less than high school, high school graduate and some college). All of our specifications include state and year fixed effects to account for secular differences between states and trends over time that may be correlated with school policies. Our sample includes siblings and we cluster errors at the household level.

Construction of the Instrument

To construct the statutory minimum number of months that a child must have been in school as of the interview date, we first matched compulsory school start age and cutoff date, defined for each state, to each sample child by the state of residence and the year of allowed school entry, inferred from the sample year and month. Statutory start ages for the first grade were compiled from

[5] This appears to be a problem with the SIPP's imputation process, because almost all entry ages are coded at exactly 60 months.

multiple years of *The Digest of Education Statistics*, an annual report of the National Center for Educational Statistics (NCES). Age-date cutoffs are from Bedard and Dhuey (2007).

The Digest of Education Statistics provided information on compulsory schooling policies of the states from 1989 to 2010, but there were some missing years.[6] We compared digests before and after each missing year and assumed that the statutory school start age was the same as the immediately preceding year if the start ages were the same in the years just before and just after the missing year.[7] In other cases, the school start age changed within the missing interval. Because we cannot say when the change occurs or whether there is a different age limit in the intervening year, we coded policy information for the intervening years to missing.[8]

The compulsory school start ages provided in the NCES report are first grade start ages but 95.1% percent of children in our regression sample have attended or enrolled in kindergarten (the figure is 85.7% in the raw data, which includes missing data for important variables). Since policy information on kindergarten start ages is unavailable, we assume that the compulsory kindergarten-start age is exactly one year younger than the compulsory first grade start age for the same state and year.

We used the birth date information (year and month of birth) in the SIPP combined with our policy data on school age of entry rules, the interview date, grade repetition, and an assumed school year running from September to construct the statutory maximum months that each child could have been in school when they appear in the sample.

Construction of Parenting Indices

We organize the questions from the SIPP's child well-being module into the four 'domains' of parenting*, affection, practices/time, parenting stress, and behavioral control*.

Affection is indicated by the number of times a parent had fun with the child in the past week and the number of times the parent praised the child in the past week. Permitted responses are (1) Never, (2) About once a week or less, (3) A few times a week, (4) One or two times a day, and (5) Many times each day. These variables are available for both fathers and mothers. Note that both of these variables are reported separately for mothers and fathers.

Practices are frequencies of a parent reading to the child, eating breakfast with the child, and eating dinner with the child. Each of these activities is reported as the number of days in the last week

[6] The missing years are 1990, 1991, 1993, 1995, 1998, 1999, 2001, 2003 and 2005.
[7] For example, the compulsory school start ages of Arizona in both 1989 and 1992 are 8 but 1990 and 1991 were missing. Therefore, we assumed that the compulsory first grade start ages of Arizona in 1990 and 1991 were 8.
[8]For example, the compulsory start age in Arizona changed from 8 to 6 between 1992 and 1994. Following our procedure, 1993 policy was coded 'missing.'

that the activity occurred (responses range from 0-7). All of these variables were reported for both mothers and fathers.

Four questions indicate *parenting stress*. Respondents were asked about the frequency of maternal feelings that the child is hard to care for, that the child bothers them, that they have given up their own life to care for the child, and that they are angry with the child. These questions, which indicate the degree of a mother's dark outlook on family life, may reflect underlying maternal depression, feelings of maternal efficacy, or both. Responses are coded on a four-category scale of (1) Never, (2) Sometimes, (3) Often and (4) Very often.

Questions about television viewing capture *behavioral control*. These questions cover whether viewing specific shows is limited, whether the total amount of television time is limited, and whether there are limits on how late at night television programs may be viewed. Each of these questions has a "Yes/No" response. There is no distinction between the parents.

We aggregated the individual variables into the four parenting indices and a total parenting index following the method used by Gelber and Isen (2013). The process is explained in detail in the Appendix.

Findings

Summary Statistics

Table 1 presents descriptive statistics for the entire sample and subsamples. The confidence level for t-tests of differences between each mean and that in the row above is indicated. We first discuss the major parenting domains, followed by tenure and policy variables, and lastly the exogenous control variables.

Parenting Indices

Descriptive staticistics for affection are all consistent with findings in the prior literature. White race is positively associated with affection[9]. Affection is lower the lower is income and maternal education, and affection is lower in single-parent families. Affection also varies with children's characteristics. Average affection is lower for boys and is lower for younger siblings than for first-born and only children. Affection declines with age. Examination of the underlying components of the affection index reveals that fathers are on average less affectionate than mothers for all groups (not reported in table; see electronic appendix for descriptive statistics of the underlying variables for all indices).

Our findings on behavioral control also comport with prior literature. Black families exert above-average positive behavioral control, while Hispanic families' control is below-average. Positive behavioral control in high-income households exceeds that in low-income households, while lone mothers exert less positive behavioral control than when both parents are present. There is a very large gap between the degree of positive behavioral control exercised by higher and lower

[9] We find Hispanic least affectionate. Not sure if that fits with prior lit.

education mothers, with low-education mothers exerting far less. As with affection, positive behavioral control displays a maturity pattern, declining with age.

The third column presents descriptive statistics for the authoritative parenting style index, which combines the factors of affection and behavioral control. Looking in detail at patterns of affection and behavioral control, parenting of children of Black and Hispanic mothers is more "authoritarian" than the average, with below-average affection and above-average behavioral control, while high income parents, parents in two-parent households, parents of girls, and parents of young children have a more authoritative style than their counterparts. High-education parents are more "permissive", while parents of later-born children and older children are more inattentive.

With regard to practices, black mothers have a lower practices index, high-income households have a higher index, two-parent families are more practice-intense, but higher-education mothers are less practice-intense. There is a life-cycle pattern to practices, with the index declining monotonically in age. The practice index is significantly lower for later-born than first-born sibs and singletons.

Descriptive statistics on parenting stress also comport closely with the prior literature, with a positive association with indicators of socioeconomic stress. Black mothers[10], impoverished mothers, and lone mothers all report higher stress levels than their counterparts. Exceptionally, low-education mothers report substantially less stress than high-education mothers, possibly because higher-education mothers are more demanding of themselves in their parenting and have more work-life balance problems.

Low-education mothers' low stress, combined with low affection and low behavioral control, is consistent with a greater incidence of the inattentive parenting style. Parenting boys is more stressful than parenting girls, and parents report more stress with younger siblings than older siblings/only children. In contrast with other indices, parenting stress has no clear trend in child age.

The final "complete" index, constructed from all parenting domains, assumes that parenting improves as affection, behavioral control and practices are greater and as parenting stress is lower. Averages are attenuated towards zero for this measure relative to the authoritative score.

School Tenure and Exogenous Explanators

While there is wide variation in states' school policy variables in practice a fairly narrow range of policies predominates. Table 1b shows how tenure and the policies are reflected in our samples. Two-thirds of sample children live in states with September (44%) and December (22%) birthday cutoffs. Over half (56%) face a Kindergarten entry age of 5, 28% of age 6, and 13% of age 4 and just 3% age 7. The average child in our sample is computed to have acquired an additional 5.8 months, or 9.7%, more months of K-12 tenure than the required minimum, as we have calculated it.

[10] Recall that parenting stress is only available for mothers.

Finally, table 1c presents descriptive statistics of the background factors.

School Entry Patterns in the SIPP

To our knowledge, no published research has implemented the mandatory schooling strategy in the SIPP. Therefore, we compare the school-start behavior of SIPP sample members against the Early Childhood Longitudinal Study-Kindergarten cohort (ECLS-K). The latter has been used in many studies using this strategy. We compare our data and calculations to the descriptive information reported for the ECLS-K in Aliprantis (2014).[11]

Although we use the continuous tenure variable in our regression analyses, each child is placed in a discrete category for purposes of producing the figure. Appendix A describes how this was done in light of possible measurement error arising from the imputations of school start age necessitated by the SIPP. It is important to note that random measurement error in our tenure variable is purged by the use of instrumental variables.

Figure 1 illustrates shares of children classified with early, on-time, and late school start status by the number of months between the birth month prior to the school entry age determination month and the birth month. The left-hand panel displays the rate of categorizations by month obtained by implementing our method in the SIPP, while the right-hand-side panel displays Aliprantis's (2014) calculations from the ECLS-K. Both sets of findings on early and late entrants comport with the intuition that the closer to the cutoff is the child's birth month, the more salient entry delay or acceleration is for parents. This is revealed by downward and upward trends in early and late starts, respectively. The key difference is that our computed incidences of late and early entries are higher than in Aliprantis (2014), especially in birth months more distant from the cutoff month. While our incidences of on-time entry is correspondingly flat across the months, ranging in a band from roughly 63%-73%, the on-time incidence in the ECLS-K is over 95% at 12-6 months out before dropping below 90% at 3 months out and finally to 74% at one month out.

The difference in rates of early entries is particularly striking but is easily explained. Most researchers working with ECLS-K (Aliprantis, 2014; Datar & Gottfried, 2015; Elder & Lubotsky, 2008) assume a uniform Kindergarten entry age of 5 instead of applying the statutory entry ages. Because it is rare for children to start Kindergarten before age 5, this all but eliminates the possibility of discovering early entrants.

A child's school tenure is potentially correlated with unobserved characteristics also affecting parenting. If a more caring parent is more protective, for example, it may be that parents who red-shirt their child (delay their entry to a grade) are more affectionate. For that reason, we instrument actual tenure with the child's expected minimum school tenure given state rules and the child's age. We estimate both reduced-form and instrumental variables estimates.

Every estimation equation includes actual tenure in school (which may be proxied or instrumented by minimum school tenure as determined by statute), age in months, dummy variables in year-of-age, sex of the child, maternal race dummies (white, black, or Hispanic), maternal marital status

[11] The data source for Figure 1 is Table 3 of Aliprantis (2014).

(never married, currently married, divorced/widowed/separated), maternal education (less than high school, high school, some or more college). We include fixed effects for survey month, survey year, state, and state-survey year interactions. Standard errors are clustered at the household level.

First Stage Results

Table 2 presents the first stage findings for the instrumental variables estimation. Because child age is well-controlled, the coefficient of the instrument is interpreted as the increase in tenure that is in addition to the passive increase in tenure due to aging. We estimate that a one-month increase in statutory school tenure increases actual attainment by 0.348 months. Aside from verifying the strength of the instrument (F=531.26 for the entire sample, the F-statistic ranges from 78.86 to 409.40 across the subsamples), the regression findings highlight some characteristics that increase tenure-for-age above the minimum mandated. Boys have greater tenure-for-age, as do white children, children living with both parents, and children with less-educated mothers. Note that this increased tenure is the net effect of red-shirting, green-shirting, and grade repetition. The findings of our first stage comport well with the prior literature (e.g., see Cook & Kang, 2018).

Estimation Findings

Table 3 presents OLS, reduced-form, and instrumental variables estimates of the effects of school tenure on the four indices of the parenting domains for the full sample. Each cell reports the coefficient from a regression of a measure of school tenure on a parenting index (the full set of findings for all the explanators is provided in an electronic appendix). Tenure effects are not estimated to differ from zero at standard confidence levels for any index when OLS is used.

In contrast, reduced-form estimates of tenure effects on affection, behavioral control, and the authoritative parenting style are all positive, while estimates of practices and parenting stress are small in absolute magnitude and insignificant. The effect on the total index of parenting is marginally significant.

An advantage of using reduced-forms is the avoidance of potential problems with the nonlinearity of the instrument. However, this does not turn out to be an important concern in practice, as our 2SLS and reduced-form estimates are qualitatively similar across all of specifications for all groups. Therefore, we also provide 2SLS estimates in Tables 3 and 4. 2SLS findings in Table 3 are qualitatively similar to their reduced-form counterparts: higher tenure increases both affection and behavioral control, their combination in the authoritative index, and the index constructed over all the domains. An additional year of school tenure increases affection and behavioral control by 0.127 and 0.289 standard deviations, respectively. The absolute magnitudes of effects on the practices and parenting stress indices are larger for the IV case, but are not estimated to differ significantly from zero.

Comparing the OLS, reduced form, and IV findings suggests that parents who red-shirt (reduce tenure-for-age) their children are selected to be higher-scoring on affection and behavioral control indices. That is, red-shirting parents are selected on being more authoritative in style.

Heterogeneity & Robustness

Estimation of OLS, reduced form, and 2SLS specifications was carried out by heterogeneous subgroup. We discuss the 2SLS findings for school tenure, shown in Table 4, which continue to be qualitatively similar to the corresponding reduced-form estimates.

Findings: Heterogeneity of effects

The effect of school tenure on practices, not estimated to differ significantly from zero for the entire sample, is robustly insignificant across all of the subsamples we explore, while effects on behavioral control and affection are frequently positive. In contrast to the findings for the entire sample, effects on *parenting stress* are significant for a large minority of the groups. About half of the groups move decisively towards more authoritative parenting, in the sense that affection and behavioral control increase together. In one case (single mothers), the increase in authoritative index is driven by increased affection only. The authoritative parenting scores of other groups (children who are boys, older, and first-born; whose mothers identify as black or Hispanic; who live with both parents and in high-income families) rise due to increased behavioral control alone. With the exceptions of highly educated and lone mothers, the largest effects of school tenure are on behavioral control.

Increased authoritative parenting of girls, younger and older children, children whose mothers are white, and children in low households all occur in the absence of a stress response. About half the groups experience some kind of stress response. Parenting stress declines with tenure for younger siblings and children living with mothers only. Prior literature suggests that parenting stress is most likely to increase when increased behavioral control engenders more conflict. In the absence of a change in affection, this suggests that the parenting response to school (a behavioral control change alone) may constitute something of a parental "crack down" on boys, first born and only children, black and Hispanic children, and children in two-parent households, whose parents' stress levels increase.

Highly educated mothers stand out from all the other groups, the lone subsample for which no coefficients differ significantly from zero (point estimates are also small in magnitude). Because these mothers' average parenting scores are high (Table 1), the findings are unlikely to reflect a lack of concern about the child's school experience. More plausibly, these families possess multiple advantages that serve to reduce school tenure's importance. First, more highly educated mothers may learn little new about child development through this channel; hence there is no reason to adjust strategy. These parents' educational and financial resources may also direct their child's progress through school in a way that does not necessitate important changes in parenting strategies. For example, more educated parents can pass on constructive learning approaches, and their superior financial resources can purchase investments (e.g., enriching activities and after-school care) that substitute for parenting investments. Finally, the random assignment of tenure is also a random assignment to less or more pre-school time in early childhood. The superior school-readiness of children of more educated mothers makes the transition to school more seamless (Elder & Lubotsky, YYYY).

The other group that is qualitatively different from the others is single mothers. Authoritative parenting increases due to affection only, accompanied by a large drops in stress.

Discussion

We estimated the effects of children's school tenure on parenting, applying the school entry age strategy to construct an exogenous measure of tenure. Investigating our imputations of early, on-time, and late entry to school with the SIPP, we found that differences between our computations and those with the ECLS-K could be explained by differences in the treatment of statutory school entry age and the imputation of school start age necessitated in the SIPP. Indices of affection, behavioral control, authoritative parenting, practices, stress, and a complete index of all the parenting variables, were implemented following Gelber & Isen (YYYY). OLS estimates understated the impact of school on parenting, consistent with positive selection in parenting for lower tenure-for-age children. Our reduced form and IV estimates indicate salutary effects on parenting on average: affection and positive behavioral control rose, with no evident change in parenting stress. We then proceeded to estimate effects for diverse stratified subsamples. The parenting of just one group—highly educated mothers—was estimated to be completely unresponsive to their children's school experience.

Among the most interesting findings were those with respect to sex and sibling role of the child. Boys experienced more authoritative parenting through increased behavioral control, with accompanying increased parenting stress. Boys on average have more difficulties with school socialization than girls, and our findings suggest that parents may respond to increases in their externalizing behavior by "cracking down." While their increased stress may reflect ineffective methods, it may also be the result of changes in boys' behavior caused by school. In contrast, increased behavioral control of girls was accompanied by increased affection and no change in parenting stress. Taken together, these findings indicate that greater tenure-for-age widens the "parenting gap" between boys and girls to girls' favor. This adds to some existing evidence that formal education disadvantages young boys. School also affects the treatment of older and younger siblings. At baseline, younger siblings receive less active parenting and attention (i.e., lower affection and behavioral control, with a lower practices index) and yet their associated parenting stress is greater. School experience narrows the gap in authoritative parenting and closes the parenting stress gap between siblings.

Effects of school experience on parenting of white children are qualitatively different than those for blacks and Hispanics. Black parents exercise more behavioral control with lower affection at baseline (sometimes termed "no nonsense" parenting), as do Hispanics. School experience widens their behavioral control gap with whites. School appears to be extremely stressful for black and Hispanic parents, who experience the largest stress effects of any groups that we examine. Prior evidence indicates that parenting stress of blacks is greatly increased when children enter school, as they are no longer able to effectively shelter their child from direct experience of racism.[12]

[12] In the case of affection, the point estimate for Hispanics and blacks are reasonably large but imprecisely estimated.

In contrast with high education mothers, who are insensitive to school tenure, low-education mothers' parenting becomes more authoritative, with the largest increase in behavioral control of the groups. Their significantly increased parental stress suggests that these parenting gains may be made with some effort, and/or that their behavioral controls are less effective. School experience has a very large beneficial impact on the warmth of the parent-child relationship for lone mothers. Children of lone mothers experience the largest effect of school tenure on affection—roughly double that of the largest effects in other groups—*and* a large reduction in stress. These effects are likely driven by lone mothers' greater need for the affordable respite provided by school. Two-parent families exhibit a pattern similar to low-education mothers, in which parenting becomes both more authoritative and stressful.

Finally, the difference in effects for older and younger children speaks to the underlying mechanics of these estimates. Significant effects for young children that later fade out reflect transitory events, such as early school socialization, while lasting effects of tenure may be attributed to "permanent" differences associated with tenure-for-age, such as the student's age rank within their class. Our findings indicate that young children with higher tenure-for-age receive more affection from their parents. Since this effect fades away by middle school, it is possible that this supernormal affection is a response to differential effects on early school socialization for children who begin school earlier. It is not possible to say whether these effects are compensatory or not. On the one hand, young children who have high tenure for age may have greater school socialization problems that elicit compensatory parental investment. On the other hand, these children may develop faster at first by being more challenged than age peers by being young-for-grade (Aliprantis, 2014), in which case greater parental affection could be elicited through a positive feedback loop. Effects of tenure on behavioral control endure into middle school. Although effects for 12-15-year-olds are less than half the magnitude of those for children aged 8-11, they are still estimated to be significant and consequential in magnitude. [1] For example, it may be expected that a 5-year-old in Kindergarten has a more rigid bedtime than a 5-year-old in day care, but our findings also suggest that a 13-year-old in 9th grade is more likely to have a bedtime than a 13-year-old in 8th grade. This suggests that early establishment of behavioral controls may be more lasting than later establishment.

According to the child development literature, the most important determinant of child outcomes is affection. If we were forced to judge the collateral benefits of school on parenting by a single outcome, then our estimates indicate that tenure is most beneficial for the average child, elementary-age children, girls, younger siblings, white children, children of single mothers, children of low-education mothers, and children in low-income households.

Positive behavioral control is considered a close second in beneficial development to affection. By this standard, with the exceptions of lone mothers and more-educated mothers, school tenure again has large positive collateral benefits. While it is not surprising that parents respond to the new rigid schedule and greater demands on children of school with new rules, it is somewhat surprising that earlier rule-setting has lasting effects on parenting of children ages 12-15.

Our research findings comport very well with the prior literature on parenting and child development, lending additional credibility to the notion that school has important impacts on parents as well as children that was found in earlier studies of preschoolers. They also comport well with prior research on cognitive development in children that employs the school start strategy. Analogous to that literature, we find that young children from varying backgrounds start out at widely differing degrees of advantage in developmentally stimulating resources, and that these early resources affect trajectories of achievement going forward. Our findings contribute new arguments for reversing the "graying" of Kindergarten or, better yet perhaps, developing a universal Pre-K education system. The estimates presented here predict that such policies may generate large collateral benefits, in both absolute terms and by reducing inequality, by improving parenting.

Appendix A

Aliprantis (2014) pointed out that children born in moths close to the cutoff months are likely to be red-shirted because they are relatively young when starting kindergarten on time. Following Aliprantis (2014), we calculate how the school (or kindergarten) entry rates differ by the month before the cutoff month in our SIPP sample. A child whose actual school start age is younger than the compulsory school start age is considered as "early entrance" or "green-shirted", and a child whose actual school start age is older than the compulsory school start age is considered "late entrance" or "red-shirted". A child is considered as "early entrance" ("late entrance") if the child starts school at least one year before (after) the statutory school start age. Otherwise, children are considered to have entered school on time.

We decided to define "early entrance" and "late entrance" as a year gap, not a month gap, because our cutoff dates and imputed actual school start ages are the month level, not the day level. For more detailed explanations, we consider two examples. Assume that the compulsory school start age is 5-year-old or 60-month-old in both examples. First, if the actual cutoff date is September 15th (e.g., Iowa), then we designated the cutoff as September and a child born in September is considered to miss the cutoff. In this case, the compulsory school start age of this child that we imputed is 71-month-old (60+11) since the child has missed the cutoff and entered school next year. However, if this child had been born before September 15th, which is the actual cutoff date, then this child did not miss the cutoff and his/her compulsory school start age should be 60-month-old. If the child actually has started school at 60-month-old, this child has entered the school on time but he/she is considered to start school 11 months earlier than the imputed compulsory school start age, 71-month-old. In the worst case, there is an allowable error of 11 months and we define the early entrance as a year gap.

Second, we exploited the survey month in order to find the actual school start age. For example, if the survey month is October and a child is in Kindergarten, then the actual school tenure of this child is 1 month. The actual school start age of this child is the current age in months as of survey date subtracted by 1 month. Consider the case in which the survey date is October 15th, th2 month child's birth date is August 14th, and the school opening day is September 1st. Then, this child started school at 60-month-old but his/her imputed actual school start age becomes 61-month-old because his/her current age is 62-month-old at the survey date. Therefore, we allowed a gap of

several months when defining the late entrance. In our sample, the maximum error that is thought to be due to the survey month is at most 2 months (most are one month and some are 2 months).

We find that children are more likely to delay their school entries, as children's birth months are closer to the cutoff months. Among children who were born one month before the cutoff month, 24.93 percent of the children started school late, and the late entry rate is decreasing to 6.36 percent if children were born twelve months earlier than the cutoff month. Aliprantis (2014) proposed dropping the red-shirted observations due to non-monotonic IV. We do a robustness run after dropping all these endogenous observations.

Both red and green-shirting are estimated to be more common in the SIPP even though we define the red and green-shirting generously as one year gap because the ECLS-K considers 5-year-old as a cutoff age (Aliprantis, 2014; Datar & Gottfried, 2015; Elder & Lubotsky, 2008), while the compulsory kindergarten/school start age varies from 4 to 8 by year and state in our sample. Even if the compulsory kindergarten/school start age varies from 4 to 8, 74.25 percent of children started school/kindergarten at 5 or 6 years old in our sample. 41 percent of children are red-shirted among children whose compulsory kindergarten/school start age is 4 years old, and 63 percent of children whose compulsory school start age is 7 or 8 years old are green-shirted.

Appendix B

Since the majority of parenting variables in the SIPP data are ordered variables, their magnitudes are not comparable with each other. In order to make the variables comparable and estimate the effects at the parenting domain level, we constructed normalized indices for our parenting domains following Gelber and Isen (2013). The process consists of two parts: one is to find the aggregated coefficient estimates and the other is to find the appropriate standard errors.

First, we normalized the original parenting variables by subtracting the mean and dividing by the standard deviation in the regression sample $\left(\frac{y_i-\bar{y}}{sd_y}\right)$ and we ran IV regressions using these normalized parenting variables. The effect of school tenure on an index of each parenting domain is computed by averaging these coefficient estimates: $\sum\frac{1}{J}\left(\beta_j/sd_j\right)$. J refers to the total number of parenting variables in a parenting domain, β_j is the coefficient estimates of the j^{th} parenting variable estimated from the IV regression of the normalized parenting variable y_j, and sd_j is the standard deviation of the j^{th} parenting variable. Standard errors are found by pooling all samples of the normalized parenting variables by parenting domains. We ran an IV regression with this pooled sample to calculate a standard error. The standard error is clustered at the household level. This process was repeated for each parenting domain and for the entire sample.

For a better understanding, consider a domain of "affection" as an example in which four parenting variables are included: frequency of fun with mothers, frequency of fun with fathers, frequency of praise from mothers, and frequency of praise from fathers. The effect of school tenure on the index of affection is calculated by running separate IV regressions of these four normalized parenting variables. The aggregated coefficient estimate is the average of these four coefficient estimates weighted by the inverse of their standard deviations. In order to find a standard error, we pooled four samples of the normalized parenting variables and ran a regression with this large pooled sample. The number of observations presented in the result tables is this pooled sample size.

This analysis allows us to compare the magnitudes of parenting variables and estimate an aggregate measure of the effect of school tenure on parenting behaviors according to our domains but it has limitations that the equal weight is assigned on the outcome variables and that it is not appropriate to normalize ordered categorical variables (Gelber and Isen, 2013).

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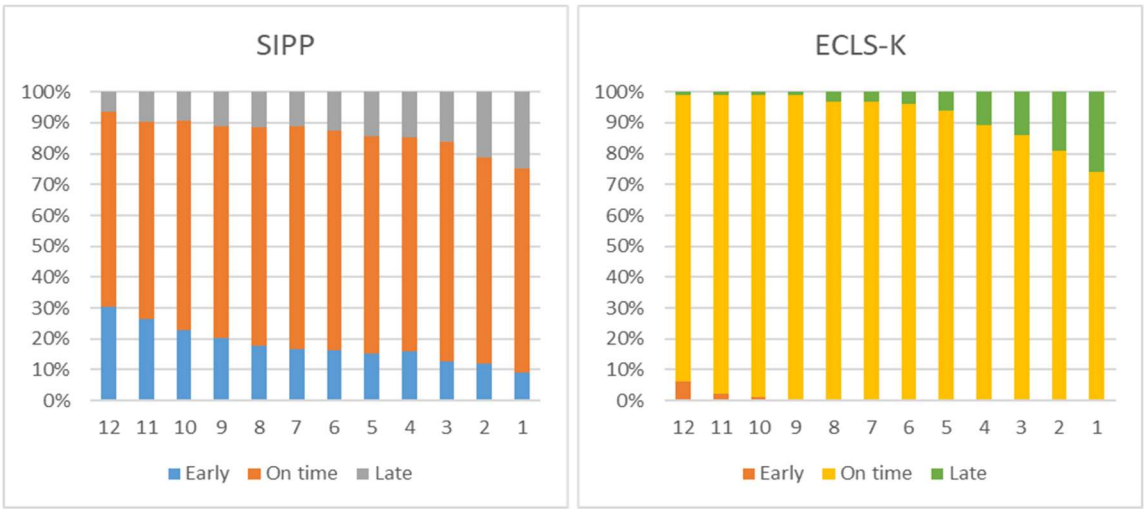
Figure 1: Comparison of Early, On-time, and Late school entry incidences in the SIPP and ECLS-K, by birth month's relationship to age determination month for entry.



Notes: Source for left-hand-side panel is the authors' computations from the SIPP. Source for right-hand-side panel is Aliprantis (2014), Table 3.

Table 1a: Descriptive Statistics of the Parenting Indices for the Complete Sample and Selected Subsamples

	Affection	*Behavioral Control*	*Authoritative*	*Practices*	*Parenting Stress*	*Parenting*
All	0.00 (1.00) [98,140]	0.00 (1.00) [83,976]	0.00 (1.00) [98,140]	0.00 (1.00) [122,491]	0.00 (1.00) [111,968]	0.00 (1.00) [416,575]
White[b]	0.02*** (0.98) [79,746]	0.00 (1.00) [66,081]	0.01 (0.99) [145,827]	0.01 (0.98) [99,518]	0.00 (1.00) [88,108]]	0.01*** (0.99) [333,453]
Black	-0.10*** (1.08) [11,640]	0.03*** (0.99) [12,303]	-0.04*** (1.03) [23,943]	-0.12*** (1.08) [14,447]	0.02*** (1.03) [16,404]	-0.04*** (1.03) [23,943]
Hispanic	-0.32*** (1.14) [7,638]	-0.03*** (1.03) [6,555]	-0.19*** (1.10) [14,193]	0.01 (0.98) [9,164]	-0.01 (1.00) [8,740]	-0.08*** (1.05) [32,097]
Low income	-0.07 (1.03) [54,238]	-0.02 (1.01) [48,435]	-0.04 (1.02) [102,673]	-0.01 (1.00) [67,028]	0.04 (1.02) [64,580]	-0.01 (1.02) [234,281]
High income	0.09*** (0.96) [42,948]	0.03*** (0.98) [34,719]	0.06*** (0.97) [77,667]	0.01*** (0.99) [54,231]	-0.05*** (0.96) [46,292]	0.02*** (0.98) [178,190)
Low ed	-0.13 (1.06) [39,760]	-0.11 (1.07) [31,974]	-0.12 (1.03) [74,734]	-0.03 (1.01) [49,051]	0.01 (1.02) [46,632]	-0.06 (1.04) [170,417]
High Ed	0.09*** (0.95) [53,380]	-0.01*** (0.99) [65,336]	0.08*** (0.94) [107,682]	0.02 (0.99) [73,440]	-0.01** (0.99) [65,336]	0.04*** (0.97) [246,158]
Lone mother	-0.05 (1.03) [13,828]	-0.05 (1.04) [20,742]	-0.05 (1.04) [34,570]	-0.10 (1.02) [17,171]	0.10 (1.08) [27,656]	-0.01 (1.05) [79,397]
Mother & Father	0.01*** (0.99) [84,312]	0.02*** (0.99) [63,234]	0.01*** (0.99) [147,546]	0.02*** (1.00) [105,320]	-0.03*** (0.97) [84,312]	0*** (0.99) [337,178]
Boy	-0.02 (1.00) [49,718]	0 (1.00) [42,674]	-0.01 (1.00) [92,342]	0 (1.00) [49,718]	0.02 (1.01) [56,832]	0 (1.0) [211,226]
Girl[a]	0.02*** (1.00) [48.422]	0 (1.00) [41,352]	0.01*** (1.00) [89,774]	0 (1.00) [48,422]	-0.02*** (0.99) [55,136]	0 (1.0) [205,349]
First-born	0.05 (0.97) [41,312]	0.04 (0.96) [34,941]	0.05 (0.97) [76,253]	0.03 (0.98) [51,234]	-0.02 (1.00) [46,588]	0.03 (0.98) [174,075]
Later-born	-0.03*** (1.01) [52,880]	-0.03*** (1.03) [44,529]	-0.03*** (1.02) [97,409]	-0.03*** (1.01) [66,237]	0.01*** (1.00) [59,372]	-0.02 (1.01) [223,018]
Younger than 12	0.07 (0.97) [59,496]	0.09 (0.93) [50,808]	0.78 (0.95) [110,304]	0.04 (0.99) [83,847]	0.00 (1.00) [67,744]	0.05 (0.98) [261,895]
Age 12-15	-0.11*** (1.04) [38,644]	-0.14* (1.09) [33,168]	-0.13*** (1.06) [71,812]	-0.09*** (1.02) [38,644]	0.00 (1.00) [44,224]	-0.08*** (1.03) [154,680]

Notes: Sample size is 27,992 for all variables except the parenting indices, which are constructed by pooling all responses to individual factors. */**/*** indicates whether a t-test of the difference in means is rejected at 90%, 95%, or 99% confidence level. The difference in means is from that in the row above. Descriptive statistics for the variables underlying the indeces are available in the electronic appendix.

Table 1b: Tenure-related variables, entire sample

Variable			Variable			Variable	
Months of school	65.38 (28.90)		Birth date cutoff is August	0.02 (0.15)		State first-grade start age of 5	0.13 (0.33)
Minimum months	59.57 (27.50)		Birth date cutoff is September	0.44 (0.50)		State first-grade start age of 6	0.56 (0.50)
Birth date cutoff is January	0.04 (0.20)		Birth date cutoff is October	0.20 (0.40)		State first-grade start age of 7	
Birth date cutoff is Feb	0.03 (0.17)		Birth date cutoff is November	0.01 (0.09)		State first-grade start age of 8	
Birth date cutoff is Jun	0.01 (0.11)		Birth date cutoff is Cutoff is December	0.22 (0.41)			
Birth date cutoff is July	0.03 (0.16)						

Notes: Sample size is 27,992.
*/**/*** indicates whether t-test of difference in means rejected at 90%, 95%, or 99$ confidence level of the mean in the corresponding statistic in the row above.

Table 1c: Descriptive statistics for other controls, entire sample

Variable					
Child's months of age	132.99 (27.64)		Mother married	0.74 (0.44)	
Boy	0.51 (0.50)		Mother never married	0.10 (0.30)	
Mother is white	0.79 (0.41)		Mother less than high school	0.14 (0.35)	
Mother is black	0.15 (0.35)		Mother HS grad	0.28 (0.45)	
Mother Hispanic	0.08 (0.27)		Mother some college	0.17 (0.37)	

Notes: Sample size is 27,992.
*/**/*** indicates whether t-test of difference in means rejected at 90%, 95%, or 99$ confidence level of the mean in the corresponding statistic in the row above.
Parenting indices sample sizes differ due to pooling of all valid responses.

Table 2: First stage OLS estimates of years of school tenure, complete sample

Variable	**Coefficient (standard error)**		**Variable**	**Coefficient (standard error)**
Minimum tenure by statute	0.348*** (0.015)		*Mother less than high school*	-0.323 (0.217)
Months of age	0.323*** (0.022)		*Mother high school graduate*	-0.417*** (0.153)
Female	0.216* (0.112)		*Mother some college*	0.176 (0.160)
Mother white	-0.689*** (0.246)		*Two-parent household*	-0.260* (0.158)
Mother black	-0.283 (0.315)		*Mother never married*	0.274 (0.253)
Mother Hispanic	0.351 (0.237)		*Year of age dummies*	YES
F-Statistic	531.26			
Observations	27,992			

Notes: Coefficient estimates with standard errors in parentheses. Errors are clustered at the household level. *p<0.10; **p<0.05; p***<0.01.

Table 3: Reduced-form and IV estimates of the effects of school tenure-for-age on parenting domains

Index Variable:	OLS	Reduced Form	IV	Number of observations
Affection	0.003 (0.010)	0.045*** (0.017)	0.127*** (0.048)	98,140[a]
Practices/Time	-0.006 (0.008)	-0.010 (0.014)	-0.028 (0.039)	122,491 [a]
Parenting Stress	0.007 (0.008)	0.008 (0.014)	0.022 (0.040)	111,968 [a]
Behavioral Control	0.016 (0.010)	0.101*** (0.016)	0.289*** (0.048)	83,976 [a]
Authoritative style	0.009 (0.007)	0.069*** (0.013)	0.197*** (0.036)	182,116
Total index	0.000 (0.005)	0.023* (0.009)	0.066*** (0.025)	416,575

Notes: Coefficient estimates with standard errors in parentheses. Errors are clustered at the household level.
*, **, *** indicates significantly different from zero at the 90%, 95%, or 99% level.

[a]Large sample sizes result from pooling the data over all of the specific questions that comprise an index in the estimation process.

Table 4: IV estimates of the effects of school-tenure-for-age on parenting indices, estimated for the entire sample and subsamples

Sample:	*Affection*	*Behavioral Control*	*Authoritative*	*Practices*	*Parenting Stress*	*Total*
All	0.127*** (0.048) [98,140]	0.289*** (0.048) [83,976]	0.197*** 0.036 182116	-0.028 (0.039) [122,491]	0.022 (0.040) [111,918]	0.066*** 0.025 416575
Elementary-age	0.173*** (0.062) [59,496]	0.392*** (0.058) [50,808]	0.267*** 0.110 [110,304]	-0.030 (0.049) [83,847]	0.085 (0.052) [67,744]	0.079** 0.032 [261895]
Age 6-8	0.107 0.095 [22,286]	0.43*** 0.089 [18,984]	0.245*** 0.070 [41270]	-0.042 0.086 [32,337]	0.03 0.084 [25,312]	0.079 0.050 [98919]
Age 9-11	0.21*** 0.073 [37,210]	0.358*** 0.066 [31,824]	0.274*** 0.053 [69034]	-0.008 0.050 [51,510]	0.051 0.056 [42,432]	0.098*** 0.036 [16976]
Middle-school-age	0.063 (0.067) [38,644]	0.176* (0.069) 33,168]	0.111** 0.050] [71,812]	-0.030 (0.054) [38,644]	-0.044 (0.054) [44,224]	0.056 (0.035) [154,680]
Boys	0.072 (0.068) [49,718]	0.326*** (0.065) [42,624]	0.181*** 0.050 [92342]	-0.031 (0.055) [62,052]	0.103* (0.057) [56,832]	0.039 0.035 [211,226]
Girls	0.171*** (0.063) [48,422]	0.233*** (0.064) [41,325]	0.197*** 0.048 [89774]]	-0.025 (0.050) [60,439]	-0.061 (0.055 [55,136]	0.087*** 0.034 [205,349]
First born & only	0.119 (0.076) [41,312]	0.136* (0.074) [34,941]	0.127** (0.057) [76,253]	-0.032 (0.059) [51,234]	0.138** (0.068) [46,588]	0.008 (0.040) [174,075]
Younger siblings	0.131** (0.060) [52,880]	0.284*** (0.062) [44,529]	0.196*** (0.046) [97,409]	-0.025 (0.049) [66,237]	-0.095* (0.049) [59,372]	0.094*** (0.031) [223,018]
White	0.110* (00.054) [79,746]	0.225* (0.055) [66,081]	0.16*** 0.042 [145,827]	-0.018 (0.040) [99,518]	0.030 (0.045) [88,108]	0.052* 0.028 [333,453]
Black	0.182 (0.111) [11,640)	0.351*** (0.104) [12,303]	0.255*** 0.082 [23,943]	-0.019 (0.129) [14,477]	0.305* (0.108) [9,921]	0.102 0.066 [54,824]
Hispanic	0.144 (0.119) [7,638]	0.267* (0.110) [6,555]	0.197** 0.095 [14,193]	0.015 (0.074) [9,164]	0.273* (0.084) [8,740]	0.022 0.056 [32,097]
Single mother	0.333* (0.110) [13,828]	0.121 (0.097) [20,742]	0.206*** 0.079 [34,570]	-0.017 (0.080) [17,171]	-0.197* (0.091) [27,656]	0.147*** 0.055 [79,397]
Two parent	0.094 (0.052) [84,312]	0.348* (0.054) [63,234]	0.203*** 0.040 [147,546]	-0.034 (0.043) [105,320]	0.092* (0.044) [84,312]	0.050* 0.028 [337,178]
Low-education mother	0.163* (0.059) [39,760]	0.420* (0.066) [34,974]	0.273*** 0.048 [74,734]	-0.009 (0.044) [49,051]	0.100* (0.050) [34,974]	0.086*** 0.031 [170,417]

High-education mother	0.037 (0.076) [58,380]	-0.009 (0.068) [49,002]	0.017 0.054 [107,382]	-0.045 (0.070) [73,440]	-0.097 (0.067) [65,336]	0.014 (0.041) [246,158]
Low-income household	0.164*** (0.054) [54.238]	0.260*** (0.053) [48,435]	0.205*** (0.041) [102,673]	-0.011 (0.040) [67,028]	0.020 (0.047) [64,580]	0.076*** (0.028) [234,281]
High-income household	-0.004 (0.099) [42,948]	0.314*** (0.099) [34,719]	0.132* (0.077) [77,667]	-0.069 (0.090) [54,231]	0.104 (0.080) [46,292]	0.006 (0.052) [178,190]

Notes: Coefficient estimates with standard errors in parentheses. Errors are clustered at the household level.
Each cell contains the coefficient estimate, its standard error in parentheses, and the sample size in brackets.