Parental Involvement, Summer Activities, and the Intergenerational Transmission of Educational Attainment

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Abstract:

Several authors have speculated that better-educated parents' higher levels of parental involvement may influence the intergenerational transmission of education; however, this hypothesis has yet to be formally tested. We begin to fill this gap in the literature by estimating augmented intergenerational mobility models that include measures of parental involvement and children's participation in "school-like" summer activities using rich data from the Child and Young Adult Supplement to the National Longitudinal Survey (NLSY79). Participation in organized summer activities directly influences children's educational attainment, as does the frequency with which parents read to children. Much of the correlation between mothers' and children's education is driven by college-educated mothers reading to their children and facilitating their children's participation in stimulating summer activities. The relationship between participation in organized activities and educational attainment is stronger for children in wealthier households, girls, and children of married parents. Policy implications are discussed.

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1. Introduction

Educational attainment is an important predictor of labor-market and social outcomes and a mechanism for economic and social mobility (e.g., Card, 1999; Ellwood & Kane, 2000; Checchi, 2006; Lochner, 2011). Accordingly, a large literature is devoted to the critical task of identifying the determinants of educational attainment (e.g., Haveman & Wolfe, 1995), with several studies focused on family socioeconomic characteristics, including parents' schooling and permanent income (Blau, 1995; Ladd, 2012). These characteristics strongly predict adult education and social outcomes in the United States (Ladd, 2012; Rothstein & Wozny, 2011; Hardy, 2012), and education policies address this relationship with remedies largely shaped by evidence on *how* educational attainment is transmitted across generations. If, for example, persistence in educational attainment is driven by the aforementioned differences in household income, the appropriate policy response may be some combination of means-tested K-12 programming, along with educational grants and loans for post-secondary education.

However, focusing solely on income ignores well-documented socioeconomic differences in home environment, parental involvement, and summer learning loss that may contribute to inequities in educational attainment and achievement (e.g., Downey, von Hippel, & Broh, 2004; Todd & Wolpin, 2007; Gershenson, 2012; Kalil, Ryan, & Corey, 2012).[1] Indeed, several authors speculate that greater levels of parental involvement or access to "school-like" summer activities observed among better-educated parents may be one mechanism through

[1] See Cooper, Nye, Charlton, Lindsay, & Greathouse (1996) for a review of the literature on summer learning loss.

which the intergenerational transmission of education operates (e.g., Checchi, 2006; Guryan, Hurst, & Kearney, 2008; Ramey & Ramey, 2010; Entwisle, Alexander, & Olson, 2001).

With this in mind, we examine the role of parental involvement and school-like activities thought to be positively associated with academic achievement (e.g., Avvisati, Besbas, & Guyon, 2010; Covay & Carbonaro, 2010; Kim, 2006) in transmitting educational attainment across generations. Our results suggest that parental involvement and participation in organized extracurricular activities promote educational persistence across generations, factors to this point omitted from standard models of educational attainment and mobility. To the extent these inputs influence educational mobility, targeted subsidies of extracurricular activities and mentoring programs might increase educational attainment among socioeconomically disadvantaged students.

We augment a standard model of educational mobility to include non-separabilities in parental involvement and children's participation in stimulating summer activities using rich data linking mothers in the 1979 National Longitudinal Survey of Youth (NLSY79) to their adult offspring. Additionally, we examine whether and how the relationship between parental involvement, participation in organized activities, and educational attainment varies by household income, child's gender, and family structure. In our study, the unconditional intergenerational education correlation coefficient is approximately 0.3, which is consistent with estimates by Hertz et al. (2007). After controlling for a standard set of socioeconomic and demographic controls, the coefficient on mothers' education falls to about 0.16, consistent with estimates produced by identification strategies using twins (Pronzoto, 2010) and related natural experiments (Oreopoulos, Page, & Stevens, 2006). Interestingly, including proxies for parental

involvement and children's participation in summer activities does not initially change the estimated coefficient of about 0.16. However, participation in stimulating summer activities and parental involvement among the children of college educated parents predicts educational attainment and influences mobility across generations, suggesting that more parsimonious specifications of educational mobility models may inadvertently omit an important determinant of both educational attainment and the intergenerational transmission of education.

2. Econometric Model

Beginning with the seminal work of Becker and Tomes (1979, 1986), numerous scholars have developed and tested the hypothesis that parents transmit socioeconomic characteristics onto their children (e.g., Blau, 1999; Bloome & Western, 2011; Guldi, Page, & Stevens, 2007; Solon, 1999). However, these studies do not typically control for the wide range of human capital investments made in children, specifically those investments made outside of formal day schooling such as parental involvement and participation in organized extracurricular activities. The empirical strategy undertaken in the current study involves extending standard empirical models of the intergenerational transmission of education to include measures of parental involvement and children's summer activities that are known to positively influence educational achievement: the frequency with which mothers read to their child (Phillips, 2011), participation in organized summer activities (Borman, Goetz, & Dowling, 2009), and summer reading (Kim, 2006). In doing so we further our understanding of the mechanisms through which educational attainment is transmitted across generations.

Consider the following adaptation of a basic intergenerational model (e.g., Ermish & Pronzato, 2011) that assumes a linear relationship between educational attainment (*S*, measured in years of schooling) across generations, where families are indexed by *i* and generations are indexed by *t*:

$$(1) \qquad S_{it} = \alpha + \rho S_{i,t-1} + \varepsilon_{it}.$$

In (1), ρ is a descriptive parameter that represents the intergenerational persistence of educational attainment. The idiosyncratic error term ε_{it} is likely correlated with $S_{i,t-1}$, as the former can be decomposed into the child's given endowment of educational and income capacity (e_{it}) and luck (u_{it}). The presence of these unobservables acknowledges the role of factors outside of parental investments including innate ability, environment, and structural societal factors. Specific elements of e_{it} include family reputation and networks, ability, race, gender, culture, goals, and so on. More generally, e_{it} and u_{it} contain elements that either negatively or positively influence children's educational attainment, income, occupation, and other socioeconomic life outcomes; are likely endogenous; and potentially heritable (Becker & Tomes, 1979).

Expanding the parsimonious specification of (1), we follow Bloome and Western (2011) and Blanden, Gregg, and Machin (2005) in relating mobility to educational attainment and control for a standard set of household SES and demographic characteristics ($\mathbf{x}_{it}$). Capacity for investment in human capital, which shapes educational attainment S_{it}, is determined in part by parents' income ($M_{i,t-1}$) (Solon, 2004). Thus, the educational attainment of generation *t* is:

(2) $$S_{it} = \alpha + \rho S_{i,t-1} + \gamma M_{i,t-1} + \boldsymbol{\beta}\mathbf{x}_{it} + e_{it} + u_{it}.$$

Underlying equation (2), child's educational attainment reflects the result of parents' $t - 1$ allocation of income and time resources between consumption for themselves and human capital investment in their children (Becker & Tomes, 1979; Solon, 2004). Generally, (2) is similar to specifications considered in previous work on economic mobility and the determinants of educational attainment (e.g., Ermisch & Pronzato, 2011; Hertz et al., 2007; Blanden et al., 2005; Ellwood & Kane, 2000; Duncan & Brooks-Gunn, 2000).

The primary contribution of the current study is the generalization of (2) to include measures of parental involvement and children's participation in summer activities, thus formalizing the insights of Blau (1999) and Guryan et al. (2008), among others. Specifically, we augment (2) to include a vector of measures of parental involvement and participation in summer activities (**p**) both additively and multiplicatively:

(3) $$S_{it} = \alpha + \boldsymbol{\lambda}\mathbf{p}_{it} + \rho S_{i,t-1} + \boldsymbol{\delta}\mathbf{p}_{it} \times S_{i,t-1} + \gamma M_{i,t-1} + \boldsymbol{\beta}\mathbf{x}_{it} + e_{it} + u_{it}.$$

Equation (3) is a reduced-form representation of the intergenerational transmission of education, conditional on income and other pre-education environmental influences, which motivates the main estimating equation. The subscripting is modified in (4) to stress that children are the unit of analysis and that some mothers have multiple adult children. Specifically, for each adult child *i* of mother *j*, we estimate the following model of educational mobility

(4) $$S_{ij} = \alpha + \boldsymbol{\lambda}\mathbf{p}_{ij} + \rho S_j + \boldsymbol{\delta}\mathbf{p}_{ij}\times S_j + \gamma M_{ij} + \boldsymbol{\beta}\mathbf{x}_{ij} + v_{ij},$$

where v is an idiosyncratic child error term that contains the elements of e_{it} and u_{it} not controlled for by the model's covariates. Equation (4) is estimated by OLS, where mothers' AFQT scores proxy for unobserved maternal ability and **x** includes a set of children's birth-cohort fixed effects.[2] The elements of **p** and **x** are described in section 3. Standard errors are clustered at the mother level to make statistical inference robust to arbitrary heteroskedasticity and within-family correlations in siblings' composite error terms created by unobserved family effects.

Several generalizations of the baseline estimating equation (4) are considered as well, both to verify the robustness of the results and to investigate potential heterogeneities in the intergenerational transmission of education. First, we replace mothers' years of schooling (S_j) with a set of categorical dummies for mothers' highest degree obtained. Similarly, we replace children's years of schooling (S_{ij}) with a set of highest degree obtained dummies and estimate the resulting four specifications as linear probability models (LPM), where the outcomes are no high school diploma, high school diploma (or more), some college (or more), and 4-year college

[2] The 2006 revision of mothers' AFQT scores that adjusted for the age at which the test was taken are used. See the discussion in Altonji, Bharadwaj, and Lange (2012) or the definitions in http://www.nlsinfo.org/nlsy79/docs/79html/79text/achtests.htm. Using AFQT scores as a proxy may be sufficient to eliminate the correlation between mothers' unobserved ability and years of schooling, household income, and parental involvement, though it does not eliminate the presence of an unobserved family effect. AFQT likely captures a range of environmental, developmental, and hereditary inputs, but there is not a consensus on whether AFQT tests achievement, ability, some combination of the two, or something altogether different (Neal & Johnson, 1996; Rodgers & Spriggs, 1996; Darity & Mason, 1998; Heckman, 1998).

degree (or more).[3] This allows for nonlinearities in the intergenerational transmission of education, perhaps driven by "sheepskin effects" associated with the diplomas and degrees associated with 12 and 16 years of schooling, respectively (Hungerford & Solon, 1987). These regressions are reported and discussed in online appendix A, and yield qualitatively similar results to the "years of schooling" regressions reported in the main text.

Second, we generalize the main estimating equation of (4) to accommodate potential differences by household income, child's gender, and household structure in the roles that parental involvement and summer activities play in the intergenerational transmission of education. Such non-separabilities may exist for a number of reasons. First, wealthier households have a greater ability to both pay for post-secondary schooling and provide physical resources such as books, tutoring services, and high-quality summer camps (e.g., Checchi, 2006). Second, a gender gap in behavioral problems and non-cognitive skills develops in early childhood that has been shown to partly explain the increasing share of female college students (Jacob, 2002). Third, single mothers may be limited in their ability to interact with children by rigid or non-traditional work schedules (e.g., Bianchi, 2000; Bianchi & Robinson, 1997). Finally, Bertrand and Pan (2013) provide evidence that the gender gap in behavioral problems and non-cognitive skills is especially stark in single parent households.

[3] By estimating separate LPMs rather than multinomial or ordered logit models, we avoid the potential biases associated with the failure of the independence of irrelevant alternatives (IIA) and parallel slope assumptions, respectively (Wooldridge, 2010). Similarly, LPMs facilitate straightforward interpretation of the models' interaction effects (Ai & Norton, 2003).

3. Data

The 1979 National Longitudinal Survey of Youth (NLSY79) is administered by the Bureau of Labor Statistics and tracks the socioeconomic and labor-market outcomes of a sample of young adults aged 14 to 22 in 1979. Beginning in 1986 the NLSY79 Child and Young Adult Supplement (CYA) provides detailed information on the children of the original NLSY79 female respondents, including measures of home environment, parental involvement in children's home and school lives, and children's participation in summer activities. The CYA has followed the offspring of the original NLSY79 respondents to adulthood and recorded their educational attainment. Importantly for the current paper, this enables the comparison of mothers' educational attainment to that of their children (BLS, 2011).

After matching children in the CYA to their mothers in the NLSY79 we restrict the sample to offspring who were 25 or older in 2010, as this is an age at which a majority of the CYA sample is likely to have completed formal schooling and an age used in previous studies of educational mobility (e.g., Hout & Janus, 2011). However, the qualitative results of the current study are robust to alternative age cutoffs, notably 27 or older in 2010, to allow for the completion of graduate school (Ibid). While we do not observe fathers' educational attainment, Behrman and Rosenzweig (2002) and Heckman and Hotz (1986) suggest that mother's education is a stronger predictor of offspring's educational attainment and parents' education levels are likely correlated due to positive-assortative mating (e.g., Lam, 1988).

All summary statistics and regressions reported in the main text are estimated using NLSY sampling weights that adjust for unequal probabilities of sample selection, as the NLSY and CYA oversample low-income and minority households. However, un-weighted regression

estimates are provided in online appendix B, as there is some debate as to whether and when regressions should be weighted (e.g., Wooldridge, 2010). We find, as have others using NLSY data, that weighted and un-weighted regression results are qualitatively similar (e.g., Arcidiacono, Bayer, & Hizmo, 2010).

Table 1 provides weighted summary statistics of the data on children's and mothers' educational attainment and the control variables that comprise the vector $\mathbf{x}_{ij}$. Educational attainment is observed for 4,002 child-mother pairs. After restricting the sample to children for which the full set of controls, summer activity, and parental involvement data are available the estimation sample is comprised of 3,286 children and 2,031 mothers. The distribution of mothers' education is similar to that of children's, though it is worth noting that both post-secondary educational attainment *and* the frequency of high school dropouts increased across generations. This is consistent with the basic finding of increased inequality in educational attainment during the years surveyed by the NLSY79 and CYA (Hout & Janus, 2011).

The average household income experienced by children in the sample between birth and the age of 18 was about $35,000. We average household income through age 18 in an effort to account for the household's permanent income throughout childhood (Rothstein & Wozny, 2011) and the influence of binding budget and credit constraints on the decision to enroll in postsecondary education. Similarly, mothers' marital status is collapsed into a child-specific binary indicator equal to one if the mother was continuously married from the child's birth through age 18; this is true for about 40% of child respondents. The qualitative results are robust to instead averaging household income and marital status through age 14.

Half of the sample's child respondents are male, 11% are Hispanic, and 26% are black. The average child respondent is one of three siblings, though siblings who were not yet 25 in 2010 are excluded from the sample. The average birth-order position of children in the sample is 1.6, which is also influenced by the exclusion of relatively young siblings from the sample.

Column 1 of table 2 summarizes the key independent variables of interest: the frequency with which mothers read to children between birth and age 9 and binary indicators of children's participation in organized summer activities and summer reading. The CYA asks how frequently mothers read to the child during three periods of the child's life: ages 0-2, 3-5, and 6-9. The reading frequency data are collapsed into child-specific parental involvement measures that take the maximum level of parental involvement experienced by the child in any CYA survey year, and even this concession leaves over 700 children missing parental-involvement data. The CYA's reading frequency variable is coded in six categories, ranging from 3 (never) to 8 (everyday). For the purposes of the subsequent regression analysis scores of 4 (several times per year), 5 (several times per month), and 6 (once a week) are combined into an "intermittent" category and scores of 7 ($\geq$ 3 times per week) and 8 are grouped in a "frequent" category. Substantial variation in the frequency with which mothers read to children remains after coding the data in this manner, as 6% of mothers reported never reading to their child through age 9, 43% reported reading to their child intermittently during at least one period of early childhood, and 47% reported reading frequently to their child during at least one period of early childhood.

The summer activity questions ask whether the child read during summer vacation or participated in organized summer activities in the 1992, 1994, 1996, and 1998 surveys. Children were unlikely to be asked these questions in more than one year, so the four responses are again

collapsed into two binary variables that indicate whether the child *ever* reported participating in either summer activity. There is substantial variation in participation in both resulting summer activity variables, as nearly two thirds of child respondents reported both reading and participating in organized activities during at least one summer vacation during childhood.

Columns 2 and 3 of table 2 compare the average levels of parental involvement and summer activities of children who failed to complete high school to those who earned a four-year college degree. Columns 4 and 5 provide a similar comparison based on mothers' educational attainment. In each case, the difference in means is strongly statistically significant. A comparison of columns 2 and 3 shows that better-educated individuals were read to more frequently and are more likely to have participated in stimulating summer activities as children than their less-educated counterparts. Similarly, a comparison of columns 4 and 5 shows that better-educated mothers are more likely to have both frequently read to their children and facilitated their children's participation in enriching summer activities. These descriptive results motivate the subsequent regression analyses that seek to better understand the role of parental involvement and children's summer activities in the intergenerational transmission of education.

4. Results

The models estimated in table 3 investigate the relationship between mothers' and children's years of schooling. The simple regression estimated in column 1 corresponds to equation (1) and shows a strongly significant intergenerational correlation of 0.33. The model estimated in column 2 corresponds to equation (2) and extends the simple regression to include a standard set of controls including mother's age at birth and AFQT score; whether the child's mother was

continuously married during his or her youth; average household income during the child's youth; the child's gender, race, ethnicity, birth order, and number of siblings; and a full set of child birth-cohort fixed effects. Adding these covariates to the years-of-schooling regression reduces the estimated coefficient on mother's schooling by nearly 50% to 0.17, which remains strongly significant.[4] The estimated coefficients on the controls are of the expected sign and consistent with the existing literature (e.g., Ellwood & Kane, 2000; Cameron & Heckman, 1999).

The models estimated in columns 3 and 4 of table 2 enrich the specification of column 2 by utilizing the CYA's rich data on children's summer activities and parental involvement (the elements of **p** in equations (3) and (4)). These variables enter the model estimated in column 3 linearly. Conditioning on these variables does not appreciably change the estimated coefficient on mother's schooling, perhaps because parental involvement is highly correlated with mothers' educational attainment (e.g., Guryan et al., 2008). However, the estimated coefficients on "mother frequently read to child" and the children's "summer activity" indicators are positive and strongly significant, suggesting that these activities are positively associated with long-run educational attainment.

The estimates reported in column 4 of table 3 correspond to the baseline estimating equation specified in equation (4), which generalizes the specification of column 3 to allow for non-separabilities in the role that parental involvement and summer activities play in the intergenerational transmission of education. Interestingly, including these interactions reduces the estimated coefficient on mothers' years of schooling to a precisely estimated zero. The

[4] Omitting mother's AFQT scores from the models estimated in columns 2 and 3 yields a slightly larger estimated coefficient on mother's years of schooling of about 0.2.

"frequently reads" and "summer activity" interaction terms are positive and statistically significant, however, suggesting that the well-known correlation between mothers' and children's years of schooling is at least partly driven by the more stimulating home environments provided by better-educated mothers. Specifically, the estimated "frequently reads"–"mothers' years of schooling" interaction effect of 0.14 is similar in magnitude to the estimated coefficient on mothers' years of schooling in column 3 that assumes a homogeneous relationship between mothers and children's years of schooling.[5]

As discussed in section 2, there are a number of reasons why the mechanism through which educational attainment is transmitted across generations might vary by household income, child's gender, or household structure. Accordingly, we investigate these potential sources of heterogeneity in tables 4 and 5 by estimating specifications that are otherwise identical to that in column 4 of table 3 separately by household income, child's gender, and mother's marital status. Columns 1 through 4 of table 4 estimate the baseline specification by income quartile, starting with the lowest. As in the main results reported in column 4 of table 3, the by-income results in table 4 yield small and insignificant estimated coefficients on mothers' schooling. Again, much of the "effect" of mothers' schooling seems to be in the schooling-frequently reads interaction terms, as the estimated interaction effects are similar in magnitude to those in column 4 of table 3 (0.10 to 0.13). However, the interaction effects are imprecisely estimated in table 4, which is

[5] Generalizations of the baseline specification estimated column 4 of table 3 that replace years of schooling (S) with categorical indicators of highest degree obtained are reported in online appendix A. These results confirm the general finding that the observed relationship between mothers' and children's educational attainment is driven by the parental involvement and facilitation of summer activities of college-educated mothers.

likely a byproduct the smaller sample sizes created by dividing the sample into income quartiles.[6]

The effect of summer reading is similar across the income distribution, though the influence of children's summer activities is strongest in wealthier households. The latter is likely the result of some combination of wealthier households' ability to provide more and higher quality organized summer activities. There is also a significant positive effect of participation in summer activities in the lowest household-income quartile, which might suggest that organized summer programs can promote educational attainment among children in low-income households. High quality organized summer programs may be especially important for children living in low-income households and neighborhoods, as they provide an escape from potentially less stimulating home or neighborhood environments.

Columns 5 and 6 of table 4 estimate the baseline specification separately for male and female adult children, respectively. The intergenerational transmission of mother's schooling is similar for both boys and girls, again operating through the schooling-frequently reads interaction term. This is perhaps unsurprising in the presence of positive assortative mating. Interestingly, however, the effect of participation in summer activities is nearly twice as large for females, though statistically significant for both genders. This is consistent with literature suggesting different trajectories for male and female achievement as well as gender differences in the effectiveness of social and education policy interventions (Anderson, 2008; Clampet-Lundquist, Edin, Kling, & Duncan, 2011).

[6] The sample was divided using weighted household income quartiles. Un-weighted sample sizes are larger for the lower household-income quartiles both because low-income individuals were oversampled and birthrates were higher in low-income households during this time period.

Columns 7 and 8 of table 4 estimate the baseline specification separately for children whose parents were continuously married through childhood, and children whose parents were not, respectively. The relationship between married mothers' and children's years of schooling operates through the schooling-frequently reads interaction effect. However, for mothers who were not continuously married, the relationship operates through the schooling-summer reading interaction term. This is perhaps the result of married mothers having more non-work time in which to read to children. Similarly, the rigid work schedules of single mothers may at least partially explain the significantly larger effect of participation in organized summer activities observed for children of married parents, as many low-income and single mothers are constrained in their ability to pay for and arrange transportation to high-quality summer programs (Chin & Phillips, 2004). The effect of summer reading is strongly significant and similar in magnitude for both groups.

Differences by gender and household structure are further investigated in table 5, as Bertrand and Pan (2013) find evidence of gender-specific responses of children to living in single parent female headed homes. Specifically, columns 1 and 2 of table 5 estimate the baseline model separately by child's gender for children in single parent homes and columns 3 and 4 do the same for the children of continuously-married parents. Two interesting results emerge. First, despite the finding that boys in single parent female headed households develop worse non-cognitive skills and behaviors, the mechanism through which educational attainment is transmitted across generations does *not* appear to vary by child's gender regardless of parents' marital status. Second, there is no significant direct effect of participation in summer activities for the male children of single mothers. The lack of an effect of participation in organized

summer activities for boys residing in single parent female headed homes may be related to the behavioral problems more common in such children.

5. Conclusion and Discussion

Using rich data on parental involvement and children's participation in summer activities from the CYA supplement to the NLSY79, we investigate the role that these variables play in the intergenerational transmission of education and in children's educational attainment. Failing to control for additively separable terms in parental involvement and participation in summer activities in a standard intergenerational mobility model does not change the estimated coefficient on mother's schooling in a practically or statistically significant way, though each measure directly predicts children's educational attainment. However, strongly significant interaction effects of mothers' schooling with both child's participation in organized summer activities and the frequency with which mothers read to children suggest that at least part of the intergenerational transmission of education is facilitated by the children of better-educated mothers receiving more individual attention at home and partaking in more and/or higher quality summer activities.

The mechanisms that facilitate the transmission of educational attainment across generations appear to be similar across households of different income levels, though the direct effects of parental involvement and participation in organized summer activities on educational attainment are strongest in wealthier households. This may reflect the ability of such households to provide higher quality and quantities of such activities. However, a positive and significant effect of participation in organized summer activities is observed in the poorest households as

well, perhaps suggesting that such households use summer programs to compensate for less-stimulating home or neighborhood environments. Policymakers might subsidize the provision of afterschool activities, mentors, academically-oriented summer camps, and so on. Such a response may be recommended if these inputs are unequally distributed throughout society, as table 2 suggests.

Girls are found to benefit more from participation in organized summer activities than boys, particularly in single parent households, though the mechanisms of intergenerational persistence of educational attainment are similar across genders. These findings are generally consistent with the existing literature (e.g., Anderson, 2008; Bertrand & Pan, 2013; Clampet-Lundquist, et al., 2011; Lindsay, 2011). Interestingly, intergenerational transmission varies by household structure: it is facilitated by parental involvement and participation in summer activities in married households but by children's summer reading in single parent female headed households. These differences may result from the rigidity of single mothers' work schedules (Bianchi, 2000; Chin & Phillips, 2004).

The NLSY79 data is well suited for the current analysis, as it contains data on parental involvement in children's home and school lives and children's participation in summer activities; however, these data are not without limitations. Importantly, the CYA data on parental involvement and children's participation in summer activities may be subject to social desirability bias, as certain types of parents may over-report the frequency of socially desirable activities such as reading to/with children. Thus, retrospective 24-hour time diaries of either children's or parent's time use may provide better measures of parental involvement and children's participation in "school-like" summer activities (Juster & Stafford, 1991). Similarly,

regarding external validity, it would be beneficial to perform similar analyses of subsequent generations and cohorts. For these reasons, future work might conduct a similar analysis using the Panel Study of Income Dynamics' (PSID) Child Development Survey (CDS), which contains time diaries and covers more recent cohorts, though does not collect summer time diaries.

Taken at face value, the results of the current analysis have three broad policy implications. First, the general importance of participation in organized summer activities provides preliminary support for the public provision of such programs. Indeed, such programs have been shown to increase academic achievement in a variety of contexts (e.g., Roderick, Jacob, & Bryk, 2004; Chaplin & Capizzano, 2006; Borman, Benson, & Overman, 2005; Borman, Goetz, & Dowling, 2009). Furthermore, the finding that the effect of participation in such activities is stronger in better-educated and wealthier households may justify targeting such programs to low-performing schools or low-income neighborhoods.

Second, the importance of parental involvement (as measured by frequently reading to children) in predicting educational attainment suggests the potential benefits of a relatively low-cost informational campaign designed to "nudge" parents towards taking a more active role in children's development. Generally, the finding that parental involvement matters is consistent with previous literature on the importance of parents taking an active interest in the development of children's literacy skills (Kim & White, 2008) and the importance of parents prioritizing and facilitating children's attendance of summer programs (Borman et al., 2005). Regarding the latter, that the effect of summer programs is larger for the children of married parents recommends not only the provision financial aid, but also transportation, as the rigid work schedules of single parents and low-income households likely limit children's participation.

Again, this is consistent with the issues raised in previous research (Chin & Phillips, 2004; Ramey & Ramey, 2010).

Finally, the general importance of parental involvement suggests the potential benefits of expanding the availability and capacity of in-school mentoring programs (Heckman & Rubinstein, 2001). Reviews of mentoring programs regularly find positive impacts on students' attendance and behavior (Randolph & Johnson, 2008; Wheeler, Keller, & DuBois, 2010), the types of non-cognitive skills positively associated with long-run outcomes such as educational attainment, earnings, and employment (e.g., Heckman & Rubinstein, 2001; Jackson, 2013). Similarly, a critical challenge faced by many first-generation college goers is their parents' lack of social and cultural capital with regards to the college application procedure (e.g., Lareau & Weininger, 2008). A recent initiative targets this problem by providing college counseling and mentoring to students in low-income high schools (Stephan & Rosenbaum, 2012). Both general and college-specific mentoring could thus serve to improve equity of educational attainment.

Yet, for disadvantaged students, less exposure to "school-like" inputs and parental involvement during childhood may prove too daunting to overcome in high school. At the other extreme, from birth, a majority of children within highly educated households appear to benefit from organized activities and involved parents. In response, interventions providing "school-like" organized activities and mentoring to socioeconomically disadvantaged children from early childhood amounts to added human capital, and could help break the persistence of educational attainment.

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Table 1: Sample Summary Statistics

Child's years of schooling	12.9
	(2.4)
No H.S. diploma	23.0%
H.S. diploma	29.3%
Some college	28.5%
4-year College degree	19.2%
Mom's years of schooling	12.6
	(2.2)
No H.S. diploma	12.8%
H.S. diploma	49.7%
Some college	26.6%
4-year college degree	10.8%
Mom's AFQT score	34940
	(26763)
Mom's age at birth	21.0
	(3.0)
Average household income	34836
	(36155)
Continuously married	39.1%
Male	49.8%
Hispanic	11.3%
Black	11.3%
Siblings	2.9
	(1.3)
Birth Order	1.6
	(0.8)
N (Moms, unweighted)	2031
N (Children, unweighted)	3286

Notes: Parentheses contain standard deviations of non-binary variables. All means and standard deviations were computed using sampling weights that account for unequal probabilities of sample selection.

Table 2: Participation in reading and summer activities by educational attainment

		Child's Attainment		Mom's Attainment	
	All	No H.S.	College*	No H.S.	College*
	1	2	3	4	5
Mom reads to child (3-8)					
Never (3)	6.4%	9.0%	3.9%	12.9%	5.2%
Intermittently (4,5,6)	42.8%	47.2%	33.0%	47.0%	31.7%
Frequently (7,8)	46.5%	37.9%	61.1%	32.4%	59.9%
Summer Activity	61.5%	54.6%	76.6%	48.4%	72.5%
Summer Reading	63.2%	52.1%	76.3%	58.4%	74.4%
N (Moms, unweighted)	2031	650	449	254	215
N (Children, unweighted)	3286	848	526	505	321

Notes: Parentheses contain standard deviations of non-binary variables. All means and standard deviations were computed using sampling weights that account for unequal probabilities of sample selection. *In columns 3 and 5, the mean of each variable is significantly different from that in columns 2 and 4, respectively, at 1% confidence.

Table 3: Child's Years of Schooling Regressions (OLS)

	(1)	(2)	(3)	(4)
Mom's years of schooling (S)	0.33	0.17	0.16	0.02
	(0.02)***	(0.03)***	(0.03)***	(0.04)
Mom never read to child			-0.05	-0.07
			(0.17)	(0.17)
Mom frequently read to child			0.24	0.14
			(0.10)**	(0.11)
S*Mom never read to child				0.10
				(0.07)
S*Mom freq. read to child				0.14
				(0.05)***
Summer reading			0.48	0.44
			(0.10)***	(0.10)***
Summer organized activity			0.44	0.40
			(0.09)***	(0.09)***
S*Summer reading				0.06
				(0.04)
S*Summer activity				0.07
				(0.04)*
Age at birth		0.11	0.11	0.10
		(0.02)***	(0.02)***	(0.02)***
HH income		0.00	0.00	0.00
		(0.00)***	(0.00)***	(0.00)***
Cont. married		0.75	0.68	0.67
		(0.12)***	(0.11)***	(0.11)***
Male		-0.84	-0.79	-0.79
		(0.09)***	(0.09)***	(0.09)***
Hispanic		0.04	0.08	0.05
		(0.13)	(0.13)	(0.13)
Black		0.19	0.19	0.19
		(0.11)*	(0.12)	(0.11)*
Siblings		-0.04	-0.03	-0.05
		(0.04)	(0.04)	(0.04)
Birth order		-0.37	-0.34	-0.32
		(0.06)***	(0.06)***	(0.06)***
Control for AFQT score	No	Yes	Yes	Yes
Birth-cohort fixed effects	No	Yes	Yes	Yes
Adjusted R^2	0.09	0.21	0.23	0.24

Notes: Estimating sample comprised of 3286 children of 2031 mothers. Parentheses contain standard errors clustered at the mother (family) level. All regressions are weighted to account for unequal probabilities of sample selection. ***, **, and * indicate 2-tailed *p*-values below 0.01, 0.05, and 0.1, respectively.

Table 4: Child's Years of Schooling Regressions by Household Income, Gender, and Household Structure (OLS)

	Household Income Quartile				Child's Gender		Mother's Marital Status	
	Q1 (lowest)	Q2	Q3	Q4	Boys	Girls	Married	Non-married
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Mom's schooling (S)	0.02	0.00	0.10	0.03	0.03	0.03	0.03	0.07
	(0.07)	(0.07)	(0.09)	(0.12)	(0.05)	(0.06)	(0.07)	(0.05)
Mom never read	-0.03	-0.01	0.18	-0.34	-0.08	-0.09	-0.25	-0.09
	(0.29)	(0.30)	(0.39)	(0.60)	(0.23)	(0.24)	(0.36)	(0.18)
Mom freq. read	-0.04	0.00	0.11	0.52	0.09	0.19	0.07	0.11
	(0.17)	(0.21)	(0.23)	(0.25)**	(0.15)	(0.15)	(0.20)	(0.12)
S*Mom never read	0.14	0.06	-0.16	0.21	0.08	0.09	0.17	-0.02
	(0.13)	(0.10)	(0.18)	(0.18)	(0.08)	(0.12)	(0.12)	(0.09)
S*Mom freq. read	0.10	0.12	0.12	0.13	0.14	0.12	0.22	0.06
	(0.10)	(0.10)	(0.09)	(0.10)	(0.06)**	(0.06)*	(0.08)***	(0.05)
Summer reading	0.31	0.55	0.56	0.44	0.38	0.52	0.48	0.51
	(0.16)*	(0.20)***	(0.21)***	(0.25)*	(0.14)***	(0.14)***	(0.19)**	(0.11)***
Summer activity	0.29	0.06	0.77	0.72	0.28	0.50	0.64	0.22
	(0.15)**	(0.18)	(0.20)***	(0.23)***	(0.13)**	(0.13)***	(0.17)***	(0.11)**
S*Summer reading	0.11	-0.04	0.25	-0.06	0.07	0.05	-0.07	0.12
	(0.07)	(0.07)	(0.08)***	(0.08)	(0.05)	(0.06)	(0.06)	(0.04)***
S*Summer activity	0.08	0.16	-0.11	0.05	0.06	0.08	0.13	-0.00
	(0.07)	(0.08)**	(0.08)	(0.10)	(0.05)	(0.06)	(0.07)*	(0.05)
Adjusted R^2	0.137	0.141	0.142	0.223	0.207	0.220	0.225	0.191
N (Moms, unwtd.)	639	560	554	439	1288	1299	667	1399
N (Kids, unwtd.)	1,057	837	759	634	1,625	1,661	1,081	2,205

Notes: Parentheses contain standard errors clustered at the mother (family) level. All regressions are weighted to account for unequal probabilities of sample selection. ***, **, and * indicate 2-tailed *p*-values below 0.01, 0.05, and 0.1, respectively. Each regression specification is equivalent to that in column 4 of table 3. Estimated coefficients of the controls are not reported here in the interest of brevity, but are similar to those reported in table 2. Income quartiles (weighted) are 15643, 27565, 42765.

Table 5: Child's Years of Schooling Regressions by Gender and Household Structure (OLS)

	Single Mom		Married Mom	
	Boys	Girls	Boys	Girls
	(1)	(2)	(3)	(4)
Mom's schooling (S)	0.05	0.10	0.04	0.07
	(0.06)	(0.07)	(0.10)	(0.12)
Mom never read	-0.05	-0.20	-0.44	0.11
	(0.25)	(0.27)	(0.44)	(0.54)
Mom freq. read	0.12	0.10	-0.06	0.23
	(0.17)	(0.17)	(0.27)	(0.27)
S*Mom never read	0.07	-0.16	0.11	0.22
	(0.08)	(0.16)	(0.15)	(0.16)
S*Mom freq. read	0.08	0.05	0.22	0.22
	(0.07)	(0.08)	(0.11)**	(0.11)**
Summer reading	0.43	0.60	0.47	0.47
	(0.16)***	(0.16)***	(0.26)*	(0.29)
Summer activity	0.08	0.32	0.54	0.74
	(0.15)	(0.14)**	(0.26)**	(0.23)***
S*Summer reading	0.11	0.13	-0.03	-0.14
	(0.06)**	(0.07)*	(0.08)	(0.11)
S*Summer activity	0.01	-0.02	0.09	0.13
	(0.06)	(0.07)	(0.10)	(0.09)
Adjusted R^2	0.146	0.178	0.182	0.189
N (Moms, unwtd.)	865	897	436	415
N (Kids, unwtd.)	1,065	1,140	560	521

Notes: Parentheses contain standard errors clustered at the mother (family) level. All regressions are weighted to account for unequal probabilities of sample selection. ***, **, and * indicate 2-tailed *p*-values below 0.01, 0.05, and 0.1, respectively. Each regression specification is equivalent to that in column 4 of table 3. Estimated coefficients of the controls are not reported here in the interest of brevity, but are similar to those reported in table 4.

Online Appendix to:

"Parental Involvement, Summer Activities, and the Intergenerational Transmission of Educational Attainment"

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Online Appendix A: Highest Attained Degree Regressions

This online appendix generalizes the baseline specifications estimated in columns 3 and 4 of table 3 by replacing years of schooling with binary indicators of "highest degree attained." Doing so allows for nonlinearities in the intergenerational transmission of educational attainment created by "sheepskin effects" associated with diplomas and degrees (Hungerford & Solon, 1987), as discussed on page 8 of the main text.

The models estimated in table A.1 are identical to those estimated in columns 3 and 4 of table 3, respectively, but replace mother's years of schooling with a set of three indicators of mother's highest degree attained. In column 1 of table A.1, relative to the omitted high-school diploma reference group, the children of mothers who did not complete high school complete 0.7 fewer years of schooling on average, while the children of mothers who completed college or received a graduate degree complete about one more year. These specifications and results are similar to those reported in table 3 of Bloome and Western (2011). The estimated direct effects

of participation in summer activities and parental involvement are nearly identical to those estimated in table 3.

The specification estimated in column 2 of table A.1 generalizes that of column 1 to include interactions of the parental involvement and summer activity indicators with the indicators of mother's highest degree attained. The signs of the estimated interaction terms are generally the same as those in column 4 of table 3. Specifically, the strong link between mothers' and children's educational attainment appears to be driven by college-educated mothers who frequently read to their children.

For the same reasons we moved from mothers' years of schooling to highest degree attained in table A.1, we further generalize the baseline model of table 3 to further investigate the effect of mother's educational attainment, parental involvement, and children's participation in summer activities on children's highest degree attained. As discussed on page 8 of the main text, we estimate a series of four LPMs to facilitate the interpretation of interaction effects. Four mutually exclusive educational outcomes are considered: (1) failure to graduate from high school; (2) graduate high school (or more); (3) attend some college (or more); and (4) 4-year college degree (or more). These models include the same set of covariates included in column 2 of table A.1.

Generally, table A.2 reinforces the findings of tables 3 and A.1. Participation in stimulating summer activities lowers the probability of failing to complete high school and increases the probability of earning a college degree. For each of the four educational outcomes considered in table 4, and taking into account the mothers' education-summer activity interactions, children are most likely to achieve the same level of education as their mother,

again suggesting a fairly strong intergenerational transmission of education. Most concerning from a "poverty trap" perspective, column 1 of table A.2 suggests that the children of mothers who did not complete high school are nearly 20 percentage points more likely to fail to complete high school than the children of college-educated mothers. This is troubling, as high school non-completers are more likely to be unemployed, have lower family income and earnings, and be connected to crime or the criminal justice system, all of which are associated with substantial social costs (Blank, 2008; Haskins et al., 2009; Lochner, 2005). Again, column 4 of table A.2 provides strong evidence that the intergenerational transmission of education is facilitated by the parental involvement and access to summer activities provided by college-educated mothers.

Table A.1: Weighted Child's Years of Schooling Regressions (OLS)

	(1)	(2)
No H.S. diploma	-0.66	-0.31
	(0.14)***	(0.25)
Some college	0.31	0.39
	(0.12)**	(0.23)*
4-yr college degree (+)	0.93	-0.17
	(0.19)***	(0.34)
Mom never read	-0.03	-0.11
	(0.17)	(0.24)
Mom freq. read	0.25	0.16
	(0.10)**	(0.14)
Never*No H.S.		-0.06
		(0.31)
Frequent*No H.S.		-0.26
		(0.31)
Never*Some college		0.33
		(0.42)
Frequent*Some college		0.11
		(0.24)
Never*college+		0.39
		(0.91)
Frequent*college+		0.81
		(0.35)**
Summer Reads	0.47	0.51
	(0.10)***	(0.14)***
Summer Activity	0.44	0.45
	(0.09)***	(0.13)***
Read*no H.S.		-0.34
		(0.24)
Activity*no H.S.		-0.14
		(0.25)
Read*some college		-0.06
		(0.23)
Activity*some college		-0.17
		(0.21)
Read*college degree		0.32
		(0.29)
Activity*college degree		0.51
		(0.33)
Adjusted R^2	0.24	0.24

Notes: Estimating sample comprised of 3286 children of 2031 mothers. Parentheses contain standard errors clustered at the mother (family) level. All regressions are weighted to account for unequal probabilities of sample selection. ***, **, and * indicate 2-tailed *p*-values below 0.01, 0.05, and 0.1, respectively. The omitted mothers' education category is H.S. diploma.

Table A.2: Weighted Child's Educational Attainment Regressions (LPM)

	No H.S.	H.S. +	Some Coll. +	College +
	(1)	(2)	(3)	(4)
No H.S. diploma	0.07	-0.10	-0.09	0.04
	(0.05)	(0.05)*	(0.05)*	(0.03)
Some college	-0.10	0.11	0.10	0.05
	(0.04)**	(0.04)**	(0.05)*	(0.04)
4-yr college degree (+)	-0.10	0.09	0.05	-0.16
	(0.07)	(0.07)	(0.08)	(0.06)***
Mom never read	0.04	-0.03	-0.04	0.00
	(0.05)	(0.05)	(0.06)	(0.03)
Mom freq. read	-0.04	0.04	-0.02	0.03
	(0.03)	(0.03)	(0.03)	(0.02)
Never*No H.S.	0.03	-0.04	-0.03	-0.04
	(0.09)	(0.09)	(0.07)	(0.04)
Frequent*No H.S.	0.11	-0.08	0.02	-0.03
	(0.06)*	(0.07)	(0.06)	(0.04)
Never*Some college	-0.08	0.08	0.09	0.01
	(0.08)	(0.08)	(0.10)	(0.07)
Frequent*Some college	0.05	-0.04	0.08	0.03
	(0.04)	(0.04)	(0.05)	(0.04)
Never*college+	0.01	-0.02	0.02	0.23
	(0.09)	(0.10)	(0.16)	(0.14)
Frequent*college+	0.00	0.01	0.14	0.17
	(0.05)	(0.06)	(0.07)*	(0.06)***
Summer Reads	-0.07	0.05	0.11	0.05
	(0.02)***	(0.03)**	(0.03)***	(0.02)**
Summer Activity	-0.05	0.05	0.10	0.08
	(0.02)**	(0.03)**	(0.03)***	(0.02)***
Read*no H.S.	0.01	0.02	-0.09	-0.02
	(0.06)	(0.06)	(0.05)*	(0.03)
Activity*no H.S.	0.05	-0.05	-0.02	-0.03
	(0.05)	(0.06)	(0.05)	(0.03)
Read*some college	0.01	0.00	-0.01	-0.03
	(0.04)	(0.04)	(0.05)	(0.04)
Activity*some college	0.03	-0.05	-0.10	-0.01
	(0.04)	(0.04)	(0.05)**	(0.04)
Read*college degree	0.06	-0.06	-0.04	0.15
	(0.05)	(0.05)	(0.07)	(0.06)**
Activity*college degree	0.01	-0.01	0.06	0.12
	(0.05)	(0.06)	(0.07)	(0.06)**
Adjusted R^2	0.12	0.12	0.17	0.16

Notes: Estimating sample comprised of 3286 children of 2031 mothers. Parentheses contain standard errors clustered at the mother (family) level. All regressions are weighted to account for unequal probabilities of sample selection. ***, **, and * indicate 2-tailed *p*-values below 0.01, 0.05, and 0.1, respectively. The omitted mothers' education category is H.S. diploma.

Appendix B: Un-weighted regressions

Appendix B reports un-weighted regressions that correspond to the weighted regressions reported in the main text and online appendix A. The qualitative patterns and results discussed in the main text and in online appendix A do not change. Tables B.1 through B.3 correspond to tables 3 through 5 of the main text, respectively. Tables B.4 and B.5 correspond to online appendix tables A.1 and A.2, respectively.

Table B.1: Un-weighted Child's Years of Schooling Regressions (OLS)

	(1)	(2)	(3)	(4)
Mom's years of schooling (S)	0.30	0.16	0.15	0.02
	(0.03)***	(0.03)***	(0.03)***	(0.04)
Mom never read to child			-0.04	-0.04
			(0.15)	(0.15)
Mom frequently read to child			0.14	0.04
			(0.09)	(0.09)
S*Mom never read to child				0.09
				(0.06)
S*Mom freq. read to child				0.15
				(0.04)***
Summer reading			0.41	0.39
			(0.08)***	(0.08)***
Summer organized activity			0.36	0.33
			(0.08)***	(0.08)***
S*Summer reading				0.05
				(0.04)
S*Summer activity				0.08
				(0.04)**
Age at birth		0.11	0.11	0.10
		(0.02)***	(0.02)***	(0.02)***
HH income		0.00	0.00	0.00
		(0.00)***	(0.00)***	(0.00)***
Cont. married		0.70	0.65	0.63
		(0.10)***	(0.10)***	(0.10)***
Male		-0.87	-0.84	-0.83
		(0.07)***	(0.08)***	(0.08)***
Hispanic		0.02	0.06	0.03
		(0.12)	(0.12)	(0.12)
Black		0.21	0.20	0.19
		(0.11)*	(0.11)*	(0.11)*
Siblings		-0.08	-0.07	-0.09
		(0.04)**	(0.04)*	(0.04)**
Birth order		-0.34	-0.31	-0.30
		(0.05)***	(0.05)***	(0.05)***
Control for AFQT score	No	Yes	Yes	Yes
Birth-cohort fixed effects	No	Yes	Yes	Yes
Adjusted R^2	0.09	0.21	0.23	0.23

Notes: Estimating sample comprised of 3286 children of 2031 mothers. Parentheses contain standard errors clustered at the mother (family) level. ***, **, and * indicate 2-tailed *p*-values below 0.01, 0.05, and 0.1, respectively.

Table B2: Un-weighted Child's Years of Schooling Regressions by Household Income, Gender, and Household Structure (OLS)

	Household Income Quartile				Child's Gender		Mother's Marital Status	
	Q1 (lowest)	Q2	Q3	Q4	Boys	Girls	Married	Non-married
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Mom's schooling (S)	0.24	-0.09	-0.03	0.17	0.02	0.04	-0.02	0.10
	(0.09)**	(0.06)	(0.08)	(0.10)*	(0.05)	(0.05)	(0.07)	(0.05)**
Mom never read	-0.28	-0.31	0.19	0.08	0.02	-0.14	-0.07	-0.05
	(0.35)	(0.25)	(0.28)	(0.33)	(0.20)	(0.22)	(0.33)	(0.17)
Mom freq. read	-0.27	0.01	0.07	0.20	0.02	0.08	0.01	0.05
	(0.20)	(0.17)	(0.18)	(0.19)	(0.12)	(0.13)	(0.18)	(0.10)
S*Mom never read	-0.19	0.16	0.06	0.13	0.10	0.05	0.14	0.01
	(0.15)	(0.09)*	(0.10)	(0.13)	(0.07)	(0.08)	(0.10)	(0.06)
S*Mom freq. read	-0.04	0.17	0.17	0.13	0.13	0.16	0.24	0.07
	(0.10)	(0.08)**	(0.10)*	(0.08)	(0.05)***	(0.06)***	(0.07)***	(0.05)
Summer reading	0.17	0.41	0.52	0.54	0.24	0.60	0.48	0.40
	(0.18)	(0.15)***	(0.16)***	(0.18)***	(0.11)**	(0.12)***	(0.16)***	(0.09)***
Summer activity	0.31	0.17	0.14	0.79	0.23	0.41	0.44	0.27
	(0.17)*	(0.14)	(0.15)	(0.18)***	(0.11)**	(0.11)***	(0.15)***	(0.09)***
S*Summer reading	0.10	-0.02	0.11	-0.04	0.08	0.01	-0.07	0.11
	(0.08)	(0.07)	(0.08)	(0.06)	(0.04)*	(0.06)	(0.06)	(0.04)***
S*Summer activity	-0.10	0.19	0.04	-0.02	0.07	0.09	0.17	-0.01
	(0.09)	(0.06)***	(0.08)	(0.08)	(0.05)	(0.06)	(0.06)***	(0.04)
Adjusted R^2	0.14	0.13	0.12	0.22	0.19	0.22	0.22	0.19
N (Moms, unwtd.)	413	525	600	658	1288	1299	667	1399
N (Kids, unwtd.)	653	820	860	953	1,625	1,661	1,081	2,205

Notes: Parentheses contain standard errors clustered at the mother (family) level. ***, **, and * indicate 2-tailed *p*-values below 0.01, 0.05, and 0.1, respectively. Each regression specification is equivalent to that in column 4 of table 3. Estimated coefficients of the controls are not reported here in the interest of brevity, but are similar to those reported in table 3. Un-weighted income quartiles are 11724, 21589, 35596.

Table B3: Un-weighted Child's Years of Schooling Regressions by Gender and Household Structure

	Single Mom		Married Mom	
	Boys	Girls	Boys	Girls
	(1)	(2)	(3)	(4)
Mom's schooling (S)	0.08	0.12	-0.03	0.04
	(0.06)	(0.07)*	(0.08)	(0.09)
Mom never read	0.01	-0.19	-0.23	0.22
	(0.22)	(0.24)	(0.40)	(0.50)
Mom freq. read	0.03	0.07	-0.05	0.10
	(0.14)	(0.15)	(0.24)	(0.25)
S*Mom never read	0.08	-0.10	0.09	0.18
	(0.07)	(0.10)	(0.13)	(0.14)
S*Mom freq. read	0.07	0.06	0.20	0.29
	(0.06)	(0.07)	(0.09)**	(0.10)***
Summer reading	0.23	0.59	0.36	0.59
	(0.13)*	(0.14)***	(0.21)*	(0.24)**
Summer activity	0.14	0.39	0.36	0.51
	(0.13)	(0.13)***	(0.22)	(0.22)**
S*Summer reading	0.09	0.11	0.02	-0.17
	(0.05)*	(0.06)*	(0.07)	(0.09)*
S*Summer activity	-0.01	0.01	0.18	0.12
	(0.05)	(0.07)	(0.09)**	(0.09)
Adjusted R^2	0.134	0.187	0.181	0.174
N (Moms, unwtd.)	865	897	436	415
N (Kids, unwtd.)	1,065	1,140	560	521

Notes: Parentheses contain standard errors clustered at the mother (family) level. ***, **, and * indicate 2-tailed *p*-values below 0.01, 0.05, and 0.1, respectively. Each regression specification is equivalent to that in column 4 of table 3. Estimated coefficients of the controls are not reported here in the interest of brevity, but are similar to those reported in table 4.

Table B4: Un-weighted Child's Years of Schooling Regressions

	(1)	(2)
No H.S. diploma	-0.70	-0.43
	(0.12)***	(0.22)*
Some college	0.38	0.39
	(0.10)***	(0.20)*
4-yr college degree (+)	0.94	-0.13
	(0.16)***	(0.29)
Mom never read	0.00	-0.07
	(0.15)	(0.23)
Mom freq. read	0.15	0.09
	(0.09)*	(0.12)
Never*No H.S.		-0.07
		(0.31)
Frequent*No H.S.		-0.41
		(0.26)
Never*Some college		0.22
		(0.38)
Frequent*Some college		0.11
		(0.20)
Never*college+		0.58
		(0.68)
Frequent*college+		0.71
		(0.29)**
Summer Reads	0.41	0.39
	(0.08)***	(0.11)***
Summer Activity	0.36	0.39
	(0.08)***	(0.11)***
Read*no H.S.		-0.13
		(0.21)
Activity*no H.S.		-0.16
		(0.22)
Read*some college		0.04
		(0.19)
Activity*some college		-0.15
		(0.18)
Read*college degree		0.48
		(0.26)*
Activity*college degree		0.47
		(0.27)*
Adjusted R^2	0.23	0.24

Notes: Estimating sample comprised of 3286 children of 2031 mothers. Parentheses contain standard errors clustered at the mother (family) level. ***, **, and * indicate 2-tailed *p*-values below 0.01, 0.05, and 0.1, respectively. The omitted mothers' education category is H.S. diploma.

Table B5: Un-weighted Child's Educational Attainment Regressions (LPM)

	No H.S.	H.S. +	Some Coll. +	College +
	(1)	(2)	(3)	(4)
No H.S. diploma	0.07	-0.10	-0.09	0.03
	(0.05)	(0.05)**	(0.04)**	(0.03)
Some college	-0.10	0.10	0.09	0.05
	(0.04)**	(0.04)**	(0.05)**	(0.03)*
4-yr college degree (+)	-0.11	0.11	0.09	-0.13
	(0.06)*	(0.06)*	(0.07)	(0.05)***
Mom never read	0.00	0.01	-0.05	0.03
	(0.05)	(0.05)	(0.05)	(0.03)
Mom freq. read	-0.03	0.03	-0.03	0.02
	(0.02)	(0.02)	(0.03)	(0.02)
Never*No H.S.	0.08	-0.07	0.01	-0.05
	(0.07)	(0.07)	(0.07)	(0.04)
Frequent*No H.S.	0.12	-0.10	-0.02	-0.03
	(0.06)**	(0.06)*	(0.05)	(0.03)
Never*Some college	-0.03	0.03	0.08	-0.02
	(0.07)	(0.07)	(0.08)	(0.07)
Frequent*Some college	0.03	-0.03	0.08	0.01
	(0.04)	(0.04)	(0.04)*	(0.03)
Never*college+	-0.04	-0.01	0.12	0.13
	(0.09)	(0.10)	(0.15)	(0.11)
Frequent*college+	0.01	-0.02	0.07	0.15
	(0.05)	(0.05)	(0.06)	(0.05)***
Summer Reads	-0.05	0.04	0.09	0.04
	(0.02)**	(0.02)*	(0.02)***	(0.02)***
Summer Activity	-0.04	0.05	0.08	0.07
	(0.02)*	(0.02)**	(0.02)***	(0.02)***
Read*no H.S.	0.01	0.01	-0.07	-0.01
	(0.05)	(0.05)	(0.04)	(0.03)
Activity*no H.S.	0.05	-0.05	-0.02	-0.04
	(0.05)	(0.05)	(0.04)	(0.03)
Read*some college	0.00	0.01	0.02	-0.01
	(0.04)	(0.04)	(0.04)	(0.03)
Activity*some college	0.02	-0.03	-0.07	-0.01
	(0.03)	(0.04)	(0.04)*	(0.03)
Read*college degree	0.04	-0.04	-0.01	0.14
	(0.05)	(0.05)	(0.06)	(0.05)***
Activity*college degree	-0.00	0.00	0.07	0.10
	(0.05)	(0.05)	(0.07)	(0.05)**
Adjusted R^2	0.13	0.12	0.17	0.14

Notes: Estimating sample comprised of 3286 children of 2031 mothers. Parentheses contain standard errors clustered at the mother (family) level. ***, **, and * indicate 2-tailed *p*-values below 0.01, 0.05, and 0.1, respectively. The omitted mothers' education category is H.S. diploma.

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