

FAMILY STRUCTURE, MATERNAL EDUCATION, AND CHILDREN'S ACADEMIC TRAJECTORIES

PAA Abstract
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Jennifer March Augustine

University of Texas at Austin
Population Research Center
1 University Station G1800
Austin, TX 78712

Introduction

American women are increasingly pursuing higher education to the point that the historical gender gap in collegiate and post-collegiate graduation has not only closed, but reversed (Buchman and DiPrete 2006). Given that women still have primary responsibility for raising children (Sayer 2005), these trends in female educational attainment have implications for children's academic success and subsequent status attainment as adults. This is because education cultivates social, cognitive, and psychological capacities, enhances knowledge and skills, and shapes values and standards of success (Kington et al. 2004; Mirowsky and Ross 2003) that affect how mothers manage their children's education to give them a competitive edge in school (Lareau 2003). Indeed, there is a compelling body of research linking mothers' and children's educational pathways through pro-academic parenting (Magnuson 2007).

At the same time, higher education is consistently associated with a higher likelihood of marriage, whereas less education is associated with a higher likelihood of divorce, cohabitation, and nonmarital childbearing (Raley & Bumpass, 2003; Sweeney & Cancian, 2004). Importantly, these relationship statuses affect the flow of resources from mothers to children—particularly money, time, and socioemotional support—and the extent to which mothers' successfully promote their children's achievement (Amato, 2005). In this way, the effects of family structure on children's achievement could potentially narrow or widen maternal educational differences in children's achievement. In order to understand how educational advantage (and disadvantage) is transmitted, when it is blunted (e.g., single parenthood), and whether it can be supplemented by an alternative socioeconomic resource (e.g. marriage), it is important to consider the impact of maternal education, via parenting, on children's achievement in tandem with children's exposure to different family structures. This study examines how children's family structure during the transition into elementary school potentially moderates the link between maternal education, parenting, and children's early achievement. This period was selected given prior research indicating that parenting during this time is especially important for shaping children's early academic success (Augustine and Crosnoe 2009; NICHD SECCYD 2005).

Of course, as family structures grow more diverse, so does the likelihood that mothers and children will experience at least one, if not more, family structure transition (Cavanagh and Huston 2006). Indeed, higher education is also associated with a higher likelihood of marital stability, whereas less education is associated with a higher likelihood marital instability. These family structure transitions can also interrupt the flow of important resources (in the case of divorce), introduce new resources (in the case of marriage), or be disruptive in their own right (Avellar & Smock, 2005; McLanahan and Sandefur 1994; Smock, Manning, and Gupta 1999). Therefore, this study will also consider the effect of family structure transitions, including whether children experience a transition and the type of families they transition into and out of. There is some emerging evidence that transitions are associated with parenting stress (which can affect parenting) among less educated mothers, but not among higher educated mothers, but that transitions have the greatest negative impact on the reading activities of the most educated mothers (Beck et al 2008; Cavanagh and Huston 2006; Cooper et al 2009). Therefore, this study will consider the extent to which family structure transitions alter the link between maternal education and parenting and whether these effects translate into divergences (or convergences) in children's achievement trajectories.

The results from this study aim to unveil whether the availability (or absence) of these relationship resources amplify, or lessen, the well-documented benefits of maternal education, through parenting, on children's early achievement. These findings will help determine whether policies and resources aimed at improving children's well-being are best served focusing mothers' human capital resources or family programs aimed at promoting marriage and marital stability and reducing nonmarital fertility.

Data and Sample

Data for this study come from the NICHD Study of Early Child Care and Youth Development (SECCYD). The SECCYD is a birth cohort study designed to understand the developmental implications of child care, but has since followed children at regular intervals into elementary school up through the 9th grade. The families who participated in this study were recruited from hospitals in or near 10 locations: Little Rock, AR; Irvine, CA; Lawrence, KS; Boston, MA; Philadelphia, PA; Pittsburgh, PA; Charlottesville, VA; Morganton, NC; Seattle, WA; and Madison, WI. During selected sampling periods in 1991, 5,265 new mothers met the eligibility criteria for the study (at least 18 years old, conversant in English, with a healthy singleton child, and no plans to move) and agreed to be contacted after their return home from the hospital. A total of 1,364 families were enrolled in the study.

Although not nationally representative, this sample was economically and geographically diverse. The SECCYD also includes repeated measures of children's achievement; repeated measures of mothers' current relationship status, and repeated measures of parenting (including observations) across multiple domains, making it well suited to the aims of this study. The analytical sample for this study includes the 1,030 children who participated in the 1st grade follow-up and whose mothers were their primary caregivers.

Focal Measures

Maternal education. During the 1 month interview, mothers reported the total number of years of education they had received and their highest level of degree attainment. Dummy variables were used to sort mothers into five education groups (less than high school, high school graduate, some college, college graduate, graduate work or degree). Unfortunately, we could not account for increases in maternal education since the child's birth because of documented problems with these reports (see Technical Note 13 on study website). Although some mothers reported additional schooling, few reported additional degree attainment.

Parenting. In line with past SECCYD research identifying critical periods of influence (NICHD EECRN, 2005), parenting will be measured immediately before school entry at 54 months and at 1st grade. Measures of parenting (at 54 months and 1st grade) include observer ratings of maternal sensitivity, mother-child interactions (e.g., stimulation of cognitive development), and the home learning environment (measured by the HOME); mothers' reports of their parenting demands (e.g., on prosocial behavior and maturity), disciplinary strategies, organization of children's lives (e.g., after school activities, play with friends), use of early enrichment activities (e.g., center care), and mothers' involvement in these activities; and teacher/mother reports of mothers' school involvement.

Family structure. Relationship status will be assessed by quarterly reports of household members and their relationship to one another at each time point. Relationship instability will be indexed by the number of changes in marital status from birth through 54 months. Family structure at birth and current family structure (at 54 months and first grade) will be measured using these same reports and sorted into four dummy categories (married, single, cohabiting, step-family). Lastly, these three measures (instability, family structure at birth, and current family structure) will be combined to create several categories that capture family structure trajectories from birth through the start of school.

Achievement. School-based achievement will be assessed across elementary school (1st to 5th grade) by two subtests of the Woodcock-Johnson Psycho-Educational Battery– Revised (Letter Word for reading and Applied Problems for math), administered during 1st, 3rd, and 5th grade, The Bracken Test of Concepts (administered at 36 months) will control for school readiness.

Analytic Strategy

The baseline model for the analyses will be a path analysis model integrating a latent growth curve model of child achievement. Parent education will be the exogenous predictor, and parenting (at 54 months and 1st grade) will be the mediator. For child achievement, the outcome variable, the latent growth curve will include an intercept (achievement measured in 1st grade) and slope (change in achievement from 1st to 5th grade). Next, measures of family structure will be entered into the baseline model as main effects and interactions with maternal education. This will test whether different elements of children's family structure histories are associated with trajectories of achievement, are mediated by parenting, and are conditioned by maternal education.

This model will be estimated in Mplus (Muthen & Muthen 2001). All models include conventional controls (e.g., income, race) as well as controls for theoretically identified observable confounds (e.g., mothers' IQ, mothers mental health, children's earliest recorded cognitive and intellectual skills, children's experiences in child care, paternal wages) that could potentially threaten causal inference. The robustness of findings will be measured by the Impact Threshold for Confounding Variables (ITCV), an index that gauges how powerful unobservable confounds would have to be to negate causal inferences (Frank 2000).

Selected Preliminary Results and Next Steps

The unconditional growth curve model for children's achievement revealed that the average child added 17 points per year to his/her average test score between first grade ($M = 461.44$ for intercept) and fifth grade ($M = 17.24$ for slope) and that there was significant variation around the means of the intercept and slope (248.8, $p < .05$ for achievement intercept; and 5.17, $p < .05$ for achievement slope). Regressing the intercept and slope of achievement on maternal education as well as on the time varying covariates (e.g., family structure) and time invariant covariates (e.g., age at birth) revealed, not surprisingly, that much of this variation is due to maternal education. Children of women with advanced degrees scored about 10 points higher than their peers with high school educated mothers, although they did not differ in their rates of achievement growth. Thus, the children of more educated mothers started off school with a clear academic advantage and then maintained this advantage in stable form over the next few years. Adding different measures of parenting to this model revealed that many (although not all)

parenting behaviors mediate the link between maternal education and child achievement. The next step in the analysis involves adding the different measures of family structure as main effects and interactions with maternal education.

References

- Amato, P. R. 2005. The impact of family formation change on the cognitive, social, and emotional well-being of the next generation. *Marriage and Child Wellbeing: The Future of Children*, 15, 75-96.
- Augustine, Jennifer and Robert Crosnoe. 2009. "Mothers' Depression and Educational Attainment and their Children's Academic Trajectories." Paper presented at the 2008 annual meeting for the American Sociological Association, Boston, MA.
- Avellar, Sarah, and Pamela Smock. 2005. "The Economic Consequences of the Dissolution of Cohabiting Unions." *Journal of Marriage and Family*, 67 (2) : 315-327.
- Beck, Audrey, Cooper, Carey E., McLanahan, Sara S., and Jeanne Brooks-Gunn. 2008. *Relationship Transitions and Maternal Parenting* (Center for Research on Child Wellbeing, Working paper WP08-12-08). Princeton, NJ: Princeton University.
- Buchmann, Claudia, and Thomas A. DiPrete. 2006. "The Growing Female Advantage in College Completion: The Role of Family Background and Academic Achievement." *American Sociological Review* 71(4):515-41.
- Cavanagh, S., &Huston, A. 2006. Family Instability and Children's Early Problem Behavior. *Social Forces*, 85, 575 – 605.
- Cooper, Carey, Sara McLanahan, Sarah Meadows, and Jeanne Brooks-Gunn. 2009. "Family Structure Transitions and Maternal Parenting Stress." *Journal of Marriage and Family* 71: 558-574.
- Frank, K. Sykes, G., Anagnostopoulos, D., Cannata, M., Chard, L., Krouse, A., & McCrory, R. 2008. Does NBPTS Certification Affect the Number of Colleagues a Teacher Helps with Instructional Matters? *Educational Evaluation and Policy Analysis*, 30, 3-30.
- Kingston, Paul W., Ryan Hubbard, Brent Lapp, Paul Schroeder and Julia Wilson. 2003. "Why Education Matters." *Sociology of Education* 76(1):53-70.
- Lareau, Annette. 2004. *Unequal Childhoods: Class, Race, and Family Life*. University of California Press.
- Magnuson, Katherine. 2007. "Maternal Education and Children's Academic Achievement During Middle Childhood." *Developmental Psychology* 43: 1497-1512.
- McLanahan, Sara S. and Gary Sandefur. 1994. *Growing up with a Single Parent: What Helps, what Hurts*. Cambridge, MA: Harvard University Press.
- Mirowsky, John, and Catherine E. Ross. 2003. *Education, Social Status, and Health*. Aldine de Gruyter.
- Muthen, Linda K. and Bengt O. Muthen. 2004. *Mplus User's Guide*. Los Angeles: Authors
- NICHD Early Child Care Research Network. 2005. *Child Care and Child Development: Results from the NICHD's Study of Early Child Care and Youth Development*. New York: Guilford Press.
- Raley, R. K., & Bumpass, L. L. 2003. "The topography of the plateau in divorce: Levels and trends in union stability after 1980. *Demographic Research*, 8, 246-258.
- Sayer, Liana C. 2005. "Gender, Time, and Inequality: Trends in Women's and Men's Paid Work, Unpaid Work, and Free Time." *Social Forces* 84: 285-303.
- Smock, Pamela, Wendy Manning, and Sanjiv Gupta. 1999. "The Effect of Marriage and Divorce on Women's Economic Well-Being." *American Sociological Review*, 64 (6): 794-812. Abstract.

Sweeney, M. M., & Cancian, M. 2004. "The changing importance of economic prospects for assortative mating among white women in the United States." *Journal of Marriage and Family*, 66, 1015-1028.