

**From the holdings of the Department of Special Collections , Princeton University Library,
Princeton, NJ**

These documents are either in the public domain, or can only be used for educational and research purposes (Fair use) as per U.S. Copyright law (text below). By accessing this file, all users agree that their use falls in the public domain or within fair use as defined by the copyright law. We do not charge any permission or usage fees for the publication of images of material in our collections, including those provided by Princeton University Library, via our website, catalog, or directly from staff. For more information regarding copyright, credit, and citation please review the information on the Copyright, Credit and Citation Guidelines page of our website.

<https://library.princeton.edu/special-collections/policies/copyright-credit-and-citation-guidelines>. If you have any questions, including how to order higher-quality images from the collection, contact Special Collections Public Services via our Ask Us! Form. <https://library.princeton.edu/special-collections/ask-us>

Doctoral Dissertations, 2011-2026

Sociology

2013

Habits that Make, Habits that Break: Gender, Children's Behavior Problems, and Educational Attainment Across Two Decades

Owens, Jayanti

Princeton, NJ : Princeton University

<http://arks.princeton.edu/ark:/88435/dsp01tq57nr13p>

U.S. Copyright law: The copyright law of the United States (Title 17, §108, United States Code) governs the making of photocopies or other reproductions of copyrighted material. Under certain conditions specified in the law, libraries and archives are authorized to furnish a photocopy or other reproduction. One of these specified conditions is that the photocopy or reproduction is not to be used for any purpose other than private study, scholarship, or research. If a user makes a request for, or later uses, a photocopy or reproduction for purposes in excess of fair use that user may be liable for copyright infringement. This institution reserves the right to refuse to accept a copying order if, in its judgment, fulfillment of the order would involve a violation of copyright law. <https://www.copyright.gov/title17/title17.pdf>

HABITS THAT MAKE, HABITS THAT BREAK:
GENDER, CHILDREN'S BEHAVIOR PROBLEMS,
AND EDUCATIONAL ATTAINMENT ACROSS TWO
DECADES

JAYANTI OWENS

A DISSERTATION
PRESENTED TO THE FACULTY
OF PRINCETON UNIVERSITY
IN CANDIDACY FOR THE DEGREE
OF DOCTOR OF PHILOSOPHY

RECOMMENDED FOR ACCEPTANCE
BY THE DEPARTMENT OF
SOCIOLOGY AND THE OFFICE OF POPULATION RESEARCH
ADVISER: SCOTT M. LYNCH AND DOUGLAS S. MASSEY

SEPTEMBER 2013

© Copyright by Jayanti Owens, 2013.

All rights reserved.

Abstract

Prior to the early 1980s, American men graduated from high school and college at higher rates than American women. Since then, women have comprised a growing majority of high school and college graduates. This growing female advantage in educational attainment carries significant implications for labor markets, marriage markets, fertility and family formation, and child well-being. It also is of consequence for racial/ethnic and socioeconomic inequality: The gender gap in educational attainment is largest among minorities and the poor. Extant labor market and social accounts explain 30-60% of the gap, leaving up to 70% unexplained.

This dissertation proposes a new, but complementary, explanation. Drawing upon newly-available data from the Children of the NLSY79, which tracks children born in the 1980s until 2010, part one of the dissertation shows that boys' higher average level of early childhood behavior problems explains 15-25% of their lower level of educational attainment compared to girls.

Introducing the Early Childhood Longitudinal Study-Birth Cohort data, the second and third parts of the dissertation compare children born in the 1980s and 2000s to examine whether the gender difference in behavior problems – like that in educational attainment – has become most widespread among minorities and low-income Americans. Findings reveal that, by the 2000s, the gender gap in early childhood behavior problems had spread throughout a wide cross-section of minority children and children from low-income families. The behavior gap emerged even between the black and Hispanic and poor boys and girls with the lowest mother-rated behavior problems.

Analysis of potential mechanisms shows that growing gender differences in observed demographic, family, and health factors account for 20%-100% of the growth of the gender gap in behavior problems at different points in the behavioral distribution. Some, but not all, of the growth of the gender gap in behavior problems is accounted for by observed population level trends. Some of the growth of the gap in behavior may be due to perceptions of boys' worsening behavior. Taken together, results predict a widening gender gap in attainment in the coming decades, especially among minority and poor children.

Acknowledgements

This dissertation would not have been possible without the time, insight, and unwavering support of my colleagues, friends, and family. First and foremost, I would like to thank my dissertation committee. I could not have dreamed of a better team with which to work. Scott Lynch and Doug Massey, my co-chairs, provided invaluable support not only on the dissertation, but throughout my entire time in graduate school. Both were willing to become a co-author on one of my first empirical papers in graduate school. By working with them I began to learn how to hone a research question, to test it soundly and rigorously, and to speak about it compellingly, while remaining cognizant of its limitations. Scott taught me how to begin to think creatively about visualizing my data and how to be concrete about what I could and could not test given its strengths and limitations. Scott also pushed me to be clearer in my writing. Doug taught me to focus on the story I was trying to tell. In addition to imparting these important skills, both were willing to become co-chairs of my dissertation committee even though my area of focus was outside of their main areas of research interest. They asked me difficult questions and set high expectations for my work. In their own ways, each of them has offered tremendous support as I've navigated the many ups and downs of graduate school. For that I will be eternally grateful.

I cannot imagine what my dissertation would have been without Sara McLanahan's expertise and generosity. Sara was a stronghold through my dissertation process in a number of important ways. She was willing to vouch for me with the Department of Education, serving as the PI on my application for the restricted use data that became a central part of my dissertation. Sara read multiple versions of the preliminary drafts of my dissertation chapters, bringing a critical eye to their framing and to my methods for testing my hypotheses. It was as a result of her willingness to brainstorm with me that I came to many of what I consider to be the high points of my dissertation. Sara pushed me to think about the nuances of my topic. Her high standards and difficult questions made me work harder.

I am very grateful to Devah Pager and Martin Ruef for providing key insights and encouragement at turning points in my research and writing. I thank them for having been willing to step up and offer support at these critical junctures. I appreciate their taking the time to read papers and offer incredibly astute feedback.

Although not officially on my committee, I am deeply indebted to German Rodriguez. German played as active of a role in my work as any of my committee members. His door was always open, and his comments on my work were amazingly lucid. I don't think I would have dared to try half of the approaches I took in my dissertation if it were not for his support.

I also owe my thanks to Angel Harris, Marta Tienda, Tom Espenshade, Matt Salganik, Paul DiMaggio, Miguel Centeno, Bob Wuthnow, and Delia Baldassarri. Early on as a graduate student, Angel took me out to lunch and we had a more open and honest conversation than I could have hoped for. I thank him for showing up similarly for me throughout my time at Princeton. Marta and Tom gave me important opportunities to work on their projects early on during my time in graduate school. They were incredibly generous with their time and resources. Although neither were a part of my dissertation committee, the lessons I learned from them certainly were. Matt changed the way I think about statistics. Our conversations and the lessons imparted in his statistics course will stay with me for years to come. As instructor of the Empirical Seminar, Delia gave me confidence early on in my program to pursue my ideas and to push through the challenges. Despite the significant contributions of my committee and these other individuals, all the shortcomings of this work are mine.

None of my work at Princeton would have been possible without the support of people and offices across Princeton University. I thank Dawn Koffman and Chang Chung for sharing their programming genius and overall research insights on numerous occasions. My deepest thanks go to Shefalika Gandhi for reminding me to be mindful and to Dean Karen Jackson-Weaver for believing in my ideas. I am grateful for the incredible staff in Sociology and OPR, including (but not limited to) Wayne Appleton, Jennifer Flath, Nancy Cannuli, Lynne Johnson, Amanda Rowe, Donna DeFrancisco, Mary Lou Delaney,

Joyce Lopuh, Val Fitzpatrick, Judie Miller, Robin Piscecky, Kristen Matlofsky, Kris McDonald, Regina Leidy, Tracy Merone, Cindy Gibson, and Judith Tilton. I acknowledge generous research support from the Graduate School, the Department of Sociology, the Office of Population Research, Butler College, and the Keller Center for Innovation and Entrepreneurship. I also am grateful for generous outside support, including that from the National Science Foundation Graduate Research Fellowship, the National Institutes of Health Traineeship in Demography, the Mellon Mays Undergraduate Fellowship, the Mathematica Policy Research Summer Fellowship, the Social Science Research Council Dissertation and Pre-Dissertation Research Grants, and the United States Department of Education's Restricted-Use Data Support.

I also owe my thanks to a number of faculty and friends outside of Princeton who have played important roles in my development of a scholar. These include my undergraduate advisors at Swarthmore College – Sarah Willie, Keith Reeves, Carol Nackenoff, and Frank Grossman – who encouraged me and provided support that went above and beyond the call of duty on endless numbers of occasions. They inspired me to pursue a Ph.D. and they helped me see it all the way through. My deepest thanks also go to a number of other faculty and researchers beyond Princeton: Annalisa Mastri, Julieta Lugo-Gil, Kim Boller, John Deke, Lauren Rivera, Eric Grodsky, Rob Warren, Josipa Roksa, Margot Jackson, Tom DiPrete, Adam Galinsky, and Kathleen McGinn. I am grateful to Emily Franklin for her impeccable editing skills.

I am inspired by the wonderful friends and colleagues I have gotten to know throughout my time in graduate school. I am particularly indebted to a number of my friends and colleagues for sharing their brilliance and their insights: Andrew Franklin, Audrey Dorelien, Wendy Sheldon, Sa'ed Atshan, Brendan Saloner, Jung Kim, Angela Gerolamo, Justene Hill, Jill Stockwell, Jonathan Tannen, Dennis Feehan, Megan Todd, Beth Sully, Analia Olgiati, Naomi Sugie, Julia Gelatt, Erik Vickstrom, Danny Schneider, Heidi Norbis, Michelle Phelps, Joann Golann, Angelina Grigoryeva, Rene Flores, Kyla Thomas, Patrick Ishikuza, Alex Davis, and David Pedulla. I especially want to thank Jonathan, Andrew, Audrey, Dennis, Megan, and Beth for giving such invaluable feedback and con-

tributing so many insights on my work over the past few years. I learned a great deal from these people – and they made graduate school fun.

Last, but not least, I want to thank my family and my dearest friends. I am grateful to them for believing in me and for putting up with me over the last six years. They make it all worthwhile. This dissertation is dedicated to them.

To the family I was born into, and to the families I've made along the way.

Contents

Abstract	iii
Acknowledgements	iv
List of Tables	xii
List of Figures	xvi
1 Introduction	1
1.1 The Gender Gap in Educational Attainment in the United States	1
1.2 Early Childhood Behavior Problems	4
1.3 Chapter Outline	6
1.4 Conclusion	10
2 Data and Samples	12
2.1 Introduction	12
2.2 Data and Measures in Chapter 3	12
2.3 Data and Measures in Chapters 4 and 5	21
3 Early Childhood Behavior Problems and the Gender Gap in Educational Attainment in the United States	30
3.1 Introduction	30
3.2 Analytic Strategy	37
3.3 Results	40
3.4 Discussion	51
4 Race, Gender, and Behavior Problems Across Two Decades	58

4.1	Introduction: A Growing Gender Gap in Children’s Behavioral Problems Across Cohorts	58
4.2	Analytic Strategy	72
4.3	Results: Racial/Ethnic Disparities in the Spread of the Gender Gap in Externalizing Problems Across Cohorts	75
4.4	Discussion	84
5	Social Class, Gender, and Children’s Behavior Problems Across Two Decades	90
5.1	Introduction	90
5.2	Links Between Family Socioeconomic Status and Child Behavior Problems: The Case of ADHD	93
5.3	Child Gender and Links Between Family Socioeconomic Status, Family Structure, Early Health, and Behavior Problems	94
5.4	Analytic Strategy	100
5.5	Results: Socioeconomic Disparities in the Spread of the Gender Gap in Externalizing Problems Across Cohorts	102
5.6	Discussion	111
6	Conclusion	116
6.1	Overview of Findings	116
6.2	Theoretical and Practical Contributions	117
6.3	Directions for Future Work	120
A	Chapter 3 Appendix	124
A.1	Scale Construction	124
B	Chapter 4 Appendix	132
B.1	General Supplemental Results	132
B.2	Shifts in the Externalizing Distribution Aggregated Across Racial/Ethnic Groups	142

B.3	A Detailed Discussion of Racial/Ethnic, Gender, and Period Differences in Descriptive Statistics in the Locations of the 10th, 25th, 50th, 75th, and 90th Percentiles of Externalizing	146
B.4	Mechanisms of the Growth in the Gender Gap in Externalizing Among Hispanics	153
B.5	Potential Mechanisms of the Growth in the Gender Gap in Externalizing, Controlling for Gender Differences in Cognitive Development	160
C	Chapter 5 Appendix	165
C.1	General Supplemental Results	165
C.2	Supplemental Results for Per Capita Household Income Quartile 2	177
C.3	Results by Mother's Education Level	182
	Bibliography	187

List of Tables

2.1	Items in the Externalizing Problems, Self-Regulation Problems, and Social Problems Scales in the NLSY-C	16
2.2	Parenting Measures Used in Analyses of the NLSY-Children Born 1983-1986	19
2.3	Sample Restrictions Applied to the NLSY-C and ECLS-B Data in Chapters 4 and 5	22
2.4	Items in the Externalizing Problems Scale (and Self-Regulation and Social Problems Sub-Scales) Used in Chapters 4 and 5, by Dataset	26
3.1	Hierarchical Anova Table Corresponding to the Path Model of Figure 3 . .	43
3.2	Two-Way Decomposition of Gender Differences in Externalizing Problems at Ages 4 or 5: Levels vs. Effects of Parenting, Family Context, and Demographic and Health Factors in the Late 1980s	50
A.1	Means and Standard Deviations of Variables Used in the Analyses, by Gender	126
A.2	Demographic, Health, Family, and Behavioral Factors as Predictors of H.S. Completion, and as Mechanisms to Help Explain the Gender Gap in H.S. Completion (Reporting Odds Ratios)	127
A.3	Demographic, Health, Family, and Behavioral Factors as Predictors of 4-Year College Completion, and as Mechanisms to Help Explain the Gender Gap in 4-Year College Completion (Reporting Odds Ratios)	128
A.4	Demographic, Health, Family, and Behavioral Factors as Predictors of Years of Schooling, and as Mechanisms to Help Explain the Gender Gap in Years of Schooling (Reporting OLS Coefficients)	129

B.1	Potential Family and Health Mediators of the Gender Gap in the Location of the 10th Percentile of Externalizing among Black Children Ages 4-5 . . .	133
B.2	Potential Family and Health Mediators of the Gender Gap in the Location of the 25th Percentile of Externalizing among Black Children Ages 4-5 . . .	134
B.3	Potential Family and Health Mediators of the Gender Gap in the Location of the 50th Percentile of Externalizing among Black Children Ages 4-5 . . .	135
B.4	Potential Family and Health Mediators of the Gender Gap in the Location of the 50th Percentile of Externalizing among White and Asian Children Ages 4-5	136
B.5	Potential Family and Health Mediators of the Gender Gap in the Location of the 10th Percentile of Externalizing Problems among Hispanic Children Ages 4-5	156
B.6	Potential Family and Health Mediators of the Gender Gap in the Location of the 25th Percentile of Externalizing Problems among Hispanic Children Ages 4-5	157
B.7	Potential Family and Health Mediators of the Gender Gap in the Location of the 50th Percentile of Externalizing Problems among Hispanic Children Ages 4-5	158
B.8	Potential Family and Health Mediators of the Gender Gap in the Location of the 10th Percentile of Externalizing Problems among Black Children Ages 4-5, Controlling for Cognitive Development	161
B.9	Potential Family and Health Mediators of the Gender Gap in the Location of the 10th Percentile of Externalizing Problems among Hispanic Children Ages 4-5, Controlling for Cognitive Development	162
B.10	Potential Family and Health Mediators of the Gender Gap in the Location of the 25th Percentile of Externalizing Problems among Black Children Ages 4-5, Controlling for Cognitive Development	163

B.11	Potential Family and Health Mediators of the Gender Gap in the Location of the 25th Percentile of Externalizing Problems among Hispanic Children Ages 4-5, Controlling for Cognitive Development	164
C.1	Potential Family and Health Mediators of the Gender Gap in the Location of the 10th Percentile of Externalizing Problems among Per Capita Household Income Quartile 1 Children Ages 4-5	166
C.2	Potential Family and Health Mediators of the Gender Gap in the Location of the 25th Percentile of Externalizing Problems among Per Capita Household Income Quartile 1 Children Ages 4-5	167
C.3	Potential Family and Health Mediators of the Gender Gap in the Location of the 50th Percentile of Externalizing Problems among Per Capita Household Income Quartile 1 Children Ages 4-5	168
C.4	Potential Family and Health Mediators of the Gender Gap in the Location of the 10th Percentile of Externalizing Problems among Per Capita Income Quartile 1 Children Ages 4-5, Controlling for Cognitive Development . . .	169
C.5	Potential Family and Health Mediators of the Gender Gap in the Location of the 25th Percentile of Externalizing Problems among Per Capita Income Quartile 1 Children Ages 4-5, Controlling for Cognitive Development . . .	170
C.6	Potential Family and Health Mediators of the Gender Gap in the Location of the 50th Percentile of Externalizing Problems among Per Capita Income Quartile 1 Children Ages 4-5, Controlling for Cognitive Development . . .	171
C.7	Potential Family and Health Mediators of the Gender Gap in the Location of the 10th Percentile of Externalizing Problems among Per Capita Income Quartile 2 Children Ages 4-5	178
C.8	Potential Family and Health Mediators of the Gender Gap in the Location of the 25th Percentile of Externalizing Problems among Per Capita Income Quartile 2 Children Ages 4-5	179

C.9	Potential Family and Health Mediators of the Gender Gap in the Location of the 50th Percentile of Externalizing Problems among Per Capita Income Quartile 2 Children Ages 4-5	180
-----	---	-----

List of Figures

1.1	Bachelor's Degrees Conferred to Women and Men from 1976-77 to 2001-02: Absolute Numbers, Absolute Difference in Numbers, and Proportions . . .	2
1.2	Percent of Bachelor's Degrees Conferred to Women, by Racial/Ethnic Group: 1976-77 to 2001-02	3
1.3	Female-Male Difference in Absolute Numbers of Bachelor's Degrees Con- ferred, by Race/Ethnicity: 1976-77 to 2001-02	4
1.4	Conceptual Overview of Dissertation	7
2.1	Data Structure and Measure Coverage for Chapter 3, by Age and Birth Cohort	15
2.2	Data Structure and Behavioral Measures Coverage for Chapters 4 and 5, by Age and Birth Cohort	23
3.1	Conceptual Model of the Associations Between Childhood Self-regulation and Social Skills, Educational Expectations, and Educational Attainment .	34
3.2	Path Model of the Associations Between Childhood Self-Regulation and Social Skills, Educational Expectations, and Educational Attainment . . .	40
3.3	Means of Variables Used in the Analyses, by Gender	41
3.4	Cumulative Percent of the Gender Gap in High School Completion, Col- lege Enrollment, and 2- or 4-Year College Completion Explained through the Addition of Demographic, Health, and Family Context, Educational Expectations, and Behavior Problems	47

4.1	Rates of ADHD Prevalence and Elementary School Suspension Rates, by Year and Gender or Race and Gender	60
4.2	Prevalence or Incidence Rates of Single Mother Families with Children, Non-Marital Childbearing, Low Birth Weight, Pre-Term Birth, and Asthma Diagnosis, by Gender and Year	67
4.3	Externalizing Problems Distribution by Time Period, Gender, and Race . .	76
4.4	Gender Gap in Externalizing Problems at the 10th, 25th, 50th, 75th, and 90th Percentiles Within Girls' and Boys' Respective Behavioral Distribu- tions and Change in Gender Gaps Between the 1980s and 2001 Cohorts, by Race/Ethnicity	78
4.5	Means and 95% Confidence Intervals of Predictor Variables, by Race, Gen- der, and Time Period, at Each Sub-Group's Respective 10th Percentile of Externalizing Problems	80
4.6	Potential Family and Health Mediators of the Growth of the Gender Gap in the Location of the 10th, 25th, and 50th Percentiles of Externalizing Behavior Problems at Ages 4-5, by Race	82
5.1	Rates of Diagnosed/Treated ADHD Prevalence Among American Children 3-18 Years by Socioeconomic Status, 1987-2008	94
5.2	Single Parent Households, Low Birth Weight & Pre-Term, and Asthma among Children by Socioeconomic Status and Year	97
5.3	Externalizing Problems Distribution, by Per Capita Household Income Quartile, Gender, and Cohort	104
5.4	Expected Values of Externalizing Problems at Ages 4 and 5 at Various Points in the Behavioral Distribution, by Per Capita Household Income Quartile, Cohort, and Gender	105
5.5	Gender Gap in Externalizing Problems at the 10th, 25th, 50th, 75th, and 90th Percentiles Within Girls' and Boys' Respective Behavioral Distribu- tions and Change in Gender Gaps Between the 1980s and 2001 Cohorts, by Per Capita Household Income Quartile	107

5.6	Potential Family and Health Mediators of the Growth of the Gender Gap in the Location of the 10th, 25th, and 50th Percentiles of Externalizing Behavior Problems at Ages 4-5 among Children from Families in Income Quartile 1	110
A.1	10th, 25th, 50th, 75th, and 90th Percentile Gender Gaps in Self-regulation and Social Problems in the Late 1980s	130
A.2	10th, 25th, 50th, 75th, and 90th Percentile Gender Gaps in Externalizing Problems in the Late 1980s Among Children in High vs. Low Parental Conflict Families and Single Mother vs. Two Parent Families	131
B.1	Prevalence of Single Parent Families with Children Under 18 from 1970-2005, by Race/Ethnicity	137
B.2	Asthma Rates for U.S. Children 0-4 Years from 2001-2003, by Race and Gender	138
B.3	Asthma Rates for U.S. Children 0-4 Years from 2001-2011, by Race and Gender	139
B.4	Counts (N's) at Each Percentile of Externalizing, by Gender, Race/Ethnicity, and Time Period	140
B.5	Expected Values of Externalizing at Ages 4 and 5 at Various Points in the Behavioral Distribution, by Race/Ethnicity, Cohort, and Gender	141
B.6	Externalizing Distribution by Time Period and Gender	144
B.7	Expected Values, Gender Gaps, and Changes in the Gender Gaps in Externalizing Across the Behavioral Distribution (Aggregated Across Racial/Ethnic Groups)	145
B.8	Means and 95% Confidence Intervals of Predictor Variables, by Race, Gender, and Time Period, at Each Sub-Group's Respective 25th Percentile of Externalizing Score	149

B.9	Means and 95% Confidence Intervals of Predictor Variables, by Race, Gender, and Time Period, at Each Sub-Group's Respective 50th Percentile of Externalizing Score	150
B.10	Means and 95% Confidence Intervals of Predictor Variables, by Race, Gender, and Time Period, at Each Sub-Group's Respective 75th Percentile of Externalizing Score	151
B.11	Means and 95% Confidence Intervals of Predictor Variables, by Race, Gender, and Time Period, at Each Sub-Group's Respective 90th Percentile of Externalizing Score	152
B.12	Potential Family and Health Mediators of the Growth of the Gender Gap in the Location of the 10th, 25th, and 50th Percentiles of Externalizing Behavior Problems at Ages 4-5 among Hispanics	159
C.1	Asthma Prevalence among Children 3-17 Years, by Parental Education and Poverty Status for Selected NHIS Survey Years 1981-1998	172
C.2	Counts (N's) at Each Percentile of Externalizing, by Gender, SES, and Time Period	173
C.3	Means and 95% Confidence Intervals of Predictor Variables, by Per Capita Household Income Quartile, Gender, and Time Period, at Each Sub-Group's Respective 10th Percentile of Externalizing Score	174
C.4	Means and 95% Confidence Intervals of Predictor Variables, by Per Capita Household Income Quartile, Gender, and Time Period, at Each Sub-Group's Respective 25th Percentile of Externalizing Score	175
C.5	Means and 95% Confidence Intervals of Predictor Variables, by Per Capita Household Income Quartile, Gender, and Time Period, at Each Sub-Group's Respective 50th Percentile of Externalizing Score	176
C.6	Potential Family and Health Mediators of the Growth of the Gender Gap in the Location of the 10th, 25th, and 50th Percentiles of Externalizing Behavior Problems at Ages 4-5 among Income Quartile 2 Children	181

C.7	Externalizing Problems Distribution, by Mother's Education, Gender, and Cohort	184
C.8	Expected Values of Externalizing Problems at Ages 4 and 5 at Various Points in the Behavioral Distribution, by Mother's Education Level, Cohort, and Gender	185
C.9	Gender Gap in the location of the 10th, 25th, 50th, 75th, and 90th Percentiles of Externalizing Problems Within Girls' and Boys' Respective Behavioral Distributions and Change in Gender Gaps Between the 1980s and 2001 Cohorts, by Mother's Education Level	186

Chapter 1

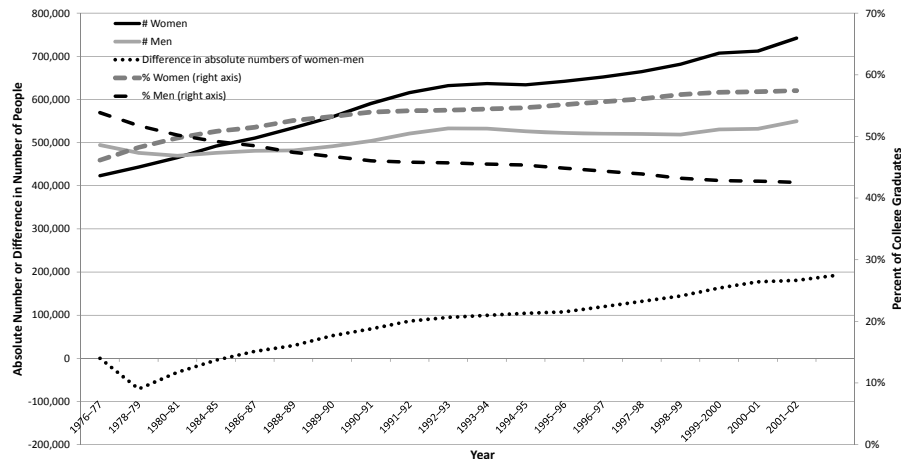
Introduction

1.1 The Gender Gap in Educational Attainment in the United States

One of the most remarkable demographic puzzles of the past fifty years is the gender reversal in educational attainment in the United States. Until the early 1980s, men comprised the majority of those completing a four-year college degree (i.e., a bachelor of arts or sciences degree; henceforth “college”) (Buchmann and DiPrete, 2006). The early 1980s saw parity in rates of college completion between men and women (Buchmann and DiPrete, 2006). Since then, there has been a growing female advantage in rates of college completion in the United States. By 2010, women comprised nearly 60% of those completing a college degree (NCES, 2010). A similar pattern of a female advantage in educational attainment has taken shape with regard to the gender gap in high school completion (Heckman and LaFontaine, 2010). Females’ higher rates of high school and college completion in the United States produce today’s “gender gap in educational attainment” or “the female advantage in educational attainment.”

Figure 1.1 shows that the female advantage exists both in absolute and proportionate terms. The slopes of the lines shown in Figure 1.1 indicate that the rate of increase in bachelor’s degree attainment has been faster for females (75%) than for males (11%). And, the difference in the absolute numbers of degrees conferred has been increasing as well. The black and gray dashed lines correspond to the right-hand axis and show that the gender gap in college completion also is growing in proportionate terms.

Figure 1.1: Bachelor's Degrees Conferred to Women and Men from 1976-77 to 2001-02: Absolute Numbers, Absolute Difference in Numbers, and Proportions



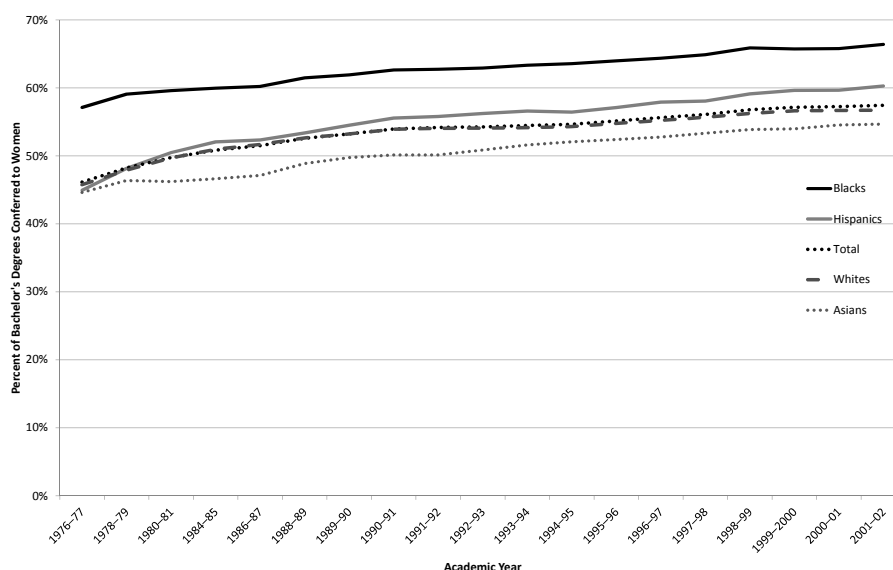
Sources: ¹U.S. Department of Education, National Center for Education Statistics. 2004. *Digest of Education Statistics, 2003*. Table 264. Accessed Online 21 June 2013 at <http://nces.ed.gov/pubs2005/2005025.pdf>.

Today's female advantage in educational attainment is important because it carries significant implications for labor markets, marriage markets, fertility and family formation, and child well-being. Individuals' educational attainment is positively associated with their employment prospects, earnings, and wealth accumulation (Bowles, 1972; Sewell et al., 1970). All four are key factors in predicting age at entry into first marriage and propensity to marry at all (Ellwood and Jencks, 2004; Oppenheimer, 1988; Schneider, 2011; Wilson, 1987). Given the tendency of Americans to marry others within their same educational bracket (Mare, 1991; Schwartz and Mare, 2005), women's higher level of educational attainment may shift marriage markets and carry significant consequences for family formation and stability, fertility, and child well-being (Bianchi and Casper, 2000).

The female advantage in educational attainment is of consequence for patterns of racial/ethnic and socioeconomic inequality in adults' and children's well-being. The gender gap in educational attainment is largest within racial/ethnic minority and low socioeconomic status communities (Buchmann and DiPrete, 2006; DiPrete and Buchmann, 2006; Heckman and LaFontaine, 2010). Figure 1.2 shows that, since the 1980s, women have constituted the majority of bachelor's degree recipients across all racial/ethnic groups. Although the gender gap in conferral of bachelor's degrees has increased at a roughly constant rate within each racial/ethnic group, the female advantage has been consistently

largest among blacks, followed by Hispanics and then whites, and lowest among Asians. By 2001-02, women earned 58% of bachelor's degrees overall (Department of Education, 2004). In 2001-2002, women earned 66% of bachelor's degrees among blacks, 60% among Hispanics, 57% among whites, and 55% among Asians (Department of Education, 2004). Figure 1.3 shows that the gender gap in bachelor's degrees conferred also has been growing in absolute terms within each racial/ethnic group.

Figure 1.2: Percent of Bachelor's Degrees Conferred to Women, by Racial/Ethnic Group: 1976-77 to 2001-02

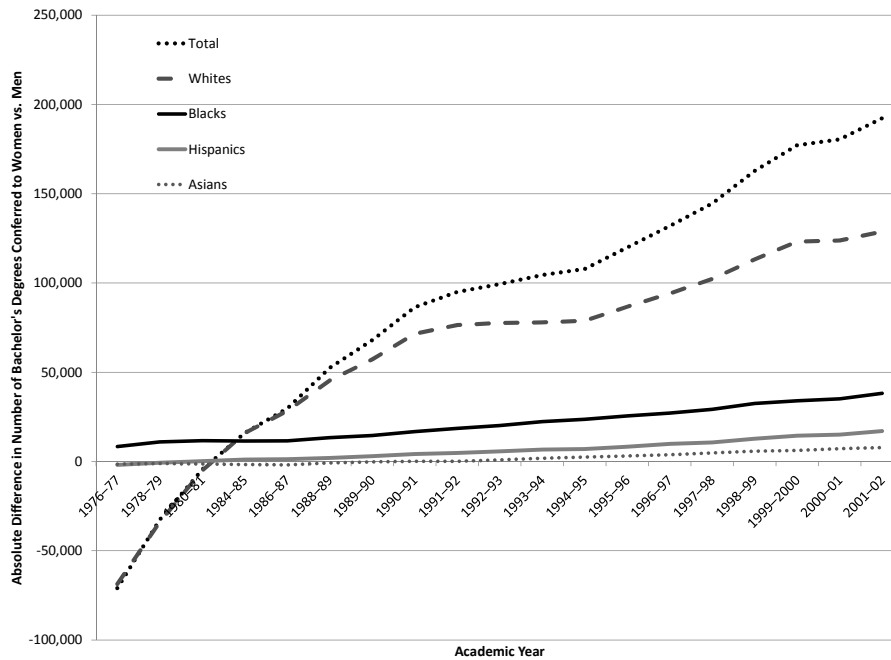


Sources: ¹U.S. Department of Education, National Center for Education Statistics. 2004. *Digest of Education Statistics, 2003*. Table 264. Accessed Online 21 June 2013 at <http://nces.ed.gov/pubs2005/2005025.pdf>.

There are similar trends in the gender gap in bachelor's degrees by parental educational attainment. The gender gap in bachelor's degree completion is largest among those whose parents do not have a college degree (Buchmann and DiPrete, 2006). To the extent that higher educational attainment predicts greater access to social, material, educational, and health resources (McLanahan, 2004), adults' and children's social and economic well-being is most tenuous within minority and low-socioeconomic status communities.

Despite the potentially wide-ranging social and economic consequences of the gender gap in educational attainment, researchers do not fully understand its causes. Most explanations have focused on the rise of "pull factors" that drive the growing gender gap: these include the opening of the highly-skilled labor market to women and the decline of

Figure 1.3: Female-Male Difference in Absolute Numbers of Bachelor's Degrees Conferred, by Race/Ethnicity: 1976-77 to 2001-02



Sources: ¹U.S. Department of Education, National Center for Education Statistics. 2004. *Digest of Education Statistics, 2003*. Table 264. Accessed Online 21 June 2013 at <http://nces.ed.gov/pubs2005/2005025.pdf>.

factory and manufacturing and other lower-skilled occupations (Goldin et al., 2006; Jacob, 2002). These labor market changes now create greater incentives and social acceptance for women to go to college (Goldin et al., 2006). Although these macro-level pull factors explain 30 to 60 percent of the growing gender gap in educational attainment, still 40 to 70 percent of the growing gender gap in educational attainment remains unexplained (Goldin et al., 2006).

1.2 Early Childhood Behavior Problems

This dissertation proposes and tests the possibility that at the root of the growing, macro-level gender gap in educational attainment is a micro-level behavioral process. I hypothesize that children's early childhood behavior problems help predict their adult educational attainment. The behaviors I focus on include self-regulation – the ability to sit still, delay gratification, and concentrate on a given task despite other distractions – and social skills – the ability to get along with others and to avoid temperamental outbursts (Blair,

2002; Peterson and Zill, 1986; Raver, 2002). Developmental psychologists often examine self-regulation problems and social problems together as what they call “externalizing problems” (Eisenberg et al., 2000; Hill et al., 2006). Largely a result of socialization within families and schools, females develop lower levels of externalizing problems than males (Kochanska et al., 2000; McFadyen-Ketchum et al., 1996). This gender difference in early behavior development is what I refer to as “the gender gap in behavior.”

The emphasis I place on childhood behavior builds on the mounting body of evidence pointing to the importance of non-cognitive (i.e., “behavioral” or “interpersonal”) skills for a range of adult educational and labor market outcomes, including high school completion (Alexander et al., 1997) and college enrollment (McLeod and Kaiser, 2004). A recent study shows that females’ lower levels of behavior problems in early childhood are an important factor in explaining their higher average test scores in elementary school (DiPrete and Jennings, 2012). Test scores are in turn a key predictor of later educational attainment (McLeod and Kaiser, 2004). The importance of adolescent behavioral skills also has been highlighted by work showing a strong relationship between adolescent behavioral skills and earnings (Heckman et al., 2006).

Nonetheless, efforts to link early childhood behavior problems to college completion have been thwarted by a prior lack of longitudinal data following children from early childhood all the way through college completion. Prior studies have established a link between behavior problems and college enrollment (Jacob, 2002; McLeod and Kaiser, 2004), but have not examined whether the association extends through to college completion. Due to the same data limitation, we also do not know whether the gender gap in educational attainment that we see today is linked to the average difference in boys’ and girls’ behavior problems in early childhood. Chapter 3 of this dissertation utilizes newly-available longitudinal data of children followed from birth to age 22 first to investigate whether early childhood behavior problems predict college completion, as shown by arrow 1 of Figure 1.4. Chapter 3 then directly addresses the first major aim of this dissertation: to test whether the gender difference in early childhood behavior problems helps explain today’s gender gap in educational attainment. To address this question, I first investigate

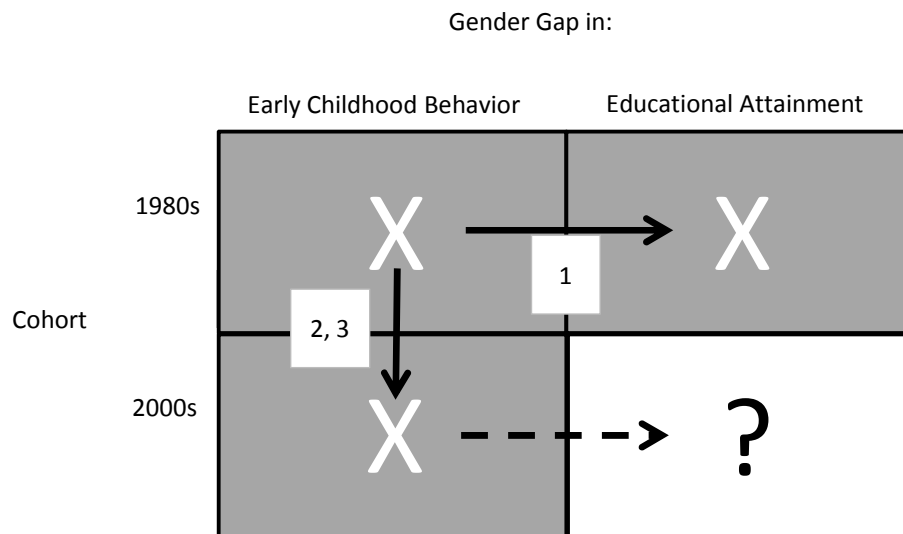
how individual-level differences in behavior problems scale up to produce a macro-level gender gap in early childhood behavior. Then I am able to examine how much of the macro-level gender gap in educational attainment that we see in 2010 is explained by the macro-level gender gap in early childhood behavior.

The second major aim of the dissertation is to be able to make some prediction of whether the gender gap in educational attainment will grow in the future, once the children born in the 2000s enter adulthood, as shown by the dotted arrow and question mark in Figure 1.4. I do so by examining whether there has been a change in the gender gap in children's behavior problems across cohorts. This hypothesis is supported by research on trends in the gender gap in the diagnosis of attention deficit hyperactivity disorder (ADHD) – a behavioral disorder diagnosed on the basis of the same behaviors that comprise externalizing. This research suggests that the gender gap in underlying externalizing behaviors has become more widespread among children (Akinbami et al., 2009). Expanding on this research, dissertation chapters 4 and 5 compare national cohorts of children born in the 1980s and the 2000s, as shown by the arrow corresponding to numbers 2 and 3 in Figure 1.4.

1.3 Chapter Outline

The remainder of this chapter presents a brief synopsis of each of the three empirical chapters (Chapters 3-5). Chapter 3 establishes that the gender gap in early childhood externalizing behavior problems among children born in the early- to mid-1980s helps explain the gender gap we see in the same children's educational attainment by 2010. Because the female advantage in educational attainment has consistently been largest among blacks and Hispanics compared to whites and Asians since at least the 1970s, chapter 4 examines whether the gender gap in behavior problems is largest and/or most widespread among black and Hispanic children. Chapter 5 examines whether the gender gap in behavior problems is largest and/or increasingly widespread among children from low income compared to high income families.

Figure 1.4: Conceptual Overview of Dissertation



Arrow 1: Using data on children born in the 1980s who are followed into early adulthood in the 2000s, the first empirical analysis of the dissertation examines whether the macro-level gender gap in educational attainment is explained by a micro-level process in which early childhood behavior problems predict educational attainment. **Arrow 2-3:** Comparing children born in the 1980s to children born in the 2000s, the second and third sets of empirical analysis investigate how boys' and girls' levels of early childhood behavior problems have changed over the past two decades. The question mark and dotted line indicate that the overall aim of the dissertation is intended to make a prediction about what we might expect to see in terms of the gender gap in educational attainment when the cohorts born in the 2000s enter early adulthood.

Chapter 3: Gender Gaps in Early Childhood Behavior and Educational Attainment in the U.S.¹

This chapter proposes and tests a framework for understanding the origins of today's striking female advantage in educational attainment. Whereas past research has examined the role of the opening labor market for women's college attainment, the present study proposes, tests, and finds support for an alternative, but complementary explanation. The past fifty years has witnessed important macro-level social shifts, such as parity in parents' investments in the education of their sons and daughters and the opening of the labor market for women. These social changes may have paved the way for girls' long-standing advantage in childhood self-regulation and social skills to translate into a female advantage in educational attainment. Using prospective panel data on a national sample of children followed from birth to age 22, this chapter shows that the gender gap in early childhood

¹An earlier version of this paper was presented at the 2012 American Sociological Association Annual Conference in Denver, CO

behavior problems of today's young adults when they were children accounts for a notable share of today's female advantage in educational attainment. Whereas much research has examined the importance of family structure in shaping gender differences in children's behavioral development, this chapter also shows that dynamics within the family – such as parenting practices and parental conflict, play an important role. Specifically, the second part of this chapter shows that the gender gap in behavior itself is shaped in part by gender-specific responses to parenting practices.

Chapter 4: Race, Gender, and Children's Behavior Problems Across Two Decades²

In recent decades, health and education researchers separately have documented a rise in overall levels of attention deficit hyperactivity disorder (ADHD) diagnosis and school suspension. Due to boys' higher baseline levels, ADHD and suspension prevalences have increased faster for boys than girls, producing a "gender gap" in these outcomes in recent decades. The gender gap is largest among black children. But, research has not investigated whether there also has been an rise in population-wide levels of the underlying self-regulation problems and social problems (i.e., "externalizing") in early childhood that may produce the growth in the gender gap in ADHD and school suspension. Especially among blacks, recent decades have seen a marked rise in non-traditional family structures (i.e., single mother and step families) and in early childhood health risk factors, like pre-term birth, low birth weight, and asthma diagnosis. As these factors become more prevalent, they are likely to affect a wider cross-section of children, including those with lower levels of behavior problems. Research also suggests boys may be exposed to these family and health risk factors to a greater degree than girls, or they may externalize more than girls in response to exposure to these factors. Shifts in families and health therefore may help explain the emergence of a gender gap in externalizing even among children with lower levels of these problems.

²An earlier version of this paper was presented at the 2012 American Sociological Association Annual Conference in Denver, CO

This chapter draws on two national samples of children born in the 1980s and in the 2000s. Using comparable measures across samples, the study finds that the gender gap in early childhood behavior problems has spread to a wider cross-section of black, Hispanic, and white children, emerging even between the boys and girls with the lowest mother-rated behavior problems among black and Hispanic children. Gender differences in observed demographic, family, and health factors, as well as in internalizing behavior problems, account for 20%-100% of the growth of the gender gap in externalizing. Results carry important implications for the intergenerational well-being of children and families, especially among black children. Results also point to the need for further investigation of changes in mother and teacher perceptions and reporting of behavior problems across cohorts and into the efficacy of early childhood programs that target behavioral and cognitive development, especially among young boys.

Chapter 5: Social Class, Gender, and Children's Behavior Problems Across Two Decades

In 2006, over 8 million American children had been diagnosed with ADHD. Since the late 1990s, as income inequality has continued to rise, ADHD prevalence has been higher and increasing fastest among children from families with an income below 200% of the poverty line. At the same time that ADHD has become increasingly concentrated among lower-income children, the population of children diagnosed with ADHD also has become increasingly male-dominated. The growing segment of low-income boys diagnosed with ADHD raises important questions about the changing perceptions of boys' attention and antisocial/aggressive behaviors over the past several decades. If perceptions of boys' bad behavior are heightened within low-income communities, can this apparent rise in low-income boys' behavior problems be explained by environmental changes that disproportionately affect boys from low-income families? Or have other social changes simply led to greater scrutiny of the behaviors of poor boys?

Like Chapter 4, this chapter also draws on two national cohorts of children born nearly two decades apart. It investigates whether it is most within low-income families that

mothers increasingly report that boys have higher levels of ADHD-linked self-regulation problems and social problems than girls. The findings reveal that, in recent decades, the gender gap in mothers' reports of children's behavior has become ubiquitous throughout low-income, but not high-income communities. As the gender gap has spread, it has emerged even between the boys and girls from low-income families who have the lowest behavior problem ratings. But, only a portion of the growing gender gap is explained by changes in families and the rise of early childhood health risks. Strikingly, much more of the growing gender gap is explained by a rise in mothers' reports of boys' levels of the internalizing behavior problems that are linked to depression. This is surprising since internalizing behavior problems historically have been reported to be higher among girls. Although further research is needed, these findings are consistent with the story that the growing gender gap in low-income children's antisocial/aggressive and attention problems is at least partly explained by changing perceptions as opposed to true changes in behaviors.

1.4 Conclusion

This dissertation tests whether the gender gap in educational attainment is due to boys' worse average externalizing behavior problems. In the first part of the dissertation, I use micro-level, individual data to investigate how individuals' behavior problems are linked to their level of educational attainment. The second and third parts of the dissertation examine how a micro-level gender difference in children's behavior problems sheds light on macro-level racial/ethnic and socioeconomic disparities in the gender gap in educational attainment. As shown in Figure 1.2, the gender gap in educational attainment has been largest within minority and low socioeconomic status communities since the 1970s. Furthermore, the absolute magnitude of the gender gap in educational attainment has increased fastest among minority and low socioeconomic status Americans.

Similarly, research has pointed to larger gender gaps in childhood externalizing problems among black and Hispanic compared to white and Asian children, as well as among children from poor compared to non-poor families (DiPrete and Jennings, 2012; Entwisle

et al., 2007; Mickelson, 2003). But, research has not investigated how the racial/ethnic and socioeconomic patterns of the gender gap in childhood externalizing problems have changed across cohorts. The second and third parts of the dissertation examine this question. If the gender gap in early childhood behavior problems has grown fastest within minority and low socioeconomic status communities, these trends may predict a growing gender gap in educational attainment concentrated especially within disadvantaged communities.

Chapter 2

Data and Samples

2.1 Introduction

This chapter lays out the data and samples used throughout the dissertation. The dissertation makes use of two longitudinal datasets. The first source of data comes from the Children of the National Longitudinal Survey of Youth (NLSY-C). Certain variables drawn from the 1979 National Longitudinal Survey of Youth (NLSY79) surveys of the mothers of the children in the NLSY-C are merged in to the working sample. The NLSY-C data are used on their own in Chapter 3 and in combination with the second primary data source – the restricted-use version of the Early Childhood Longitudinal Study-Birth Cohort (ECLS-B; IES license number 09120016; PI: Dr. Sara McLanahan) – in Chapters 4 and 5.

2.2 Data and Measures in Chapter 3

Data and Sample Restrictions

The sample from the NLSY-C used in Chapter 3 consists of the roughly 6,900 children who were born between 1979 and 2010 to NLSY79 women aged 14 to 21 in 1979. Between 1986-2010, the NLSY-C collected detailed developmental information biennially for children aged 4 to 16. Of these 6,900, educational attainment at age 22 and behaviors at ages 4 or 5 are available for the roughly 1,840 children born between 1983 and 1986. Approximately 500 of these children (or 27%) have siblings in the sample. Because some of the modeling

strategies used later in the dissertation do not allow for the clustering of standard errors for siblings, one child is randomly selected from each set of siblings to preserve comparability of the sample throughout the chapters.¹ Random selection of one sibling from families with multiple children in the sample brought the working sample to 1,752 children (roughly 440 children in each of the 1983-1986 cohorts).

The structure of these data and the timing of data collection is shown by year, age and birth cohort in Figure 2.1. The X's indicate the chronological progression of each birth cohort from age 0 to age 22. Black X's indicate that coverage for a given measure is available for the indicated cohort and age group. Behavioral measures (including externalizing problems, self-regulation problems, social problems, and internalizing problems) are collected in 1988 at ages 4 (1984 birth cohort) and 5 (1983 birth cohort), and in 1990 at ages 4 (1986 birth cohort) and 5 (1985 birth cohort). Similar patterns of data collection hold for household income, family structure, parental conflict and parenting, educational expectations, and ear infection or asthma diagnosis by the present age, each of which is measured concurrently with behavior, as discussed below. Birth weight, gestation time, mother's education, family structure, and mother's age at birth are collected in 1984 for the 1983 and 1984 birth cohorts and in 1986 for the 1985 and 1986 birth cohorts. A measure of early childhood literacy often used as a proxy for early childhood cognitive development, the Peabody Picture Vocabulary Test-Revised Edition (or PPVT), is collected in 1986 at ages 2 and 3 for the 1984 and 1983 birth cohorts, respectively, and in 1988 for the 1986 and 1985 birth cohorts.²

Measures in Chapter 3

Dependent Variables in Chapter 3

Educational attainment (EDU) includes binary indicators for high school and four-year college completion as of age 22 as well as a continuous variable for years of schooling

¹However, analyses for this chapter were replicated including siblings and clustered standard errors and substantive conclusions did not change.

²PPVT is standardized within-age as discussed later.

completed.³⁴ Years of schooling is used in addition to four-year college completion in part because it helps capture intermediate attainment outcomes such as college enrollment and partial or 2-year college completion.⁵

The second set of dependent variables are summed indexes measuring self-regulation problems and social problems and their composite, externalizing behavior problems, at ages 4 or 5 and 10 or 11 (BEH), as shown in Table 2.1 (Peterson and Zill 1986).⁶ The externalizing problems index uses six items based on mother reports for how frequently the child: (1) is impulsive or acts without thinking, (2) is restless, overly active, or can't sit still, (3) has trouble getting along with other kids, (4) breaks his/her own or another's things deliberately, (5) is not liked by other children, and (6) has a strong temper and loses it easily, on a scale of 1 (never) to 3 (often). The externalizing problems scale ranges from six to eighteen and has a Cronbach's alpha of 0.70.⁷ The self-regulation problems and social problems sub-scales are shown in Table 2.1. Note that consistent with most psycho-biologists notion of self-regulation (see Blair (2002)), the self-regulation sub-scale includes a measure of concentration that is excluded from the overall externalizing problems measure to preserve its comparability to other externalizing problems scales: "How frequently does your child have difficulty concentrating?"

³The small number of respondents completing a GED prohibit modeling GED completion separately. Combining high school and GED completion did not change substantive conclusions.

⁴Many of the children born in the second half of 1986 begin kindergarten a year after their cohort-mates born in the earlier part of 1986 and turn 24 after their survey date in 2010. Therefore, they are only able to report four-year college completion rates as of 2010.

⁵Methodological reasons for the use of a continuous measure of educational attainment are described in Section 3.2.

⁶Children's behavior was only observed every other year in the NLSY-C. Some children were assessed at age 4 (or age 10) and others at age 5 (or age 11).

⁷These six items provide coverage of each of the three sub-scales—self-centered/explosive, attention problems/overactive, and antisocial/aggressive—that are encompassed within the full externalizing problems scale used in the Pre-Kindergarten Behavioral Skills-2nd Edition and Child Behavior Checklist, also shown in Table 2.1.

Figure 2.1: Data Structure and Measure Coverage for Chapter 3, by Age and Birth Cohort

15

		Age																						
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
	1983	x																						
	1984	x	x																					
	1985	x	x	x																				
	1986	x	x	x	x																			
	1987		x	x	x	x																		
	1988			x	x	x	x																	
	1989				x	x	x	x																
	1990	Birth				x	x	x	x															
	1991	weight;		PPVT			x	x	x	x	x													
	1992	Gestation;		Cognitive					x	x	x													
	1993	Mother's		Skills					x	x	x	x												
	1994	Ed;		Behavior, Time I;						x	x	x	x											
	1995	Family		Household Income;							x	x	x	x										
	1996	Structure;		Family Structure;								x	x	x	x									
	1997	Mother's		Parental Conflict & Parenting;								x	x	x	x									
	1998	Age		Ear Infection or Asthma Diagnosis									x	x	x	x								
	1999														x	x	x	x						
	2000															x	x	x	x					
	2001																x	x	x	x				
	2002																	x	x	x	x			
	2003																		x	x	x	x		
	2004																			x	x	x	x	
	2005																				x	x	x	x
	2006																					x	x	x
	2007																						x	x
	2008																							x

NOTE: A black X indicates that coverage for a given set of measures is available for a particular birth cohort and age.

Table 2.1: Items in the Externalizing Problems, Self-Regulation Problems, and Social Problems Scales in the NLSY-C

SELF-REGULATION PROBLEMS:
(I) Attention Problems/Overactive
-Is impulsive/acts without thinking
-Is restless, overly active, can't sit still
(II) Concentration
-Has difficulty concentrating
SOCIAL PROBLEMS:
(I) Antisocial/Aggressive
-Has trouble getting along with other kids
-Breaks own or another's things deliberately
-Is not liked by other children
(II) Self-Centered/Explosive
-Has a strong temper and loses it easily
Cronbach's Alpha (full scale): 0.70
NOTES: Items are based on mother reports on a scale of 1 (never) to 3 (often). The externalizing scale used here consists of the subset of Child Behavior Checklist (CBCL) items selected by Peterson and Zill (1986) for use in the Behavior Problems Index (BPI) that overlaps with items used in the equally well-known Pre-Kindergarten Behavioral Skills Scale, 2nd edition (PKBS-2). This subset of items has been established to be a more valid index of externalizing than that used in the BPI alone (Guttmanova et al. 2007). The resulting externalizing scale is an index that sums 6 of the 7 items shown above from across the lack of self-regulation and lack of social skills subscales. Only the item measuring concentration is excluded from the overall externalizing scale to preserve comparability with other commonly-used externalizing scales, which usually do not include concentration. The lack of self-regulation and lack of social skills scales are distinct subsets of the overall externalizing scale, as indicated above. The lack of self-regulation scale includes the item measuring concentration because concentration is a central part of most psycho-biologists' notion of self-regulation (Blair 2002).

The third dependent variable is the average of the mother and child's educational expectations for the child when the child was 8 or 9 years old (EXP). Separately, both mother and child were asked: "How far do you expect [your child] to go in school?" Responses included: 1 (leave high school before graduation), 2 (graduate from high school), 3 (get some college or other training), 4 (graduate from college), or 5 (get more than four years of college). Mother's and child's educational expectations are averaged in order to capture: (1) the way parents transmit their perceptions of their child's labor market

opportunities to the child, and (2) the way the child's own educational expectations are shaped by peers, teachers, and parents.

Key Predictor Variables in Chapter 3

I differentiate between structural factors affecting childhood context (STR) and family dynamics (DYN). Structural factors include: 1) family composition at birth (a dummy for father absent at birth); 2) family composition at age 4 (indicators for single mother, social (i.e. non-biological, residential) father), and; 3) educational and economic resources (mother's years of schooling at birth and household income at age 4 (in \$1,000s in models; divided by 25,000 for ease of display in figures). Family dynamics include: a parental conflict scale and three parenting practices scales (maternal harshness, positive discipline and warmth, and cognitive support). Parental conflict (Cronbach's $\alpha=0.73$) is a summed index of mother's responses to the NLSY79 survey administered in 1988: "On a scale of 1 (never) to 4 (often) about how frequently do you and the child's father argue about: chores and responsibilities, money, children, showing affection, religion, leisure time, drinking, other women, or relatives."⁸

The parenting practices summed indexes shown in Table 2.2 are age-appropriate measures of parent-child interaction between child ages 0 to 5). Maternal harshness (Cronbach's $\alpha=0.60$) includes : (1) an indicator for insecure attachment at age 2 (whose construction is detailed in the footnotes of Table 2.2, and; (2) an indicator for whether the child was spanked in the past week when she or he was between ages 3 and 4. Insecure attachment and spanking are within a single measure as in prior work combining maternal coercion and non-affection into a single item (McFadyen-Ketchum et al., 1996) and based on research suggesting a bi-directional association between them (Bugental and Happaney, 2004; Carlson, 1998).

Mother's positive discipline and warmth (Cronbach's $\alpha=0.68$) includes indicators for: (1) mother "always" talks to child while working at home (0-2 years); (2) mother hugs, kisses or caresses child during interviewer observation (0-2 years); (3) mother talks

⁸Items were worded with regard to the biological father even if he was not present in the household. Children were aged 2-5 years at the time parental conflict was collected.

to the child when child acts out physically (i.e., tries to hit the mother) (3-4 years), and; (4) mother sends the child for a timeout when child acts out physically (3-4 years). Cognitive support (Cronbach's $\alpha=0.76$) includes indicators for: (1) parent(s) reads to the child every day (0-2 years); (2) child has more than 5 push/pull toys and more than 10 children's books (0-2 years); (3) television is on in the home for less than 3 hours per day (3-5 years); (4) parent(s) takes the child to the grocery at least twice per week (0-2 years), and; (5) child goes outside the house daily (0-2 years).

Demographic & Health Context, Cognitive Skills, and Internalizing Behavior Problems in Chapter 3

Demographic and contextual factors of the child's birth (DEM) include: mother's age at birth, cognitive development at 2-4 years (discussed below), mother's report of whether the child was diagnosed with asthma or an ear infection by age 4, birth weight in pounds, gestation time in weeks⁹, birth order, race or ethnicity, child year of birth, and internalizing behavior problems at 4 or 5 years (discussed below).¹⁰

Cognitive skills are captured by Peabody Picture Vocabulary Test (PPVT) scores measured at child ages 2 to 4. Note that PPVT is standardized within-age so that the slight upward trend in scores by age is adjusted relative to the scores of other children of the same age at test administration. Prior research established the relationship between behavioral problems and test scores (Buchmann et al., 2008; McLeod and Kaiser, 2004; Whitmire, 2010). In addition, I do not expect gender differences in cognitive skills to drive results. I use a temporally prior measure of cognitive skills to adjust for variation in cognitive ability without focusing on cognitive ability as a key pathway.

The internalizing problems scale uses maternal reports of child behavior on the two items that overlap across the Pre-Kindergarten Behavioral Skills, 2nd Edition (PKBS-2)

⁹Reported by the mother in the first interview period after the child's birth.

¹⁰At the extreme, boys' behavior problems may be associated with males' higher rates of adolescent criminal activity and high school dropout, whereas girls' behavior problems may be associated with teen pregnancy (Ensminger and Slusarcick, 1992; Sampson and Laub, 1995). Original models therefore also controlled for conviction status (ever-convicted by age 18 for high school completion or age 22 for college completion) and pregnancy (had a child by age 18 for high school completion or age 22 for college completion). Although statistically significant, these have a negligible effect on the gender gap in educational attainment.

Table 2.2: Parenting Measures Used in Analyses of the NLSY-Children Born 1983-1986

Scale Description	Item Description ³	Age(s)
Maternal Harshness (0-2)	Cronbach's alpha=.6027	0-5
Maternal Attachment Type: Insecure Attachment (0-1)¹	Binary "insecure attachment" classification constructed from maternal responses to a subset of the Rothbart Behavior Questionnaire and Kagan's Compliance Scale, which comprise the Attachment Insecurity Scale ¹	2
Spanking (0-1)	Binary measure of whether or not mother has spanked child in the past week	3-5
Positive Discipline and Warmth (0-4)	Cronbach's alpha=0.6782	0-5
Maternal Warmth (0-2)	Binary measure for whether mother "always" talks to child while working around the house	0-2
	Binary measure for whether mother caressed, kissed, or hugged child at least once during interviewer observation	0-2
Positive Discipline (0-2)	Binary measure for whether one of the mother's responses to being hit by child is to send the child to his/her room	3-5
	Binary measure for whether one of the mother's responses to being hit by child is to talk to the child	3-5
Cognitive Support (0-5)	Cronbach's alpha=0.7575	0-5
Literacy Environment (0-3)²	Binary measure for whether mother reads to child "every day"	0-2
	Binary measure for whether child has more than 5 push/pull toys AND more than 10 children's books	0-2
	Binary measure for whether television is on in home for less than 3 hours per day, on average	3-5
Exploration Outside Home (0-2)	Binary measure for whether parent(s) take child to the grocery at least twice per week	0-2
	Binary measure for whether child goes outside the house "daily"	0-2

¹The Attachment Insecurity Scale (INSECUR) has an observed scale range of 5-40 based on maternal responses to the Rothbart Infant Behavior Questionnaire and Kagan's Compliance Scale. Items include: trouble soothing or calming; stays close to mother during play; copies mother's behavior; cries when left alone; demanding and impatient when mother is busy; gets worried when mother is upset; wants help). Following a classification scheme based on patterns observed nationally in the ECLS-B and in the Ainsworth studies in which 54-55% of children age 2 are identified as "insecure" (see page 24 in "Chapter 8: Toddler's Security of Attachment Status" in the ECLS-B Toddler Attachment Sort 45 data documentation), I classified the lowest 60 percent of scores as "secure" and highest 40 percent as "insecure".

²Based on research indicating that the national average for hours of television per day among children under 7 ranges from 2 to 2.5 (see Boller et al. 2004 and Rideout et al. 2003), with only 29 percent of this programming educational in nature (Bickham et al. 2003), I classify 3 or more hours of television per day as 0 (not improving the home literacy environment), and under 3 hours of television per day as 1 (literacy-enhancing).

³All items are based on maternal report, except the second item of maternal warmth (whether mother hugged, kissed, or caressed child during observation), which is based on interviewer report.

and the Behavior Problems Index (BPI): (1) child seems unhappy, sad, or depressed, and; (2) child is too fearful or anxious, on a scale of 1 (never), 2 (sometimes), to 3 (often). These items were selected to cover both main components of internalizing problems (social withdrawal and anxiety/somatic problems) across both the PKBS-2 and BPI scales.¹¹

Treatment of Missing Data and Sensitivity Analyses for Chapter 3

Multiple imputation of twenty datasets using the built-in multiple imputation procedure in Stata 11 was used to deal with item-missingness on key predictors (Royston, 2004). Dependent variables like educational attainment (missing for approximately 25% of cases) and childhood behaviors (missing for roughly 18% of cases, almost all of which were also missing on educational attainment) were included in imputation. Observations with imputed dependent variables were dropped prior to analyses based on the strategy of multiple imputation then deletion (Von Hippel, 2007). Imputed predictor variables for which missingness was highest included: parental conflict (35%), household income at age 4 (16%), cognitive support at age 4 (12%), maternal discipline and warmth at age 4 (12%), and maternal harshness (8%). The working sample consisted of 1,752 observations after carrying out the imputations. Given the extent of item missingness, three sets of sensitivity analyses were conducted: (1) Replication with complete cases only; (2) Replication with a second multiply-imputed dataset in which the variances of imputed items were increased by 10% to partially test violation of the missing-at-random assumption (Allison, 2000; Lynch and Brown, 2013), and; (3) Assessment of systematic biases in item-missingness by regressing a binary indicator for missingness on the dependent variable on observed covariates. This tests whether the dependent variable is missing-at-random as a function of observed predictors. Substantive results did not change, and few systematic biases in missingness were identified.

¹¹Models using all BPI internalizing problems items provided in the NLSY-C did not change substantive results.

2.3 Data and Measures in Chapters 4 and 5

Data in Chapters 4 and 5

This study relies on the comparison of two national samples of children followed from birth in the mid 1980s or in 2001, until at least kindergarten. The first data source is the same as that used in Chapter 3: the NLSY-C. As in Chapter 3, certain item about parents collected in the National Longitudinal Survey of Youth: 1979 (NLSY-79) are merged into the working sample of the NLSY-C. The second data source is the restricted-use version of the Early Childhood Longitudinal Study-Birth Cohort (ECLS-B).

Both data sources contain detailed information on children's early health, cognitive and behavioral development, home environments, and parents' relationship statuses, social class, and demographic characteristics. This information draws from maternal interviews or surveys and, for certain items, interviewers' direct home observations or test administration. The structure of the data and the timing of data collection is shown by year, age and birth cohort in Figure 2.2. The X's indicate the chronological progression of each birth cohort from age 0 to age 5. The brackets detail timing of variables collection.

Sample Restrictions in Chapters 4 and 5: Children of the National Longitudinal Survey of Youth (NLSY-C)

As in Chapter 3, the 1983-1986 birth cohorts of the NLSY-C are the best-suited for Chapters 4 and 5. Because the behavior problems of interest were not collected in the NLSY-C until 1986, the 1983-1986 cohorts are the earliest for whom behavior problems are available at ages 4 and 5 (for comparability with the ages at which measures are available in the ECLS-B). These cohorts also allow me to maximize the period between studies.¹²

The NLSY-C includes roughly 3,000 children born between 1983 and 1986, as shown in Table 2.3. However, whereas the NLSY-C sample used in the Chapter 3 is restricted

¹²Note that the NLSY-C alone includes children born in the 2000s. However, reliance on the 2000s births would have introduced significant bias into the analysis due to maturation: the 2000s births in the NLSY-79 were to mothers much older and more economically and otherwise stable than those born in the 1980s.

to the 1,752 children born from 1983-1986 who are followed until age 22, Chapters 4 and 5 focus on children only until kindergarten entry. In order to minimize selection and maximize sample size, Chapters 4 and 5 preserve the roughly 1,160 additional children born between 1983-1986 who are followed at least until kindergarten.¹³ Of the 3,000 NLSY-C children born between 1983-1986, 506 (19%) had siblings in the sample. Because quantile regression – the primary analytic strategy used in Chapters 4 and 5 – does not permit the clustering of standard errors among siblings, I randomly selected one child from these families, for a total of roughly 2,600 children (a similar strategy is employed in Thomson et al. (1994)). Ultimately, behavior problem measures were available for roughly 2,000 of these children.

Table 2.3: Sample Restrictions Applied to the NLSY-C and ECLS-B Data in Chapters 4 and 5

	NLSY-C	ECLS-B
Full Sample	11,500	10,700
Mothers 18-29 years at birth	11,500	6,100
Children born 1983-1986 (If NLSY-C)	3,000	N/A
Randomly-selected child if siblings in sample (Randomly- selected twin, if applicable)	2,600	5,700
Non-missing on externalizing	2,000	4,600
Note: In compliance with ECLS-B restricted-used reporting guidelines (and for comparability in reporting across datasets), sample sizes are rounded to the closest 50.		

¹³Note that, in light of the larger NLSY-C sample used in Chapters 4 and 5 compared to Chapter 3, I replicated all analyses in Chapters 4 and 5 using the same working sample as in Chapter 3. Substantive conclusions did not change and are available upon request.

Figure 2.2: Data Structure and Behavioral Measures Coverage for Chapters 4 and 5, by Age and Birth Cohort

	Age						
	0	1	2	3	4	5	6
1983	NLSY-C						
1984	NLSY-C	NLSY-C					
1985	NLSY-C	NLSY-C	NLSY-C				
1986	NLSY-C	NLSY-C	NLSY-C	NLSY-C			
1987		NLSY-C	NLSY-C	NLSY-C	NLSY-C		
1988			NLSY-C	NLSY-C	NLSY-C	NLSY-C	
1989				NLSY-C	NLSY-C	NLSY-C	NLSY-C
1990					NLSY-C	NLSY-C	NLSY-C
1991						NLSY-C	NLSY-C
1992							NLSY-C
1993							
1994							
1995							
1996							
1997							
1998							
1999							
2000							
2001	ECLS-B						
2002		ECLS-B					
2003			ECLS-B				
2004				ECLS-B			
2005					ECLS-B		
2006						ECLS-B	
2007							ECLS-B
2008							

NOTE: Grey text indicates that behavioral skills were not measured in a given year or at a given age (the complete set of behavioral skills were not collected for children under age 4).

Sample Restrictions in Chapters 4 and 5: Early Childhood Longitudinal Study-Birth Cohort (ECLS-B)

Roughly 15-20 years later, the ECLS-B collected similar developmental and family information on a nationally-representative sample of about 11,000 babies born in 2001. Based on direct observations and parental interviews/surveys, the ECLS-B tracked children at 9 months, 2 years, 4 or 5 years (preschool), and 6 years (kindergarten), as shown in Figure 2.1. ECLS-B mothers spanned the child-bearing ages at the birth of their child(ren) in

2001. For comparability across datasets, the ECLS-B sample was restricted to the roughly 6,100 children born to mothers aged 18-29 at their child's birth in 2001, as shown in Table 2.3.¹⁴ Approximately 10% of the sample consisted of (oversampled) twin or higher order births. Because the quantile regressions used in these chapters cannot cluster standard errors for siblings, I randomly selected one child per mother. This reduced my sample to approximately 5,700. Of these, externalizing problems at ages 4 or 5 were available for the roughly 4,600 children who comprise the working sample for the 2001 birth cohort.

Measures in Chapters 4 and 5

The most significant challenge in variables creation was the identification of items that were directly comparable across datasets. This required the selection of items that were worded virtually identically, measured when children in both datasets were the same age, and collected from the same reporting party. Even though the ECLS-B collected information from teachers and daycare providers and through direct-observations, measures are constructed almost exclusively from maternal reports because this was the primary strategy deployed in the NLSY-C. The scales used here are commonly used in prior research. However, in some cases (e.g., externalizing behaviors and internalizing behaviors) the scales used here include fewer items than the full number available for a given construct. This is in order to ensure that scales are comprised of nearly identical measures collected at comparable ages across datasets, as discussed in detail below.

Dependent Variables in Chapters 4 and 5

The dependent variable in Chapters 4 and 5 is a summed index for externalizing problems. Externalizing problems at ages 4 or 5 is conceptualized as the sum of two component subscales: self-regulation problems and social problems, as shown in Table 2.4 (Peterson and Zill, 1986).¹⁵ In both datasets, the externalizing problems index uses six items based on

¹⁴The mean age of childbearing increased from 24 to 27 years between 1983 and 2001 (Mathews and Hamilton, 2002). Restricting the ECLS-B sample to children born to mothers 18-29 years may have introduced selection bias into the sample. A robustness check in which mothers up through age 35 were included in the ECLS-B sample showed that the growth of the gender gap did not change much.

¹⁵Children's behavior was only observed every other year in the NLSY-C. Some children were assessed at age 4 and others at age 5.

mother reports of the child's frequency of: (1) impulsiveness, (2) restlessness, (3) trouble getting along with/difficulty getting invited to play by other children, (4) destructiveness, (5) likability, and (6) temper.¹⁶

In the ECLS-B, mother reports of her child's frequency of exhibiting a given externalizing behavior are measured on a scale from 1(never) to 5(very often). In the NLSY-C, mother reports are measured on a scale of 1 ("rarely"), 2 ("sometimes"), and 3 ("often"). The ECLS-B items are rescaled from x=1 ("never") to x=5 ("very often") to 1 ("rarely") to 3 ("often") using two methods: (1) merging of extreme categories ("very often" with "often" and "never" with "rarely"), and; (2) a linear rescaling using the formula: $x \cdot .5 + .5$. The resulting externalizing problems scales range from six to eighteen. The ECLS-B scale has a Cronbach's Alpha of 0.75; the NLSY-C, 0.70.¹⁷ Because results did not differ substantively between the rescaling method, results from the first method – the merging of extreme categories – are reported throughout the paper.

One of the key issues with internal validity was comparability of externalizing problems items across datasets. These sensitivity analyses are discussed at the end of this chapter.

Key Predictor Variables in Chapters 4 and 5

I differentiate between three broad sets of predictors: family socioeconomic and cultural resources, family structure, and early childhood health. Family socioeconomic and cultural resources include mother's years of schooling at time of child's birth and per capita household income at age 4 (in \$1,000s), in 2011 dollars.¹⁸ Family structure includes fam-

¹⁶Although most studies draw on a subset of the complete Pre-Kindergarten Behavioral Skills, 2nd Ed. (PKBS-2) scale, the full PKBS-2 externalizing problems scale consists of 27 items divided into three subcategories indicated in Table 2.4 The subset of items used in the present externalizing problems scale includes at least one item from each of the three sub-categories. By sub-scale, these include: Self-centered/explosive: Wants all the attention, will not share, yells or screams when angry, must have his or her own way, defies parent, teacher or caregiver, has unpredictable behavior, is jealous of other children, is moody or temperamental, whines or complains; Attention problems/overactive: makes noises that annoy others, takes things away from other children, has difficulty concentrating or staying on task, disobeys rules, is restless and fidgety, and disrupts ongoing activities; Antisocial/aggressive: teases or makes fun of other children, is physically aggressive, seeks revenge against others, and calls people names. All items are based on maternal report.

¹⁷These six items provide coverage of each of the three sub-scales—self-centered/explosive, attention problems/overactive, and antisocial/aggressive—that are encompassed within the full PKBS-2 externalizing problems scale referenced in an earlier footnote, and also shown in Table 2.4.

¹⁸Per capita household income is constructed by dividing total household income (adjusted to 2011 dollars) by the number of people living in the household).

Table 2.4: Items in the Externalizing Problems Scale (and Self-Regulation and Social Problems Sub-Scales) Used in Chapters 4 and 5, by Dataset

Scale/Subscale Name:	CBCL (BPI) EXTERNALIZING ITEMS AVAILABLE IN NLSY-C ¹	COMPARABLE PKBS-2 (PBS) EXTERNALIZING ITEMS AVAILABLE IN THE ECLS-B ²
SELF-REGULATION PROBLEMS:		
Attention Problems/Overactive	Is impulsive/acts w/o thinking	Acts impulsively
	Is restless, overly active, can't sit still	Is overly active
SOCIAL PROBLEMS:		
Antisocial/Aggressive	Has trouble getting along w/ other kids	Is (not) invited to play by other children (reverse-coded)
	Breaks things on purpose	Destroys others' things
	<i>Is not liked by other children</i>	Is (not) liked by other children (reverse-coded)
Self-Centered/Explosive	Has strong temper and loses it easily	Has temper tantrums
Cronbach's Alpha: 0.70		Cronbach's Alpha: 0.75
¹ Within the NLSY-C's more general Behavior Problems Index (BPI; developed by Peterson and Zill 1986) were 10 externalizing items. Of these, 6 overlapped almost identically with those available in the ECLS-B. The item listed in italics is included in the BPI-based externalizing scale, but not in the CBCL-based externalizing scale (see Guttmanova et al. 2007 for a discussion of why CBCL measures are more valid than the BPI items). However, to maximize coverage, it is included in the present externalizing scale. ² The ECLS-B includes a total of 8 externalizing items from the broader Problem Behaviors Scale of the Pre-Kindergarten Behavioral Skills, 2nd Ed. scale. Two PKBS-2 items (Child is physically aggressive and Child is angry) available in the ECLS-B were not used in the present scale due to non-corresponding items in the NLSY-C. However, the subset of items used in the present externalizing scale include at least one item from each of the three primary externalizing sub-scales (attention problems/overactive, etc.) listed above. In order to correspond to the NLSY-C scale of: 1=not true/rarely, 2=sometimes, 3=often, the ECLS-B items are rescaled from 1 (never)-5 (very often) to 1-3 using two approaches: (1) merging of extreme categories ("very often" with "often" and "never" with "rarely"); (2) a linear rescaling using the formula: $x * .5 + .5$.		

ily composition at birth (a dummy for father absent at birth) and family composition at age 4 (indicators for single mother and social (i.e., non-biological, residential) father). Early childhood health factors include indicators for pre-term birth (less than 37 weeks gestation), low birth weight (less than 5.5 pounds), and asthma diagnosis by age 4.¹⁹

Demographic Context and Internalizing Problems in Chapters 4 and 5

Models adjust for a number of additional demographic, and behavioral factors. These include: mother's age at birth, the child's birth order, child's year of birth, child's internalizing behavior at ages 4 or 5 (discussed below), and, indicators for race/ethnicity, where analyses are not stratified. Internalizing is measured using maternal reports of child behavior on the two items that overlap across the Pre-Kindergarten Behavioral Skills, 2nd Edition (PKBS-2) and the CBCL's Behavior Problems Index (BPI): (1) child seems unhappy, sad, or depressed, and; (2) child is too fearful or anxious. These items were selected

¹⁹Pre-term is based on mother's report of weeks of gestation and birth weight in the first interview period after the child's birth.

to cover both main components of internalizing (social withdrawal and anxiety/somatic problems) while also using items deemed to be valid measures of internalizing across both the PKBS-2 and BPI scales.²⁰ The internalizing items are scaled (and re-scaled, in the case of the 1-5 point ECLS-B items) in the same way as the items used to measure externalizing problems.

Cognitive Development in Chapters 4 and 5

Prior research has focused on the relationship between behavioral problems and test scores (Buchmann et al., 2008; McLeod and Kaiser, 2004; Whitmire, 2010). But, it is not clear whether behavior predicts cognitive development, cognitive development predicts behavior, or both are the product of some other factor associated with both. Given this study's focus on behavior and the family and health factors that explain a growth in the gender gap in externalizing problems where it appears, the results presented in the main text do not control for cognitive development. However, supplementary analyses shown in the appendix material of Chapters 4 and 5 adjust for variation in cognitive ability without focusing on cognitive ability as a key pathway. A detailed description of the cognitive ability measure used in the supplementary analyses is also included in the appendix material of Chapters 4 and 5.

Treatment of Missing Data and Sensitivity Analyses in Chapters 4 and 5

Multiple imputation of twenty datasets using the built-in multiple imputation procedure in Stata 11 was used to deal with item-missingness on key predictors (Royston, 2004). Externalizing problems at ages 4 or 5 (missing for roughly 24% of cases in the NLSY-C and 21% of cases in the ECLS-B) was included in imputation. Observations with imputed dependent variables were dropped prior to analyses based on the strategy of multiple imputation then deletion (Von Hippel, 2007). Imputed predictor variables for which missingness was highest included: per capita household income at age 4 (22% in the NLSY-C and 33% in the ECLS-B) and cognitive support at age 4 (18% in the NLSY-C and

²⁰Models using all BPI internalizing items provided in the NLSY-C did not change substantive results.

10% in the ECLS-B). The working sample consisted of 6,400 observations after carrying out the imputations (rounded to the nearest 100 for restricted data reporting purposes). Given the extent of item missingness, three sets of sensitivity analyses were conducted: (1) Replication with complete cases only; (2) Replication with a second multiply-imputed dataset in which the variances of imputed items were increased by 10% to partially test violation of the missing-at-random assumption (Allison, 2000), and; (3) Assessment of systematic biases in item-missingness by regressing a binary indicator for missingness on the dependent variable on observed covariates. This tests whether the dependent variable is missing-at-random as a function of observed predictors.

Internal and Predictive Validity Checks for the Behavioral Scales in Chapters 4 and 5

After constructing comparable behavioral scales across datasets, I conducted a number of sensitivity analyses to examine the internal and predictive validity of these scales. Of the six items in the externalizing problems scale used in the present study, one item is not worded nearly as consistently across datasets as the other items. In the NLSY-C, this item asks mothers how frequently “the child has trouble getting along with other kids”. In the ECLS-B, the comparable item asks mothers how frequently “the child is (not) invited to play by other children”. As a robustness check on the internal validity of the externalizing problems scale, I estimated all models without this item, drawing instead on the other 5 items. Results did not change substantively.

In terms of external validity, I examined correlations between my constructed externalizing problems and internalizing problems scales and the complete scale provided in the respective dataset. I found high correlations between each of my constructed scales and the complete scale within each dataset from which comparable items were taken. For example, in the NLSY-C, the externalizing behaviors scale comes from the Behavior Problems Index, which is a subset of 10 items taken from the Achenbach Child Behavior Checklist. In the ECLS-B, the externalizing behaviors items come from the PKBS-2, and consist of a subset of 8 of the original 27 PKBS-2 externalizing problems items. Of the

10 externalizing items in the NLSY-C and the 8 in the ECLS-B, 6 align almost exactly. These six items provide coverage of each of the three subscales—self-centered/explosive, attention problems/overactive, and antisocial/aggressive—that are encompassed within the full PKBS-2 externalizing problems scale. Furthermore, each subscale is highly correlated (above .90) with the complete set of externalizing problems items available within its respective dataset.

Chapter 3

Early Childhood Behavior Problems and the Gender Gap in Educational Attainment in the United States

3.1 Introduction

Today, females in the United States are more likely than males to finish high school, to enroll in college, and to complete a college degree (NCES, 2010). This “gender gap in educational attainment” has emerged over the past several decades, representing one of today’s most striking demographic shifts (Diprete and Buchmann, 2006; Goldin et al., 2006; Heckman and LaFontaine, 2010). Today the gap is larger than at any point in the last century. The gender gap in attainment also presents a fascinating social puzzle as a rare case of female advantage amid other gender stratification processes that disadvantage women (Risman, 2004). Macro-level social and economic changes are a key explanation for the gender gap in educational attainment (Goldin et al., 2006). These changes include the opening of the skilled labor market to women and a decline in the low skill jobs that were once open to women (Goldin et al., 2006; Jacob, 2002). After de-industrialization, remaining higher-paying, low-skill jobs (e.g., construction and manufacturing) are heavily male-dominated (Jacob, 2002). Although these labor market pull factors explain somewhere between 30 and 60 percent of the growing female advantage in

educational attainment, still 40 to 70 percent of the gender gap in educational attainment remains unexplained by these macro-level social factors (Goldin et al., 2006).

Research has begun to point to the possibility that a micro-level factor – individuals’ behavior problems – may help explain the gender gap in educational attainment (Buchmann et al., 2008; Farkas, 2003). Females develop lower levels of these externalizing problems than boys (Kochanska et al., 2000). This has been true for decades (McFadyen-Ketchum et al., 1996). Expanding on this fact, one study showed how gender differences in adolescent behavior problems predict females’ higher level of college enrollment (Jacob, 2002). Another set of studies found that gender differences in early life behavioral development predict the macro-level gender gap in elementary and middle school test score performance (Cooper et al., 2011; DiPrete and Jennings, 2012). A final set of studies has shown the importance of behavior problems specifically in early childhood for predicting individuals’ level of high school completion and college enrollment (Alexander et al., 1997; Duncan et al., 2007; McLeod and Kaiser, 2004). However, none of these studies has directly focused on how gender differences in behavior may explain the macro-level gender gap in educational attainment. Nor have these studies examined whether this unique process of gender stratification in educational attainment originates in the earliest stages of the life-course through gender differences in the socialization of early childhood behaviors.

The present seeks to address this limitation of prior research. This study utilizes newly-available longitudinal data of children followed from birth to age 22 to ask whether micro-level gender differences in early childhood behavior problems help explain today’s macro-level gender gap in educational attainment. By bringing insights from life-course research into conversation with the largely disparate research on early childhood behavioral skills and the female advantage in educational attainment, this study furthers our understanding of gendered early life behaviors as a “fundamental cause” of this rare case of female advantage in adult socioeconomic attainment. The early life behaviors of interest throughout this chapter are self-regulation problems and social problems. Self-regulation problems include the inability to sit still, to delay gratification, and to concentrate on a

given task despite other distractions. Social problems include fighting with others and exhibiting temperamental outbursts. These self-regulation problems and social problems are known together as “externalizing problems” (Blair, 2002; Peterson and Zill, 1986; Raver, 2002).

Although the gender gap in self-regulation problems and social problems has existed for decades, there are a variety of reasons to believe that it is only in recent decades that females have been able to reap the benefits of their long-standing behavioral advantage. Recent decades have witnessed a rising age at first marriage and childbirth (Goodwin et al., 2009; Goldin et al., 2006; Teachman et al., 2000). There also have been social changes in the structure and openness of labor markets, in families, and in cultural norms around men and women’s educational expectations and labor market opportunities (Goldin, 2006). These cultural and social shifts may have created the structural circumstances necessary for females to realize the benefits of their long-standing early childhood behavioral advantage.

Perceptions of gender differences in labor market opportunities may also influence the proposed links between the gender gap in early childhood self-regulation and social skills and educational attainment. Educational expectations are one way parents transmit their perceptions of their child’s labor market prospects to their child. Children form their own educational (and labor market) expectations by internalizing these signals from parents, as well as those they receive from peers, teachers, and siblings. If parents today set higher educational expectations for girls than in the past, we may see gender parity in parents’ educational expectations. With the transition to a service and technology economy in which more jobs require post-high school training than in the past, and in a labor market more open to women, females’ comparative behavioral advantage now may translate into greater success (Cho, 2007; England and Farkas, 1986; Goldin et al., 2006; Reskin, 1990). Females’ behavioral advantage may be compounded since boys’ educational expectations for themselves are more likely than girls’ to be lowered by same-gender peers who may internalize anti-school attitudes reflected in the school culture, especially in low socioeconomic status schools (Legewie and DiPrete, 2012). Boys and girls

then may ultimately modulate their behavior in response to the educational expectations they perceive from peers and influential adults. Another likely pathway through which behavior problems may predict educational attainment is a continuity in these behavior problems throughout childhood (Caspi et al., 1995; Cherlin et al., 1998) (for a partial exception, see McLeod and Kaiser (2004)).

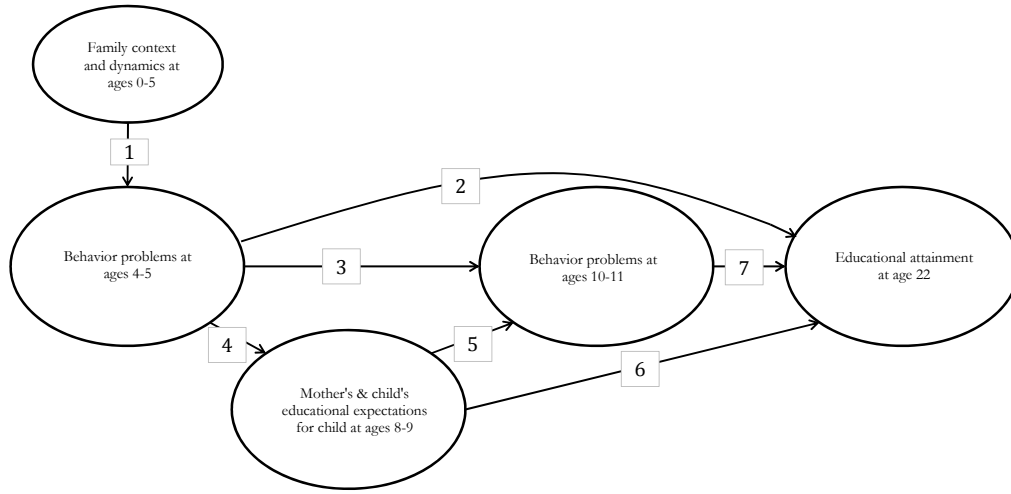
The final aim of this work is to discern the specific factors within families that contribute to the gender gap in behavior in the first place. Research has shed light on the role of family instability, particularly father absence, in helping account for the gender gap in childhood behavior (Bertrand and Pan, 2011; Cooper et al., 2011). However, other research also shows that children’s behaviors are shaped by dynamics within the family – such as parenting styles and parental conflict (Deater-Deckard and Dodge, 1997; Moffitt et al., 2002; Moiduddin, 2008). Gendered responses to common family dynamics therefore may help account for the gender gap in childhood behavior.

Childhood Behavior Problems and Educational Attainment

Research has established that early childhood behavioral skills are linked to adult high school completion and college enrollment for national samples of children (McLeod and Kaiser, 2004; Moffitt and Caspi, 2001; Shonkoff and Phillips, 2000), and to years of schooling at age 22 in a regional sample (Entwisle et al., 2005). Adolescent behavioral skills also are linked to high school completion, college enrollment, and four-year college completion (Farkas, 2003). Having been suspended from school at least once by eighth grade decreases the likelihood of completing high school by 17 percentage points, the likelihood of attending college by 16 percentage points, and the likelihood of being a college graduate by 9 percentage points (Bertrand and Pan, 2011). However, the association between early childhood behavior problems and college completion net of differences in family context and individual characteristics remains understudied, as shown by paths 1 and 2 of the conceptual model in Figure 3.1.

Research also is inconclusive on the pathways through which early childhood behavior may be linked to educational attainment, particularly college completion. Some re-

Figure 3.1: Conceptual Model of the Associations Between Childhood Self-regulation and Social Skills, Educational Expectations, and Educational Attainment



search shows that the relationship between early childhood behavior problems and high school completion operates through lower cognitive ability (McLeod and Kaiser, 2004). In contrast, it also shows that early behavior problems and college enrollment are linked through continuity between early and late childhood behavior problems (McLeod and Kaiser, 2004). A range of other research also finds support for continuity between early and late childhood behavior (Caspi et al., 1995; Cherlin et al., 1998). One way to investigate the hypothesis that, on average, patterns of early childhood behavior persist throughout childhood net of differences in cognitive ability is to control for a temporally-prior measure of early childhood cognitive development. Therefore, rather than relying on school test scores used to measure children’s grasp of concepts taught in the classroom, I control for children’s scores on the Peabody Picture Vocabulary Test (PPVT), which is highly correlated with adult intelligence test scores and measured when children are 2.5 to 4 years of age (Altepeter, 1989; Dunn, 1965). This measure of early childhood cognitive development enables a conceptual shift in focus away from cognitive skills and toward the potentially persistent female advantage in childhood behavior as a primary pathway of interest (paths 3 through 7 of Figure 3.1).

This study advances our understanding of the links between family dynamics (parental conflict and parenting practices), children’s behavior, educational expectations, and edu-

cational attainment, as shown by paths 1 through 7 in Figure 3.1. Family environments and educational expectations may shape children's behavior (paths 1 and 5 of Figure 3.1), but educational expectations may also reflect children's behavior (path 3). Research shows that parents' expectations for their children are sensitive to children's behavior problems (Rutchick et al., 2009). Through a combination of teacher and peer influences in school (Legewie and DiPrete, 2012) and parent influences at home, children also may adjust their behavior in response to the expectations and encouragement they receive from influential adults and peers. Educational expectations may therefore mediate the path between early and late behavior problems.

The Gender Gap in Childhood Behavior Problems and Educational Attainment

Today, mothers rate girls roughly 0.5 standard deviations lower than boys on the composite measure of self-regulation problems and social problems known as "externalizing problems" (Cooper et al., 2011; Dufur et al., 2008; Matthews et al., 2009; Moiduddin, 2008). Although this gender gap in early externalizing behavior problems has existed for decades, the gender gap in educational attainment is a recent demographic phenomenon. Nonetheless, there are a variety of reasons to believe that it was not until the latter half of the 20th Century that the necessary social and economic climate emerged for females' long-standing behavioral advantage to translate into their higher levels of educational attainment relative to males. For example, the latter half of the 20th Century witnessed the remarkable ascent of age at first marriage and childbearing (Goodwin et al., 2009; Teachman et al., 2000). With the mean age at first marriage moving from the early to mid-20s, more women began entering college than in the past (Goldin et al., 2006). This may have opened the opportunity for their long-standing behavioral advantages to lead to higher relative rates of college completion. There were also dramatic shifts in the structure of the labor market with the decline of the manufacturing sector and the rise of a service and technology-based economy in which demand for skilled workers rose sharply on average since the 1950s (Murphy and Welch, 1993). Indeed, partly owing to females'

lower baseline wages, females experienced higher returns to schooling than males over this period (Murphy and Welch, 1989). At the same time, existing unskilled blue collar jobs that do not require higher education (e.g., construction) remain more open to males (England and Farkas, 1986). It is possible that a result of social and economic changes such as these, females' lower levels of externalizing problems could come to explain the relatively newly-emergent gender gap in educational attainment that we see today.

Recent studies are also consistent with this hypothesis. Research shows that today's gender gap in early childhood behavioral skills is linked to the gender gap in elementary and middle school academic achievement. "Social and behavioral skills" (DiPrete and Jennings, 2012) and "anti-school attitudes and behavior among boys" (Legewie and DiPrete, 2012) explain roughly one-third to one-half of the gender gap in reading and math test scores at the end of elementary school. The gender gap in adolescent (i.e., eighth grade) school disciplinary and behavioral problems explains a substantial share of the female advantage in college enrollment (Jacob, 2002). What remains under-examined is whether females' higher level of behavioral skill – and lower levels of externalizing problems – helps explain the remarkable female advantage in educational attainment evident today.

In line with the hypotheses of this paper, there also is reason to believe part – though not all – of the relationship between the gender gaps in early childhood behavior and educational attainment may be mediated by a gender difference in mothers' educational expectations for sons and daughters. Recognizing the labor market to be much more open to women than in previous generations, mothers may be sensitive to the gender differences in children's early behavior. Recognizing females have brighter labor market prospects than in prior generations, they may set as high of educational expectations of girls as boys. At the same time, negative sanctions in school and exposure to peers who may foster anti-school attitudes (see Legewie and DiPrete (2012)) may lead boys – especially those with behavior problems – to seek alternatives to formal secondary and post-secondary schooling.

The Social Drivers of the Gender Gap in Behavior

Research has shown that aspects of family structure and instability help explain the gender gap in early childhood behavior (Bertrand and Pan 2011; Cooper, Osborne, Beck, and McLanahan 2011). This research has highlighted gender differences in children's responses to similar levels of exposure to father absence and family instability. However, research in psychology and sociology also shows that family dynamics like parental conflict and parenting styles shape children's behavioral development (Aunola and Nermi 2005; Jekielek 1998; Johnson, Kalil, and Dunifon 2012). But, sociologists have not fully contextualized the importance of parental conflict and parenting styles like harshness, positive discipline, maternal warmth, and cognitive support for the gender gap in early childhood behavior.

Parental conflict and parenting styles may shape the gender gap in early childhood self-regulation and social skills through two primary channels (or some combination thereof): 1) boys' and girls' differing exposure to family dynamics, or, 2) boys' and girls' differing responses to relatively similar types of exposure. Recent research shows that, with the rise of gender egalitarianism in households and changing norms and expectations around women's educational opportunities and familial and societal roles, parents' differential investments in sons and daughters have diminished significantly (Buchmann, DiPrete, and McDaniel 2008). It is therefore more likely that the gender gap in early childhood behavior largely results from boys' and girls' differing responses to relatively similar types of exposure to family dynamics.

3.2 Analytic Strategy

To test the first two hypotheses about the links between early and late childhood behavior problems and educational attainment, I use a series of regressions corresponding to the numbered paths in the model in Figure 3.2. Figure 3.2 operationalizes the relationships between behaviors, educational expectations, and educational attainment as shown in the conceptual model in Figure 3.1. I use OLS regressions for all paths with semi-continuous outcomes (i.e., educational expectations, behavior, and years of schooling). The continuous outcome for years of schooling tests for robustness of the results against the possibility

of bias due to rescaling of the unobserved residual variance when comparing coefficients across nested logit models (see (Allison, 1999; Karlson et al., 2012)). I use logistic regressions for the binary outcomes of high school and college completion (paths 1d, 2, and 7).

The magnitudes of the regression paths gives one indication of meaningful pathways, but it is also useful to know how much of the variance in a given outcome (i.e., educational expectations, behaviors at ages 10-11, attainment) can be attributed to a covariate of interest, net of prior covariates. In these and all subsequent analyses, continuous and semi-continuous predictor variables are centered at their sample-specific means. Therefore, I also fit a series of nested analysis of variance models following the paths shown in Figure 3.2. I calculate the percent of variance explained by the addition of the covariate of interest net of all other prior covariates using the equation:

$$\% \text{ of variance explained} | \text{prior covariates} = \frac{(RSS(y_n | \phi) - RSS(y_n | \phi, x_{n-1}, x_{n-2}, \dots))}{RSS(y_n | \phi)} * 100 \quad (3.1)$$

where RSS is the residual sum of squares, y_n is a dependent variable from Figure 3.2, and ϕ represents a vector of all chronologically prior covariates as shown in Figure 3.2. Logistic regressions use deviance, not RSS.

To test the hypothesis about the behavioral origins of the gender gap in educational attainment, I calculate the percent of the gender gap in educational attainment that can be explained by the gender difference in exposure to six potential sets of mechanisms: demographic context, economic resources, family structure, family dynamics, educational expectations, and behavior problems.¹ In the baseline specification $Logit(pr(EDU)) = \beta_0 + \beta_1(Male)$, β_1 is the gender gap in educational attainment. I then fit a series of nested logit models, adding sequentially to the baseline model the mechanisms of interest noted above. In specification k (ranging from 1 to 7 for the seven vectors of potential

¹Note that I do not treat behavior at ages 10 or 11 as a separate mechanism because I find that the association between behavior at ages 4 or 5 and educational attainment operates largely through behavior at ages 10 or 11.

mechanisms):

$$\text{Logit}(\text{pr}(\text{EDU})) = \beta_0 + (\text{Male})\beta_1 + \sum_{j=1}^k z_j\gamma_j \quad (3.2)$$

where z_j are vectors of covariates for the mechanisms of interest (e.g., demographic characteristics, family structure, etc.) and γ_j are the corresponding coefficient vectors.

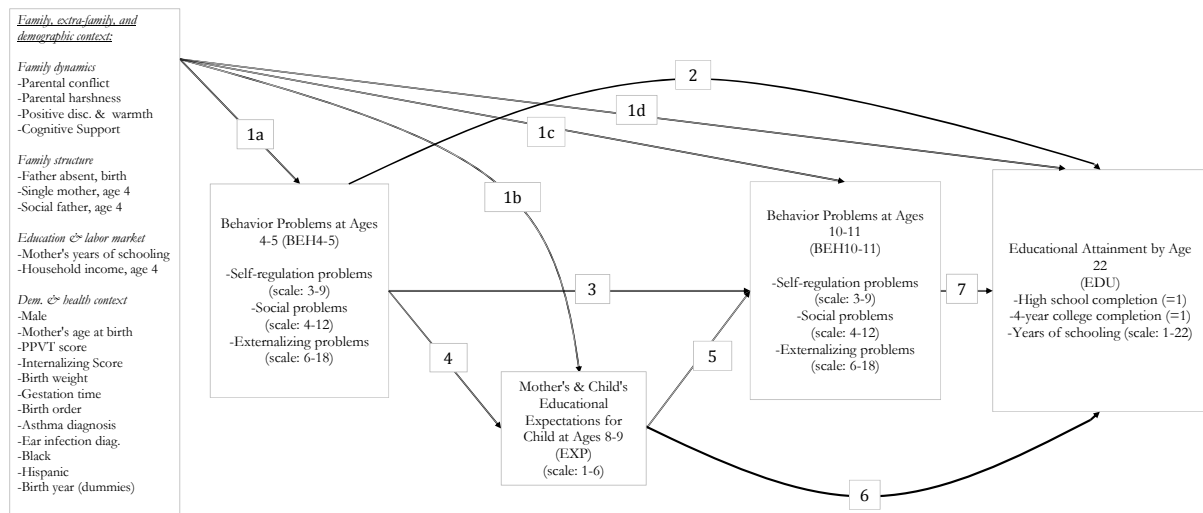
The gender gap in educational attainment also may be conceptualized as the relative difference in the odds between males and females, or $e^{\beta_1} - 1$. The percent of this gender gap explained by the gender difference in the added mechanism is the percent change in this relative difference. The difference between models in the cumulative percent of the gender gap explained is the percentage-point increase in the explained gender gap in attainment.

Finally, to test the hypothesis about the drivers of the gender gap in early childhood behavior problems, I employ a Oaxaca-Blinder decomposition. This two-stage process identifies the contributions of each family, demographic, and health mechanism to the overall gender gap in externalizing problems at ages 4 or 5, as shown in equation (3.3) below:

$$\begin{aligned} EXTERN_M - EXTERN_F &= \underbrace{(x'_M - x'_F)\beta}_{\text{exposure}} + \underbrace{\bar{x}'(\beta_M - \beta_F)}_{\text{vulnerability}} \end{aligned} \quad (3.3)$$

where $(x'_M - x'_F)\beta$ is the contribution of a given variable to the gender gap due to gender differences in means (i.e., exposure) of a given predictor, and $\bar{x}'(\beta_M - \beta_F)$ is the contribution due to difference in the effects of each variable for boys compared to girls. Because the results from the decomposition of externalizing problems closely resemble those for self-regulation problems (attention and concentration difficulties) and social problems (aggression, antisocial behavior, and dislike of the child on the part of peers), I report only

Figure 3.2: Path Model of the Associations Between Childhood Self-Regulation and Social Skills, Educational Expectations, and Educational Attainment



the former.² Finally, in order to address the possibility of reciprocal causality between externalizing problems and cognitive skills, all models were estimated without controlling for cognitive skills (i.e., PPVT). Coefficients on the other observed factors did not change substantially.

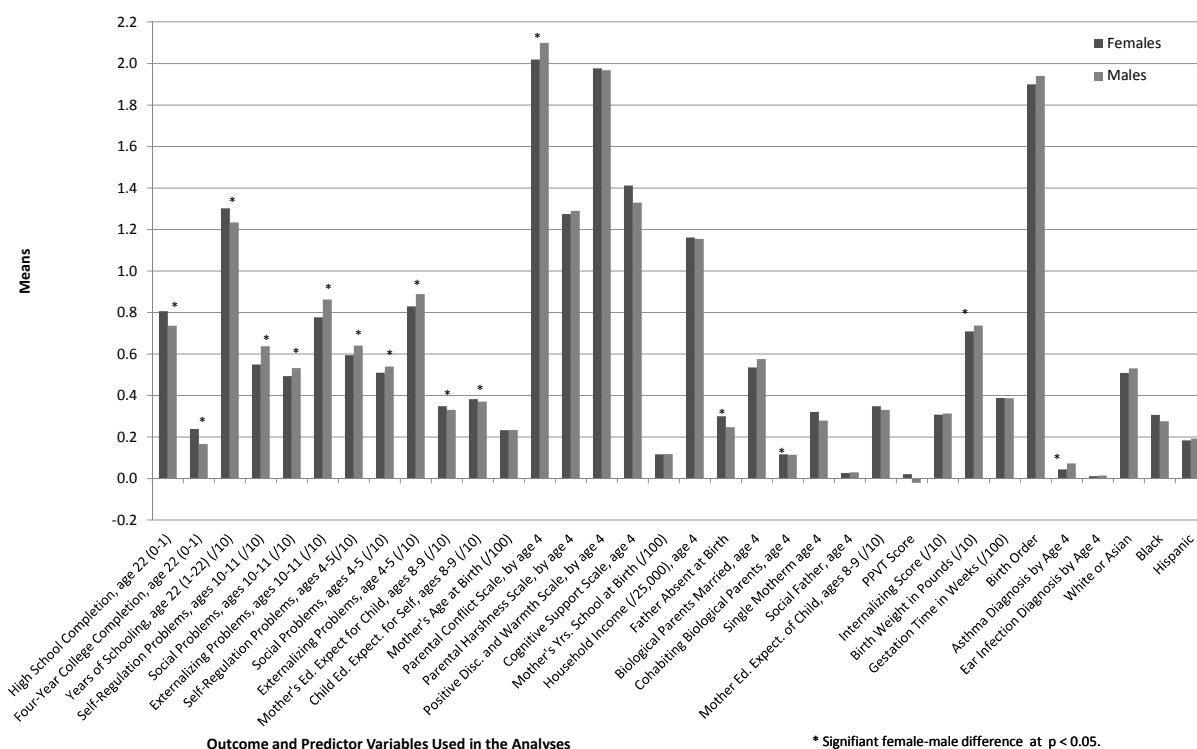
3.3 Results

In line with prior research, children in this national sample born between 1983 and 1986 exhibit marked gender differences in childhood behavior and educational attainment (see Figure 3.3 and Appendix Table A.1). Girls display lower levels of self-regulation problems (0.29 standard deviations, $t=6.22$), social problems (0.21 standard deviations, $t=4.82$), and externalizing problems (0.28 standard deviations, $t=6.49$) at ages 4 or 5. At the group level, means for behavior remain of roughly similar magnitudes at ages 10 or 11. The gender gap in externalizing problems, self-regulation problems, and social problems also grows only slightly by ages 10 or 11. Females out-pace males in rates of high school completion by 7%, or roughly 0.18 standard deviations ($t=-4.63$) and four-year college completion by 7% (0.20 standard deviation; $t=-3.45$). Girls also express and receive

²Self-regulation problems and social problems results are available upon request.

from mothers educational expectations on par with the expectations received by boys. On average both girls and boys say at ages 8 or 9 that they expect to “graduate from college.” Parents also on average expect both their sons and daughters to “get some college or other training.” However, it is worthwhile to note that girls fall on average a significant 0.17 points higher than boys in terms of mother’s educational expectations of them (0.17 standard deviations; $t=-3.41$), and rate their own expectations on average 0.12 points higher than do boys (0.11 standard deviations; $t=-2.29$). There are no sta-

Figure 3.3: Means of Variables Used in the Analyses, by Gender



tistically significant differences in boys’ vs. girls’ exposure to parenting styles (maternal harshness, positive discipline and warmth, or cognitive support). But, boys are exposed to significantly higher levels of parental conflict than girls at age 4 ($t=3.55$), which could be because, in the 1980s, biological fathers were more likely to remain in the household if they had a son than a daughter ($t=2.99$). Girls experience greater single mothering at age 4 ($t=-2.12$). There are no statistically significant differences by gender in mothers’ years of schooling at the birth of the child, household income at age 4, odds of married biological parents at age 4, cohabiting parents at age 4, or the presence of a social father

at age 4. There also are few statistically significant differences by gender in demographic and health context, except that boys on average weigh 0.28 pounds ($t=5.27$) more than girls at birth and have slightly higher odds of asthma diagnosis by age 4 ($t=2.89$).

Pathways Between Childhood Behavior, Educational Expectations, and Educational Attainment

The first hypothesis (path 2 of Figure 3.2) predicted that early childhood self-regulation problems and social problems would be on average associated with lower levels of educational attainment, including college completion. The results shown in Table 3.1 lend support to this hypothesis, revealing that early childhood behavior is a significant predictor of educational attainment (see also appendix tables A.2-A.4). Children who fall one unit above the mean in self-regulation problems, social problems, or externalizing behavior problems at ages 4 or 5 on average experience 5, 9, and 7 percent lower odds of high school completion. They experience 8, 16, and 7 percent lower odds of 4-year college completion, net of controls. And, they receive on average 0.10, 0.08, and 0.09 fewer years of schooling.

An analysis of the variance in educational attainment explained by the addition of early childhood behavior problems at ages 4 or 5, net of controls, places the significant associations between early childhood behavior and educational attainment into context. Table 3.1 shows that early childhood self-regulation, social, and externalizing behavior problems at ages 4 or 5 reduce the unexplained variance in high school completion by 12%, 24%, and 31%. They reduce the unexplained variance in 4-year college completion by 5%, 4%, and 8%. In line with prior research (Entwisle et al., 2005), early childhood behavior problems still serve as a strong indicators of later educational attainment.

Table 3.1: Hierarchical Anova Table Corresponding to the Path Model of Figure 3

Path	Dependent Variable	Mediating Covariate ¹	Mediating Behavior Problem (at 4-5) ²	% of Variance Explained ³			Path	Dependent Variable	Mediating Covariate ¹	Mediating Behavior Problem (at 4-5) ²	% of Variance Explained ³			Path	Dependent Variable	Mediating Covariate ¹	Mediating Behavior Problem (at 10-11) ²	% of Variance Explained ³		
				Odds Ratio	Sig						β	Sig						Odds Ratio	Sig	
2	High School Completion	BEH4-5 ϕ	SR	0.950 *		11.669	3	Behavior at 10-11	BEH4-5 ϕ	SR	0.403 ***		11.660	7	High School Completion	BEH10-11 EXP, BEH4-5, ϕ	SR	0.916 *		40.842
			S	0.906 *		23.942				S	0.340 ***		12.859				S	0.914 *		35.866
			E	0.929 *		30.748				E	0.388 ***		15.385				E	0.914 *		37.138
2	4-yr Coll. Completion	BEH4-5 ϕ	SR	0.839 **		4.692	4	Education Expect.	BEH4-5 ϕ	SR	-0.081 ***		1.540	7	4-yr Coll. Completion	BEH10-11 EXP, BEH4-5, ϕ	SR	0.756 ***		43.499
			S	0.928 *		3.954				S	-0.098 ***		1.690				S	0.860 *		10.345
			E	0.922 *		7.553				E	-0.061 ***		1.339				E	0.830 **		24.394
2	Years of Schooling	BEH4-5 ϕ	SR	-0.097 **		13.245	5	Behavior at 10-11	EXP BEH 4-5, ϕ	SR	-0.317 ***		3.806	7	Years of Schooling	BEH10-11 EXP, BEH4-5, ϕ	SR	-0.120 **		47.676
			S	-0.040 +		4.527				S	-0.135 **		1.603				S	-0.084 *		46.599
			E	-0.059 *		8.168				E	-0.227 **		1.983				E	-0.076 *		47.016

¹Variable numbers are the same as those used in Figure 3. The mediating covariate is added to the nested model conditional on temporally preceding covariates. Phi (ϕ) represents the family context variables also shown in Figure 3.

²SR=Self-regulation problems; S=Social problems; E=Externalizing.

³The "explained variance" is the percent of the previously unexplained variance that is accounted for by the addition of the mediating covariate of interest, net of controls (see equation 1). The residual sum of squares (RSS) is used to capture the difference between the predicted and observed values in the case of OLS regression (paths 3, 4, and 5 as well as paths 2 and 7 for years of schooling), while the deviance is used with logistic regressions (paths 2 and 7 for high school and college completion).

The next hypothesis (paths 3 and 7 of Figure 3.2) posited that late childhood self-regulation and social problems and educational expectations on average would mediate the relationship between early childhood self-regulation problems and social problems and educational attainment. Table 3.1 shows that early childhood behavior problems are partially associated with educational attainment through late childhood behavior problems. Path 3 shows that children one unit above the mean in self-regulation problems, social problems, and externalizing behavior problems at ages 4 or 5 on average fall 0.40, 0.34, and 0.39 units higher in the corresponding behavior problem at ages 10 or 11. Early behavior problems also explain a share of the unexplained variance in late childhood behavior. Self-regulation problems, social problems, and externalizing problems at ages 4 or 5 explain 12%, 13% and 15% of the unexplained variance in the corresponding behavior problem at 10 or 11. Although this may seem like a modest percent of variance explained, other results (available upon request) indicate that when early childhood behavior is added to a model of educational attainment on late childhood behavior, the relationship between early behavior and educational attainment loses statistical significance and the odds ratio becomes essentially 1. This indicates late childhood behavior is a key mediator of the association between early behavior and educational attainment. A correlation matrix was also generated to examine shifts in behavior problem scores between early and late childhood. Results (available upon request) suggest over half of children experienced a downward shift (by 2 to 3 points) in behavior problem scores by ages 10 or 11. But, children's positions in the behavioral distribution did not change substantially. These results suggest general continuity in behavioral problems relative to one's same-aged peers over time, in spite of a general trend toward lower levels of behavioral problems for most children as they age.

Late childhood behavior problems also are predictive of educational attainment, as shown by path 7 of Figure 3.2. Children who fall one unit above the mean level of self-regulation problems, social problems, or externalizing behavior problems at ages 10 or 11 experience roughly 9% lower odds of high school completion for each behavioral measure. They experience 24%, 14%, and 17% lower odds of 4-year college completion. And,

they earn on average 0.12, 0.08, and 0.08 fewer years of schooling. Late childhood self-regulation problems, social problems, or externalizing behavior problems explain 41%, 36%, and 37% of the unexplained variance in high school completion net of demographic, health, and family covariates, behavior problems at ages 4 or 5, and educational expectations. Late childhood self-regulation problems, social problems, or externalizing problems explain 44%, 10%, and 24% of the unexplained variance in 4-year college completion, and 47%-48% of the unexplained variance in years of schooling. The larger percent of unexplained variance accounted for by late childhood behavior problems reflects the temporal proximity between late childhood behavior and educational attainment. In line with prior research, behavior problems tend to explain more of the variance in high school rather than college outcomes (McLeod and Kaiser, 2004). Self-regulation problems in late childhood are most robustly associated with post-secondary outcomes, explaining 44% of the variation in college completion.

Results also point to path dependencies between behavior problems and educational expectations. Path 4 shows that children one unit above the mean in self-regulation problems, social problems, and externalizing behavior problems at ages 4 or 5 on average fall 0.10 points lower in mother and child's average educational expectations. Path 5 shows that children whose average educational expectations are one unit above the mean are 0.32, 0.14, and 0.23 units lower in self-regulation problems, social problems, and externalizing behavior problems at ages 10 or 11. However, despite the pathways between early childhood behavior problems, educational expectations and late childhood behavior problems, early childhood behavior problems explain under 2% of the unexplained variance in educational expectations net of demographic, health, and family predictors. And, educational expectations explain under 4% of the variance in childhood behavior problems at ages 10 or 11, net of behavior problems at ages 4 or 5 and demographic controls. Educational expectations are significant predictors of educational attainment. But, early and late childhood behaviors explain a much larger share of unexplained variance in educational attainment, net of controls.

Childhood behavior, Educational Attainment, and Gender

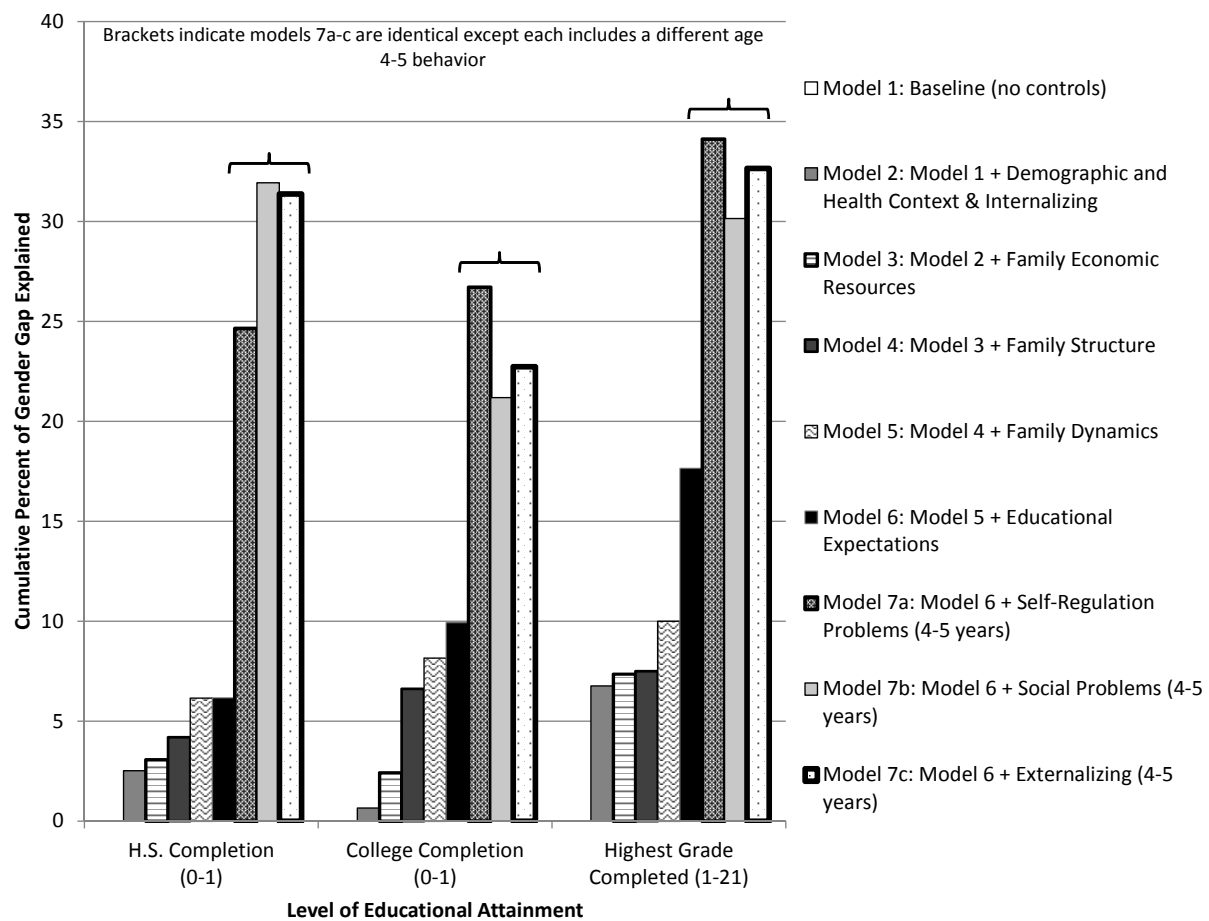
The third hypothesis proposed that, when individuals' micro-level behavior problems scores are scaled up to the group level, the gender gap in early childhood behavior in the mid-to-late 1980s would help account for today's gender gap in educational attainment. In order to contextualize results for the differing mechanisms that might account for the gender gap in educational attainment, Figure 3.4 displays the cumulative percentage of the gender gap in high school completion, college enrollment, and 2- or 4-year college completion explained by six sets of possible mechanisms: demographic and health context (including internalizing problems), family structure, family economic resources, family dynamics, mother's and child's average educational expectations, and behavior problems at ages 4 or 5. Model 2 of Figure 3.4 shows that demographic and health context predictors explain roughly 1 to 7% of the gender gap in each educational attainment outcome.³ Beyond that explained by demographic and health predictors, model 3 shows that gender differences in mother's education and family economic resources explains an additional 1-2 percentage-points of the gender gap in high school completion, college completion, and years of schooling.⁴ Model 4 shows that gender differences in family structure explain an additional 0-5 percentage-points of the gap in attainment or years of schooling, likely because fathers' greater presence in households with sons than daughters is associated with the gender gap in educational attainment. Model 5 shows that family dynamics explain an additional 1 to 3 percentage-points of the gender gap in each educational attainment outcome.

If daughters on average perceive educational and labor market incentives on par with or even slightly higher than sons' (Jacob 2002) and are less exposed to expectation-lowering peers (Legewie and DiPrete, 2012), we would expect that gender gaps in parents' and children's educational expectations would play an important role in accounting for

³Results not shown here indicate that gender differences in conviction status and pregnancy explain under 1 percentage-point of the gap in any educational attainment outcome beyond that explained by prior predictors. In the case of conviction status, this might be because few individuals (under 5%) have a criminal record, or because the effects of the marked gender differences in criminal convictions are highly correlated with other observed predictors of the gender gap in educational attainment.

⁴The percentage point of the gap in attainment explained is the difference between the cumulative percent of the gender gap explained between models.

Figure 3.4: Cumulative Percent of the Gender Gap in High School Completion, College Enrollment, and 2- or 4-Year College Completion Explained through the Addition of Demographic, Health, and Family Context, Educational Expectations, and Behavior Problems



the gender gap in educational attainment. Model 6 reveals that gender differences in educational expectations account for an additional 0 to 7 percentage-points of the gender gap in educational attainment.

Models 7(a) through 7(c) of Figure 3.4 offer support for the hypothesis that the gender gap in educational attainment is explained in part by the gender difference in mean levels of behavior problems (see also appendix tables A.2-A.5).⁵ Model 7(a) shows that self-regulation problems account for an additional 15-20 percentage-points of the gender gap in educational attainment. Model 7(b) shows that social problems explain an additional 25

⁵Note that, since educational expectations are measured at ages 8 or 9, whereas behavior is measured at ages 4 or 5, as a sensitivity check I reversed the order in which I added educational expectations and the behavior problems scale to the final model. Results did not change.

and 11 percentage-points of the gender gap in high school and college completion compared to model 6 and an additional 13 percentage points in years of schooling. Externalizing problems account for an additional 12-25 percentage-points of the gap in high school and college completion and years of schooling.

Although results from the first two hypotheses indicate that behavior problems are more predictive of high school completion than college completion, the gender gap in self-regulation problems explains slightly more of the gender gap in four-year college completion than it does of the gap in high school completion. Taken together, the gender gap in externalizing problems explains roughly 80% of the component of the gender gap in high school completion explained by observed factors. Externalizing problems account for 60% of the component of the gender gap in college completion accounted for by observed factors. And externalizing problems accounts for 45% of the component of the gender gap in years of schooling explained by observed factors. Importantly, when behavior is added to the model first, results indicate that behavior problems explain an even larger share of the gender gap in each educational attainment outcome. However, in order to preserve chronological ordering within the life-course, behavior is added after demographic and family environment factors.

Drivers of the Gender Gap in Behavior

The final hypothesis predicted that the gender gap in self-regulation problems and social problems at ages 4 or 5 would be driven by boys' more negative responses to similar levels of exposure to parental conflict and harshness, and less-positive responses to positive discipline and maternal warmth and cognitive support.⁶ The decomposition results presented in Table 3.2 support this hypothesis. Results are presented for the decomposition of exter-

⁶A related question concerns whether the gender gap in behavior problems at ages 4 or 5 is driven by the worst- compared to the best-behaved children and, in particular, by the worst-behaved children in high-conflict families. Results indicate that the magnitude of the gender gap increases from the 10th to the 90th percentile in the overall sample (as shown in Appendix A.1) and that this pattern is even more pronounced among children raised in high vs. low parental conflict families (as shown in the Appendix A.2). For example, Appendix A.1 shows that the gender gap in externalizing problems increases from just 0.27 points among the best-behaved boys and girls to 3.5 times that – or 0.94 points – among the least. This result is more pronounced for the self-regulation problems and social problems scales, where the gender gap is 0.14 and 0.01 between the best-behaved boys and girls and over 7 and 130 times as large between the worst-behaved boys and girls.

nalizing problems because this scale encompasses most facets of self-regulation problems and social problems and because the sub-scale results do not change substantive conclusions (results for self-regulation problems and social problems available upon request). Columns (1) and (2) of Table 3.2 display uncontrolled, gender-specific means for all family, demographic, and health variables used in the prior analyses. As in other regression analyses, continuous variables are centered at their overall sample mean. Columns (3) and (4) display coefficients for each variable’s association with externalizing problems, by gender. Column (5) shows how much male-female differences in exposure at particular levels (i.e. means) of each predictor contribute to the overall gender gap, as shown in the first part of equation (3.3). The largest gender difference in exposure is to parental conflict. Males are exposed on average to slightly higher levels of parental conflict than females. This differential exposure to parental conflict accounts for 6.6% (or 0.036 points) of the overall (0.59 point) gender gap in externalizing problems.

In contrast to differences in exposure, column (6) shows how much of each variable’s raw point contribution to the gender gap is attributable to male-female differences in the effects of each predictor at the sample-average level of exposure, as shown in the second part of equation (3.3). The majority of the positive effects of parental conflict on the gender gap in externalizing problems arise from parental conflict’s otherwise more negative association with males’ externalizing problems. Column (7) sums the point-contribution of each variable due to differences in both exposure and effects, showing each variable’s contribution to the overall gender gap. The sum of column (7) is 0.59 – the magnitude of the overall gender gap in externalizing problems also shown in Figure 3.3 and Table A.1. Columns (8) and (9) translate the magnitudes into percentage terms. For all predictors that are associated with an increase in the gap, column (8) calculates the proportion of the total positive effects that are due to gender differences in the levels and effects of each variable. Parental conflict, parental harshness, and positive discipline and warmth, for example, accounts for 50.1%, 10.7%, and 15.8% of all positive effects on the gender gap in externalizing problems. These three factors account for over 75% of the

Table 3.2: Two-Way Decomposition of Gender Differences in Externalizing Problems at Ages 4 or 5: Levels vs. Effects of Parenting, Family Context, and Demographic and Health Factors in the Late 1980s

	Means		Coefficients				Decomp of Levels	Decomp of Effects	Overall Effect of Levels & Coefficients	Prop. of positive effects on gap	Prop. of negative effects on gap
	(1) M	(2) F	(3) M	Sig	(4) F	Sig	(5)	(6)	(7)	(8)	(9)
Parental Conflict Scale	2.099	2.019	0.611 ***		0.286 *		0.036	0.669	0.705	0.501	0.000
Parental Harshness Scale	1.289	1.275	0.537 ***		0.425 ***		0.007	0.144	0.151	0.107	0.000
Positive Discipline and Warmth Scale	1.967	1.977	0.063		-0.050		0.000	0.223	0.223	0.158	0.000
Cognitive Support Scale	1.330	1.412	-0.100		-0.029		0.005	-0.097	-0.092	0.000	0.113
Mother's Years of Schooling at Birth ¹	0.037	-0.035	-0.116 **		-0.096 *		-0.008	0.000	-0.008	0.000	0.009
Household Income, Age 4 ¹	0.016	-0.015	-0.045		-0.009		-0.001	0.000	-0.001	0.000	0.001
Father Absent at Birth	0.248	0.301	0.182		0.070		-0.007	0.031	0.024	0.017	0.000
Single Mother, Age 4	0.280	0.321	0.168		0.130		-0.006	0.011	0.005	0.004	0.000
Social Father, Age 4	0.030	0.027	0.191		0.326		0.001	-0.004	-0.003	0.000	0.004
Mother's Age at Birth ¹	0.104	-0.097	0.050		0.010		0.006	0.000	0.006	0.004	0.000
PPVT Score ¹	0.003	-0.002	-0.282 ***		-0.136 *		-0.001	0.000	-0.001	0.000	0.001
Internalizing Score, Age 4 ¹	4.000	4.000	0.000		0.000		0.000	0.000	0.000	0.000	0.000
Birthweight ¹	0.128	-0.120	-0.004		-0.111 +		-0.014	0.000	-0.014	0.000	0.017
Gestation Time ¹	-0.006	0.006	0.007		-0.039		0.000	0.000	0.000	0.000	0.000
Birth Order	1.940	1.900	-0.097		-0.012		-0.002	-0.163	-0.165	0.000	0.203
Asthma Diagnosis by Age 4	0.073	0.044	0.312		0.131		0.006	0.011	0.017	0.012	0.000
Ear Infection Diagnosis by age 4	0.015	0.011	-0.362		0.646		0.001	-0.013	-0.013	0.000	0.015
Black	0.276	0.307	-0.274		0.219		0.001	-0.144	-0.143	0.000	0.175
Hispanic	0.192	0.183	-0.334 +		0.129		-0.001	-0.087	-0.088	0.000	0.108
Born 1984	0.253	0.245	-0.271		0.272 +		0.000	-0.135	-0.135	0.000	0.166
Born 1985	0.249	0.220	-0.331		0.208		-0.002	-0.126	-0.128	0.000	0.157
Born 1986	0.219	0.229	-0.069		0.047		0.000	-0.026	-0.026	0.000	0.032
_Cons	1.000	1.000	7.176 ***		6.901 ***		0.000	0.275	0.275	0.196	0.000
							0.022	0.568	0.590	1.000	1.000
% of Gender Gap Driven by Levels vs. Effects:							0.023	0.977			

¹Variable centered at the late-1980s sample-specific mean. See Appendix A.1 for uncentered means.

positive effects on the gender gap in externalizing problems at ages 4 or 5.⁷ Column (9) does the same for all variables whose overall effects are associated with a decrease in the magnitude of the gender gap. Cognitive support, for example, accounts for 11.3% of all negative (“gap-narrowing”) effects.

Sensitivity Analyses

Given the extent of item-missingness due largely to attrition from the sample between birth and age 22, three sets of sensitivity analyses investigate the possibility of systematic attrition and biases in my estimates due to my treatment of missing data. First, I conducted logistic regressions containing binary indicators for item-missingness on each

⁷In line with decomposition results, the gender gap does not seem to be driven as strongly by the worst-behaved children in single-mother families at age 4 (as shown in Appendix A.2).

variable shown in 3.2 on all temporally prior predictor variables. Few systematic patterns were identified (results available upon request). The last two analyses helped test the sensitivity of results to any partial violation of the missing at random assumption (Allison, 2000). I replicated analyses on complete cases only. Then I constructed another sample of 20 imputed datasets where the variance on imputed items was increased by 10%. The latter tested whether introducing noise in the multiple imputation procedure would significantly weaken the associations between the pathways of interest. In both cases, results did not change substantively.

Two additional sensitivity analyses addressed possible issues of reverse-causality in the prediction of gender gaps in early childhood behavior. First, it is possible that children's behavior shapes both cognitive ability and parenting, although I model the reverse associations. I therefore estimated all models predicting the gender gap in behavior without controls for cognitive ability (i.e., PPVT score). Results indicated that substantive conclusions did not change. Second, to adjust for the possibility that parental conflict and parenting were responsive to children's behavior, I included controls for child temperament at ages 2 to 4. I found that the associations between parental conflict or parenting practices and children's behavior did not change significantly.

Finally, this sample of 1983-1986 births in the Children of the NLSY were to mothers aged 18 to 29. That these children were born to younger mothers raises the question of whether results hold even for children born later, to older mothers. As a robustness check, analyses for high school completion were replicated for children born in 1990 to mothers aged 25 to 32 years at birth. Substantive conclusions about the paths between early childhood behavior problems and high school completion, the relationships between the gender gap in behavior and attainment, and the drivers of the gender gap in behavior did not change.

3.4 Discussion

This study uses prospective panel data of children followed from birth to age 22 to begin to develop a theoretical and empirical framework for understanding the origins of today's

female advantage in educational attainment. Past research has focused on the effects of the opening of the labor market to women, which creates larger incentives for women's college attainment (Jacob, 2002; Kane, 1994; Murphy and Welch, 1989, 1992). The present study finds support for an alternative, but complementary perspective: this rare case of female advantage in status attainment is linked to the female advantage in childhood self-regulation and social skills originating as early as age four.

Although research on the effects of women's higher returns to schooling has gained substantial empirical support in explaining today's gender gap in attainment, it has tended to shift emphasis away from the possibility that the gender gap in educational attainment may originate early in life. The present study highlights gender differences in early behaviors as a "fundamental cause" of the gender gap in educational attainment evident today. Expanding on the notion of educational expectations as a key component of the status attainment model, parents' perceptions of sons and daughters' differing labor market opportunities are in part shaped by parents' perceptions of the feasibility of their earning a college degree. Aware that their daughters may now mobilize their long-standing behavioral advantage into college attainment and participation in white-collar jobs, "feasibility" may be determined largely by gender differences in behavior. If parents are now responsive to girls' behavioral advantage, they may set high educational expectations for their daughters. The gender gap in behavior persists into late childhood in part because girls respond positively to these high expectations while boys' behavior is more negatively influenced by a peer culture that defines success outside of the traditional channels of formal schooling.

Through these pathways, the present study extends to college completion previously established associations between early childhood behavior problems and high school completion and college enrollment (Entwisle et al., 2005; McLeod and Kaiser, 2004; Moffitt and Caspi, 2001; Shonkoff and Phillips, 2000). It finds that a one-unit increase above the sample mean level of behavior problems at ages 4 or 5 is associated with a 14 to 24 percent reduction in the odds of four-year college completion. Although educational expectations are a key component of the status attainment model, they have not been considered in

prior studies of the gender gap in educational attainment. Parents' educational expectations are important because children's early educational and labor market expectations are filtered through their parents. Children's own educational expectations are also important because they reflect messages from peers, teachers, siblings, and parents about how far the child can and should aspire to go in school and in the labor market. Together, early childhood behavior responds to parenting, and parent and child educational expectations respond to early childhood behavior. In turn, children's late childhood behavior is to some degree shaped by educational expectations and ultimately helps explain much of the variation in educational attainment.

This study also begins to consolidate theories about the importance of family dynamics in stratification processes by highlighting aspects of family context not generally considered within the status attainment model (for an exception, see Astone and McLanahan (1991)). The female advantage in self-regulation and social skills is driven by dynamics within the family, such as parental conflict and parenting practices. Although boys and girls are exposed to similar family dynamics, boys respond more negatively to parental conflict and harsh parenting, and less positively to positive discipline and maternal warmth than girls. Gendered responses to these family dynamics account for roughly 75% of the gender gap in behavior at ages 4 or 5. These findings add nuance to sociological understanding of the importance of social origins. Status attainment theory has tended to focus on structural aspects of social origins that bear lasting associations with adult outcomes. The incorporation of nuanced, but often overlooked, family dynamics such as parenting practices and parental conflict into research in the status attainment tradition advances sociological understanding of how gender differences in children's behaviors shape female advantages in educational attainment.

These findings begin to cohere into an empirically-supported theory of the importance of the gender gap in early childhood behavior for explaining today's gender gap in educational attainment. For those focused on identifying interventions for boys at high risk for school dropout, the findings presented here point to the potential efficacy of programs and policies that address boys' behavioral development as a route for boosting

educational attainment and also potentially avoiding their engagement in deviant behavior more broadly. For those concerned with the broad landscape of female disadvantage in its many forms – segregation by field of study, institutional selectivity, occupational segregation, motherhood penalties, and earnings inequality – the present study offers insight into how females leverage their behavioral advantage within one particular arena.

Findings also illuminate a number of outstanding quandaries. Further investigation of the following questions would advance sociological understanding in the area of family dynamics, children’s behavior, educational attainment, and gender gaps in each. First, through what mechanisms do boys and girls respond differently to dynamics within families even when they are exposed to almost identical levels of these dynamics? Past research has highlighted physiological differences and gene-environment interactions that lead to sex differences in responses to family disruptions (with worse behavioral and educational attainment outcomes for boys than girls) (Deater-Deckard and Dodge, 1997; Krein and Beller, 1988).

However, two related mechanisms also may be implicated. The first is environmental. Girls have higher levels of father absence at birth and single motherhood at age 4. These patterns suggest that boys’ exposure to higher conflict may be due to the fact that parents are more likely to remain in bad marriages if they have a son. Boys are also more likely to live with stepparents. Future research should investigate whether boys are more vulnerable to parental conflict because of their higher levels of exposure to environments associated with parental conflict. Research should also explore which environments are most implicated.

The second potential mechanism is social psychological. Boys on average may be sensitized to negative stereotypes about their proclivity toward problem behavior. This awareness may manifest as a self-fulfilling prophesy analogous to that of stereotype threat for minority students and academic performance (see Steele and Aronson (1995); Owens and Massey (2011)) or women in math and science/engineering or entrepreneurship (Correll and Ridgeway, 2006; Thebaud, 2010). Through the internalization of negative-ability stereotypes of “behavior-problem boys” potentially accompanied by a sense of academic

fatalism, boys may respond more negatively to family dynamics like parental conflict and harsh parenting and less positively to positive discipline and maternal warmth. Identification of these processes should be a primary aim of further research.

Second, the present study emphasizes children's responses to parents, but do parents' responses to children also vary based on the behavior of sons and daughters? A limitation of the present study is its inability to investigate how parenting practices are affected by children's behavior problems. Because parenting is based on age-appropriate measures of parents' interactions with their children, much of the information on parenting collected in early childhood is not available after ages 4 or 5 when behaviors are collected. Sensitivity analyses discussed above indicate that the associations between parental conflict and parenting and behavior remain even after controlling for temperament, which helps address the possibility of reverse-causality. In addition, the pathway between children's behavior and parents' educational expectations may pick up on some aspects of parents' responses to children's behavior, since parents' educational expectations likely incorporate feedback due to children's behaviors. Nonetheless, the strongest claims from this study relate to the unidirectional mechanism through which children respond to parenting, and not the other way around. Sociological understanding would be strengthened by future research examining the bi-directionality of the effects of parent-child interactions.

Third, this study is based on investigation of between-person differences in the pathways of interest; that is, it identifies some degree of continuity in behaviors throughout childhood at the aggregate level, in line with prior research (Belsky et al., 1998; Cherlin et al., 1998). But are early childhood behaviors linked to educational attainment as strongly for boys and girls whose behaviors change by late childhood? And, what are the most common behavioral trajectories for boys and girls whose behaviors change substantially throughout childhood? Finally, the present study examines whether links between gender gaps in behavior and educational operate through gender gaps in parent and child educational expectations. It finds limited support for this hypothesis, suggesting that other indirect paths are more centrally implicated. Future research would also benefit

from further investigation of the pathways that mediate associations between the gender gap in early childhood behavior and those in educational attainment.

Fourth, this study focuses on links between gender gaps in behavior and educational attainment at the aggregate level, controlling for social class. However, research points to social class differences in gender gaps in both educational attainment (Bailey and Dynarski, 2011) and childhood development (Moiduddin, 2008). The gender gap in educational attainment is largest in the top quartile of the income distribution, although it permeates the income spectrum (Bailey and Dynarski, 2011). The gender gap in childhood development is also ubiquitous across the social class distribution (based on proxies for social class such as neighborhood resources and family structure) (Hetherington et al., 1982; Krein and Beller, 1988; Moiduddin, 2008). There is also some evidence that parenting practices vary by socioeconomic status, suggesting a possible mechanism for the gender gap in childhood development especially among lower socioeconomic status families (Moiduddin, 2008). Future research should examine socioeconomic gradients in the links between gender gaps in childhood development and educational attainment.

Salient changes in educational attainment in the last three decades paint a rosy picture for women when using the broadest measures of educational attainment, as is the case in the present study. But, these shifts in certain of women's educational fortunes should not eclipse the importance of other forms of persistent gender inequality. Women continue to experience segregation in field of study, institutional prestige, and occupation. The aim of this study is to shed light on the mechanisms by which women have attained relative success in one particular area within a wider landscape that continues to be marked by gender inequality. The hope is that by better understanding the processes through which certain gains have been made, future research and policy may be better suited to address the other faces of gender inequality. In this light, future research should also examine the disconnects whereby female advantages in early childhood behaviors may fail to translate into advantages in the labor market, particularly in terms of occupational segregation.

In the next chapter, I turn attention directly to the behavioral differences that the present chapter finds help explain the gender gap in educational attainment we see to-

day. Although Chapter 3 focuses on explaining the gender gap in educational attainment evident today, this contemporary gender gap in attainment is part of a longer-standing social process: the gender gap in attainment has been growing over recent decades. What is uncertain at this point is whether the gender gap in educational attainment will continue to grow in the future. Given the importance of the micro-level behavioral processes implicated in explaining the macro-level gender gap in educational attainment, Chapters 4 and 5 turn to examining the evolution of the gender gap in behavior problems across cohorts. The aim is to shed some light on what we may expect to see in the gender gap in educational attainment once some of the most recent birth cohorts enter early adulthood.

Chapter 4

Race, Gender, and Behavior Problems Across Two Decades

4.1 Introduction: A Growing Gender Gap in Children's Behavioral Problems Across Cohorts

Perhaps because the female advantage in the development of self-regulation and social skills has existed for decades, researchers have tended to overlook two key trends within medical and educational research that suggest that boys' self-regulation problems and social problems actually may have increased relative to girls' over time. Working separately, both medical and educational researchers in the U.S. have carefully documented increases in gender disparities in attention deficit and hyperactivity disorder (ADHD) diagnosis and in elementary school suspensions across birth cohorts, as shown in Panel A of Figure 4.1 (Bertrand and Pan, 2011; Olfson et al., 2003; Mendez, 2003).¹ ADHD is a behavioral disorder linked to the attention problems that partially constitute externalizing problems (Breslau et al., 2000; Hack et al., 1995). By contrast, school suspension – a disciplinary tactic that entails removing students from school for up to ten school days – is more closely linked to the social problems that also partially constitute externalizing problems (Skiba and Peterson, 2000). In addition, these gender gaps in ADHD diagnosis

¹Note that the proportional increase in ADHD diagnosis has been roughly 400% for both boys and girls. However, due to boys' higher baseline levels of diagnosis, ADHD diagnosed prevalence is much larger for boys than girls.

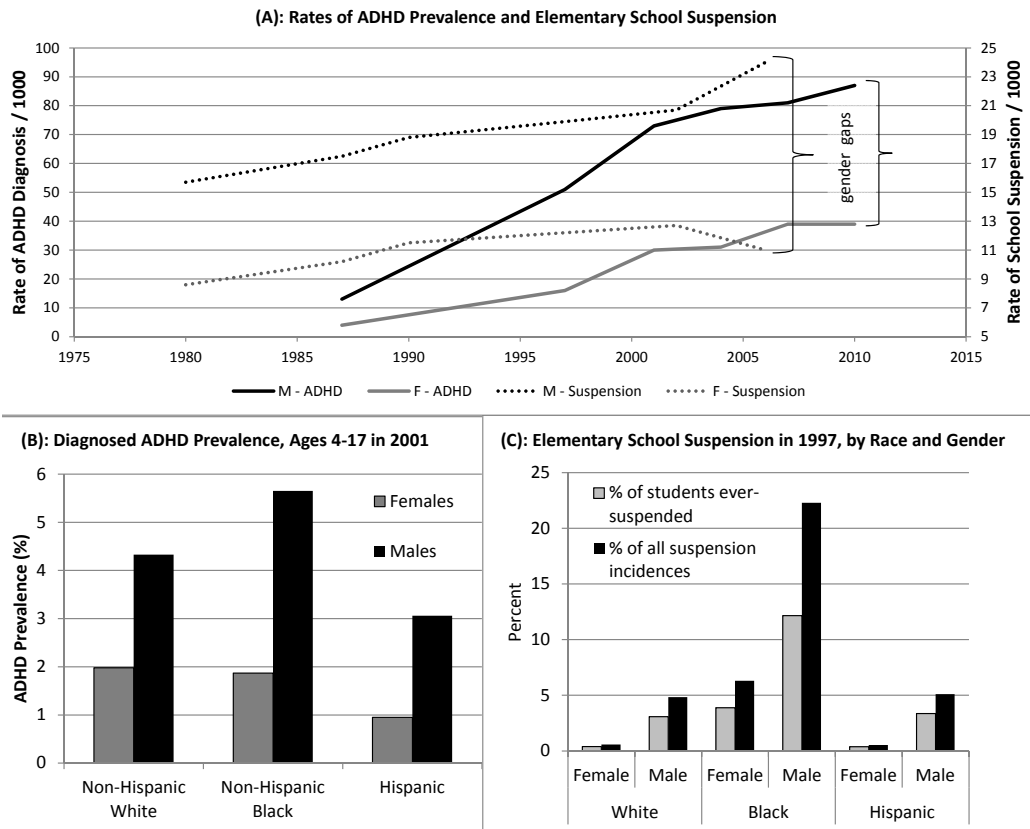
and school suspensions are growing most among minority children, especially black children. These trends suggest that there may also have been a growth in the gender gap in the self-regulation problems and social problems that are used to diagnose ADHD and that lead to school suspensions. And, the gap may have grown more among minority children, specifically blacks.

If black boys are reported as behaving worse than black girls, this would point to the emergence of a new form of racial inequality that sets up a growing segment of black boys for disadvantages in a wide range of key, behaviorally-linked outcomes. Early life behavior problems are associated with key predictors of socioeconomic attainment, including educational achievement and attainment and labor market earnings (Alexander et al., 1997; DiPrete and Jennings, 2012; Farkas, 2003; Heckman and Rubinstein, 2001). The emergence across cohorts of a gender gap in externalizing problems among an increasing number of minority children would carry important implications for many forms of social inequality across the life-course of minority boys, and possibly affect inequality in future generations. These social inequalities could impact child well-being and delinquency now, and as children age, labor markets, marriage markets, family stability, and economic inequality.

Racial Disparities in the Growing Gender Gap in Behavioral Problems

Gender gaps in ADHD diagnosis and school suspension vary by race/ethnicity (Cuffe et al., 2005; Mendez and Knopf, 2003). For ADHD diagnosis, the gender gap is largest among black children, followed by whites and Hispanics (Reid et al., 1998, 2001; Waschbusch and Willoughby, 2008). Drawing on a nationally-representative sample of children aged 4 to 17 years in 2001, Panel B of Figure 4.1 documents ADHD diagnosed prevalence of 5.65% for black boys and 1.87% for black girls (a gap of 3.78 percentage-points), compared to 4.33% and 1.98% for white boys and girls (a gap of 2.35 percentage-points), and 3.06% and 0.95% for Hispanic boys and girls (a gap of 2.11 percentage points) (Cuffe et al., 2005).

Figure 4.1: Rates of ADHD Prevalence and Elementary School Suspension Rates, by Year and Gender or Race and Gender



Sources: **Panel A:** ¹Bertrand, M., & Pan, J. (2011). The trouble with boys: social influences and the gender gap in disruptive behavior (No. w17541). *National Bureau of Economic Research*. ²Olfson, M., Gameroff, M. J., Marcus, S. C., & Jensen, P. S. (2003). National trends in the treatment of attention deficit hyperactivity disorder. *American Journal of Psychiatry*, 160(6), 1071-1077. ³Centers for Disease Control. National Health Interview Surveys, 1998, 2001, 2004, 2007, 2010. **Panel B:** ⁴Cuffe, S. P., Moore, C. G., & McKeown, R. E. (2005). Prevalence and correlates of ADHD symptoms in the national health interview survey. *Journal of Attention Disorders*, 9(2), 392-401. **Panel C:** ⁵Mendez, L. R., & Knopf, H. M. (2003). Who gets suspended from school and why: A demographic analysis of schools and disciplinary infractions in a large school district. *Education and Treatment of Children*, 26(1), 30-51.

Research indicates that the rise in school suspensions that has taken place in recent decades is disproportionately concentrated within black communities (KewalRamani, 2007; Wallace Jr et al., 2008). As an increasing share of minority boys are suspended from school, there has been a growth in the absolute magnitude of the gender gap in school suspensions among blacks, as shown in Panel C of Figure 4.1. Gender gaps in elementary school suspension are of larger absolute magnitude among black and Hispanic students than among whites and Asians (Mendez, 2003; Skiba et al., 2011, 2013).² Higher levels of school suspension and increased prevalence of ADHD among boys, and the concentration of gender gaps in ADHD and suspension within minority communities further suggests a growing gender gap in externalizing behavior problems, especially among minority children.

Population Dynamics Underlying Behavioral Change

To the extent that the rising prevalence of ADHD and school suspensions and the growing absolute magnitude of the gender gaps therein are linked to underlying externalizing behavior problems, these behavioral trends could be driven by two possible phenomena. One possibility is that the types of children, particularly boys, with externalizing problems profiles that would have previously placed them just below the threshold for ADHD diagnosis or school suspension have now have tipped over the threshold for ADHD diagnosis or school suspension.³ This could be due to a combination of factors, such as heightened perceptions of behavior problems among at-risk boys, newly-found access to medical coverage to enable diagnosis, changes in diagnostic criteria, and/or a crackdown on behavior problems at home or in schools. The types of girls with externalizing problems profiles that also would have previously placed them just below the threshold may also enter the clinical or suspended populations, but to a lesser degree than boys.

Another possibility to explain the growth in the absolute magnitude of the gender gap in ADHD diagnosed prevalence and school suspension is that there may have been

²Due to limited data on elementary school suspensions by race and gender, these data are from one large school district in Florida from 1997.

³For simplicity, this hypothesis makes the assumption that the threshold for diagnosis has not changed, which is likely not to be the case in reality.

a rise in mother and/or teacher reports of problem behavior among children with externalizing problems profiles that would have placed them throughout the full range of externalizing problems had they been born in the 1980s. That is, even children with externalizing problems profiles that would have placed them at the low end of the behavior problems distribution had they been born in the 1980s may have experienced a rise in levels of externalizing problems scores. In both these hypothetical situations, even if the proportional increase in behavior problems reports is the same among boys and girls, the absolute magnitude of the gender gap may grow because boys have historically received higher problem behavior scores. Both males' and females' behavior problems distributions would shift to higher levels in line with trends in ADHD diagnosed prevalence and school suspension rates over the same period, but males' distribution would move up more than females'. On a practical level, a disproportionate rightward shift in reports of boys' behavior problems across the entire behavioral distribution would mean that even the types of boys who would have been reported to have relatively low levels of behavior problems in the 1980s would be judged more negatively than girls who also display relatively low levels of behavior problems. This would lead to an appearance of a gender gap in reports of behavior problems across the distribution, rather than only among the boys and girls with the highest levels of reported behavior problems.

For decades, black and Hispanic children have been reported to have higher levels of externalizing problems. Owing to higher levels of ADHD and externalizing problems and higher rates of school suspension among black compared to white, Asian and Hispanic boys, even a proportionate rise in externalizing problems across race groups would lead to a larger growth in the gender gap in externalizing problems among black compared to white and Asian or Hispanic children. Furthermore, by virtue of black boys' higher prevalence of ADHD and rates of school suspension compared to all other groups, an increase in reported levels of underlying externalizing behavior problems may occur among an even wider and more behaviorally advantaged cross-section of black boys. The gender gap in externalizing problems may therefore appear between more behaviorally advantaged black boys and girls.

Shifts in Perceptions vs. Shifts in True Behaviors

In recent years, there has been much debate among health and education researchers, as well as in the popular press, over whether the rise in rates of ADHD diagnosis and school suspension are the result of true changes in behavior problems (Mayes et al., 2009). One possibility is that these shifts are largely a result of changes in social perceptions of and expectations/norms about behavior, rather than changes in the children's actual behavior. With changes such as a movement towards high stakes testing in schools and zero-tolerance policies for bad behavior in recent decades, society may have become less tolerant of externalizing behavior problems.

To the extent shifts in social perceptions of behavior problems have occurred, they have done so alongside a trend toward the medicalization of socioemotional problems, brought about in part by changes in social policy and medical/diagnostic procedures. These include the expansion of Medicaid in the 1990s and the three revisions to the Diagnostic and Statistical Manual (DSM) criteria used to diagnose ADHD between 1980 and 2000. As a result, a combination of changes in social perceptions, social policy, and medical and diagnostic procedures may have facilitated a clampdown on externalizing behavior problems in boys more than in girls. Gender differences in the degree of clamp down on behavior problems across cohorts born in the past twenty or more years is especially likely in light of the historically higher levels of behavior problem reports among boys, and in particular African American boys.

It is also possible that there are truly ailments that afflict boys more than girls, or that elicit a more severe externalizing response from boys than girls. It is unclear therefore whether any apparent growth in the gender gap in externalizing problems, and especially one that would emerge across an expanding behavioral cross-section of African American children, would reflect true changes in behavior.

Possible Causes of a Real (vs. Perceived) Growth in the Gender Gap in Externalizing Problems

If the anticipated growth in the gender gap in externalizing behavior problems drives the apparent growth in the gender gap in ADHD and school suspensions, especially among black children, research must investigate potential causes of the growth in the gender gaps in externalizing behavior problems. This involves beginning to decipher whether the expected growth in the gender gap in externalizing behavior problems results from a true change in behavior, or a shift in perceptions and reporting. One way to begin to gain some empirical traction on this issue is to test the explanatory power of recent demographic and medical shifts that may be linked to a true growth in the behavior gender gap that occurs at higher overall levels of behavior problems. Plausible explanatory factors must: 1) be linked to externalizing problems, ADHD, and suspension (due to gender differences in exposure or gender differences in effects); 2) display a worsening trend (i.e., increasing prevalence) across recent cohorts and/or more negatively affect males than females, and; 3) be concentrated among, or disproportionately adversely affect, African-Americans. In the cases where exposure differentials (as opposed to effect differentials) are the source of male disadvantage, we should also see evidence a growing gender gap in these factors across recent decades.

Over the same period that gender gaps in rates of ADHD diagnosis and school suspension have increased, the prevalence of early childhood chronic health problems and of single mother and social father (i.e., step-father or other non-biological father figure) households also have been on the rise (McLanahan and Percheski, 2008). Changes in early childhood health include a rise in low birth weight (under 5.5 pounds) and pre-term (under 37 weeks gestation) births (Demissie et al., 2001; Horbar et al., 2002; CDC, 2007). Early childhood chronic health problems, especially asthma, also are on the rise (Moorman et al., 2007). The subsequent pages provide a detailed look at these demographic trends, with an eye toward gender and racial gaps in each, where data are available. The prevailing emphasis on the magnitude of the gender gap between blacks and whites is a reflection of limitations in current research.

Family Structure

Research has documented the relationship between family structure and children's psychological well-being across a variety of externalizing behavior problems-linked school outcomes. These include suspension and drop-out (Sigle-Rushton and McLanahan, 2002; Thomson et al., 1994).⁴ The association between family structure and externalizing problems may be partially attributed to the strong correlation between family structure and family economic situation (e.g., household income adjusted for number of people in the household) and social/cultural resources (e.g., mother's education level) (Linver et al., 2002). Some research shows that children's externalizing problems are linked to family socioeconomic status, with lower levels of behavior problems among children raised in higher status and higher-income families and/or during periods in a child's life where family income is higher (Dearing et al., 2006; Hill et al., 2013; Miller and Chen, 2013; Thomson et al., 1994). In this case, it is important to tease out the difference between the effects of father absence and the effects of economic resources on children's externalizing problems.

Rates of single motherhood in the U.S. have increased from roughly 7% in 1960 to 13% in the early 1970s, 18% in the early 1980s, 22% in the early 1990s, and nearly 25% in the early 2000s, as shown in Panel A of Figure 4.2 (McLanahan and Percheski, 2008). Rates of non-marital childbearing follow a similar trend, rising from 4% in 1960, 8% in 1970, 13% in 1980, and 17% in 1990 and 2000s (McLanahan and Percheski, 2008). Research also suggests that, even though fathers used to be more likely to stay in the household with the presence of a son, this was no longer the case by the 2000s (Cooper et al., 2011; Davies and Lindsay, 2004; Deater-Deckard and Dodge, 1997; Hetherington et al., 1982).

Research shows that boys raised in single-parent families have significantly higher levels of externalizing problems than girls (Alexander et al., 1997; Demo and Acock, 1988), as do boys who experience mother partnership instability (Cooper et al., 2011). As single

⁴One study finds that only 11% of children from two biological parent families had ever dropped out of school, been suspended or expelled, or had a parent contacted because of a behavioral infraction (Thomson et al., 1994). The share of children with any of these same outcomes was much higher among children raised with a step-father (19%), a cohabiting social father (21%), a divorced mother (23%), or a never-married mother (26%) (Thomson et al., 1994).

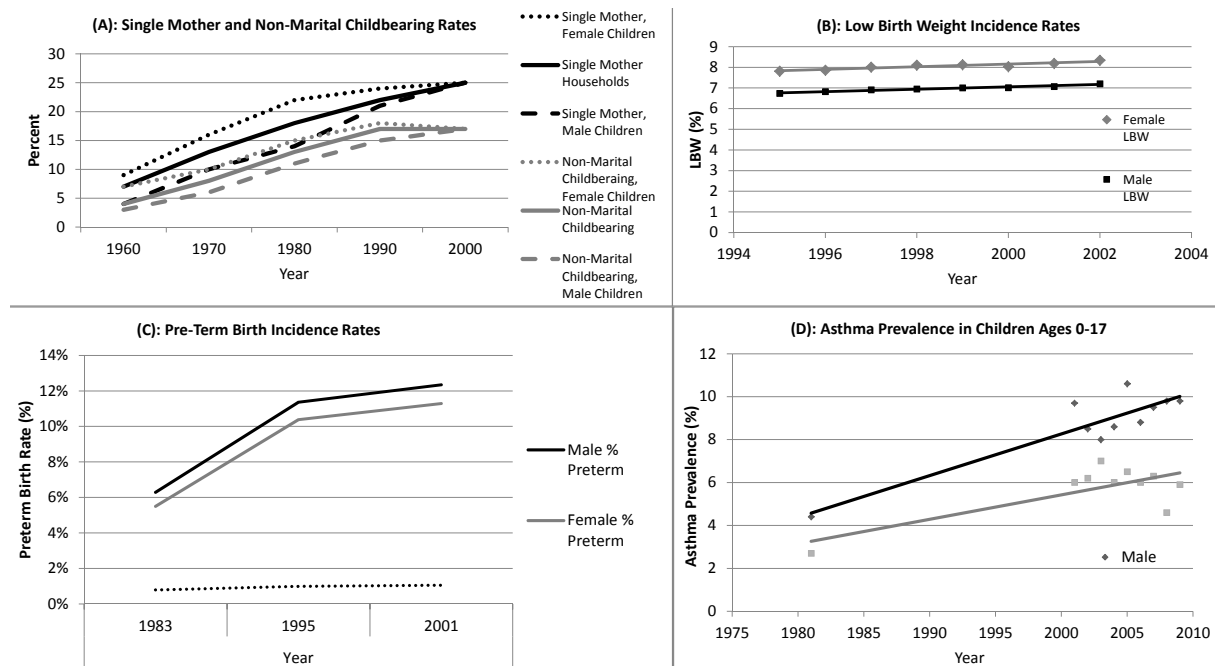
mother households become more widespread, boys may externalize more frequently and/or more severely (Davies and Lindsay, 2004). This may be because fathers serve as important male role models at a time when children are first learning to self-regulate and express emotions in socially-acceptable ways (Buchmann et al., 2008). Therefore, although both boys and girls are likely to experience similar levels of father absence today, the degree to which girls and boys respond through externalizing behavior may differ (Davies and Lindsay, 2004). Some research suggests boys also may externalize more than girls in response to economic hardship (Shaw et al., 1994, 1998).

For decades black children have experienced single parent households at higher rates than whites, Hispanics, and Asians (Sigle-Rushton and McLanahan, 2002). In 1970, just over 30% of black children under 18 years of age were living with a single parent, compared to just under 10% of white children (see Appendix Figure B.1) (Child Trends, 2013). By 2005, the percentage-point difference in the percent of black compared to white children under 18 in single parent households had increased from just over 20 percentage-points to just over 30 percentage-points, amid a steady upward trend for both black and white children (Child Trends, 2013). In light of research indicating that boys in single-parent families exhibit higher levels of externalizing problems than girls, the increasing rate of black children raised in single parent families suggests that the absolute magnitude of the gender gap in externalizing problems may have grown across recent decades, and may also have emerged among better behaved African American children.

Low Birth Weight

Low birth weight (defined as less than 2,500 grams or 5.5 pounds at birth) is linked to behavioral disorders like hyperactivity, attention problems, and ADHD diagnosis among both females and males (Pharoah et al., 1994). A 2002 gender-balanced study of just under 500 children – half diagnosed with ADHD and half with behavior in the normal range – found that low birth weight children were roughly three times more likely to be diagnosed with ADHD, controlling for a range of demographic and health confounders (Mick et al., 2002).

Figure 4.2: Prevalence or Incidence Rates of Single Mother Families with Children, Non-Marital Childbearing, Low Birth Weight, Pre-Term Birth, and Asthma Diagnosis, by Gender and Year



Sources: **Panel A:** ¹McLanahan, S. and Percheski, C. 2008. Family Structure and the Reproduction of Inequalities. *American Sociological Review* 34: 257-276. **Panel B:** ²U.S. Department of Health and Human Services, Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS), Division of Vital Statistics, Natality public-use data 1995-2002, on CDC WONDER Online Database, November 2005. Accessed at <http://wonder.cdc.gov/natality-v2002.html> on May 21, 2013 5:34:37 PM. **Panel C:** ³U.S. Department of Health and Human Services, Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS), Division of Vital Statistics, Natality public-use data 1995-2002, on CDC WONDER Online Database, November 2005. Accessed at <http://wonder.cdc.gov/natality-v2002.html> on May 21, 2013 5:34:37 PM. ⁴Cooperstock, M., & Campbell, J. 1996. Excess males in preterm birth: interactions with gestational age, race, and multiple birth. *Obstetrics & Gynecology*, 88(2), 189-193. **Panel D:** ⁵U.S. Department of Health and Human Services, Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS), Division of Vital Statistics, National Health Interview Survey public-use data 2001-2009, on CDC Online Database. Accessed at <http://www.cdc.gov/nchs/nhis.htm> on May 21, 2013 5:34:37 PM. ⁶Weitzman, M., Gortmaker, S., & Sobol, A. (1990). Racial, social, and environmental risks for childhood asthma. *Archives of Pediatrics & Adolescent Medicine*, 144(11), 1189-1194.

Low birth weight, however, is more common among females than males (McGregor et al., 1992). The gender gap in rates of low birth weight has remained virtually constant in recent decades, as shown in Panel B Figure 4.2. Despite this seeming male advantage, some research shows that the gender gap in birth weight among at-term births (37-41 weeks gestation) has been gradually shrinking since the 1980s and has decreased from about 135 grams in 1980 to 125 grams in 2000 (Van Vliet et al., 2009). This is because birth weights are trending downwards more for males than females. As a result, rates of pre-term birth are rising faster for males than females. The proportion of babies at risk for behavior problems therefore may increase more among male than female babies. Some researchers call this “the paradox of low birth weight”: even though a higher proportion of female than male births are low birth weight, infant mortality rates are higher among males than females (Rothman et al., 2008). Additional research also suggests that despite lower prevalence of low birth weight among males, those males who do experience low birth weight are more likely low birth weight females to experience a number of behavioral and early health problems. It is therefore no surprise that the rate of behavior problems in early childhood is higher among low birth weight males than females (Pharoah et al., 1994).

Low birth weight is more strongly linked to attention problems, a key component of externalizing problems, among black compared to white children (Breslau et al., 2000). Rates of low birth weight also are much higher among black than white children. Black children were more than two times as likely to be born low birth weight compared to white children in 1980 (Paneth, 1995; Reichman, 2005). This ratio had decreased by roughly 5-10% by 2000, but black children continue to experience substantially higher rates of low birth weight than white children (Reichman, 2005). In light of higher rates of behavior problems among low birth weight males than females and the greater prevalence of low birth weight in black communities, there is reason to believe that the absolute magnitude of the gender gap in low birth weight may be larger among black than white children. The greater prevalence of behavior problems among low birth weight males than females combined with the larger proportion of low birth weight black males than white males,

suggests the gender gap in externalizing problems may be larger among black than white children.

Pre-Term Births

Research shows that pre-term birth (defined as births prior to 37 weeks of gestation) is linked to a range of early childhood health and behavioral risks, including a number of behavioral disorders like ADHD, autism, and high levels of externalizing problems (Bhutta et al., 2002). Pre-term births are on the rise in the United States (Demissie et al., 2001). And, a larger percentage of males than females are born pre-term across virtually all developed countries (Ingemarsson, 2003; Zeitlin et al., 2002). As shown in Panel B of Figure 4.2, rates of pre-term birth are roughly 1% higher for males than females at the national level (Health and Human Services, 2005). Between the 1980s and 2000s, there was a small but consistent trend toward a growing gender gap in rates of pre-term birth by gender (Health and Human Services, 2005). In 1983, the rate of pre-term birth was 0.78 percentage-points higher for males than females; by 2001 this difference had grown to 1.05 percentage points, for a growth of 35% over these two decades (Health and Human Services, 2005). The modest growth in the gender gap in pre-term birth rates means tens of thousands more male than female babies are born pre-term in the 2000s compared to the 1980s.

Pre-term and low birth weight babies are more likely than babies born at term and of normal weight to develop a host of health problems, including asthma (Bhutta et al., 2002). Pre-term and low birth weight babies also are at higher risk for slow behavioral development and more behavioral disorders (Elsmen et al., 2004). Furthermore, a number of studies show that pre-term boys in particular are at the highest risk, even compared to pre-term girls comparable on a variety of observed characteristics (Elsmen et al., 2004).

Pre-term birth rates also are higher among blacks than whites. Between 1989 and 1997, pre-term births rose from 8.8% to 10.2% of live births among whites (Demissie et al., 2001). Even though rates of pre-term birth fell by 7.6% among blacks between 1989-1997, still 17.5% of black births were pre-term (down from 19.0% in 1989) (Demissie et al., 2001). Although there has been little research on trends in pre-term birth by race

and gender, with the significantly larger male-to-female ratio of pre-term births among blacks compared to whites, it is possible that rates of decline in pre-term birth are higher among black females than males. In this case, the gender gap in rates of pre-term birth among blacks could be growing more than the gender gap in rates among whites, even as the rates of pre-term births among blacks decline overall.

These trends together suggest a possible growth in the gender gap in pre-term linked behavior disorders linked to externalizing problems. As more males than females across a wider cross-section of children experience pre-term birth, the gender gap in externalizing problems may similarly appear among a more behaviorally-advantaged cross-section of children, especially minority children.

Asthma

Research conducted on a national sample of children using the Child Health Supplement of the National Health Interview Survey (NHIS) documents that asthma diagnosis in early childhood is linked to a behavioral outcome closely related to externalizing problems: first grade retention (Byrd and Weitzman, 1994). Data compiled from the NHIS also documents increasing prevalence of asthma diagnosis among children ages 2-5 years old in the U.S. between the 1980s and the 2000s, as shown in Panel D of Figure 4.2. At the same time as prevalence is increasing across genders, rates of diagnosis are increasing faster for boys than girls.

Asthma diagnosis among young children also is highest overall among black children compared to whites and Hispanics (see Appendix Figure B.2). National Surveillance for Asthma data collected by the National Center for Health Statistics for children ages 0-4 between 2001 and 2003 also indicates that the absolute magnitude of the gender gap is significantly larger among black compared to white and Hispanic children.⁵

Taken together, trends in asthma diagnosis by race and gender predict a growing gender gap in associated behavior problems like externalizing problems, particularly among

⁵Although Vital Statistics estimates of the gender gap in asthma diagnosis for children ages 0-4 for 2001-2003 differ somewhat from those from the National Surveillance for Asthma, Vital Statistics estimates tell a similar story. Vital Statistics of asthma diagnosis by race and gender among children ages 0-4 from 2001 to 2011 also indicate that the gender gap in asthma diagnosis has grown fastest among blacks and Hispanics compared to whites over the past decade (see Appendix Figure B.3).

black children. This is because the absolute magnitude of the gender gap in asthma diagnosis is growing. The growth in the gender gap in externalizing problems occurs alongside rising prevalence rates among both boys and girls. In addition, the gender gap in asthma diagnosis is concentrated among black children.

Summary of Hypotheses

The gender gap in externalizing problems in the 1980s is likely to be concentrated between the worst-behaved boys and girls. This is because the social and environmental factors that are likely to contribute to the long-standing gender gap in externalizing problems are also likely to be concentrated among the most disadvantaged segments of the population, whose children tend to have higher levels of behavior problems (e.g., ADHD, school suspension, and underlying externalizing problems) (Akinbami et al., 2009; King and Bearman, 2011; McDaniel et al., 2006; McLanahan and Percheski, 2008; Mendez, 2003). And, when behavior problems were likely to have been lower on average for both boys and girls, the gender gap in behavior problems would have been driven by the worst-behaved boys not only exhibiting higher levels of behavior problems in terms of the number of problems, but also in terms of the severity of these problems (Deater-Deckard and Dodge, 1997; Gaub and Carlson, 1997; Hetherington et al., 1985; Lahey et al., 2007). However, as low birth weight and pre-term births, early childhood chronic health problems, and single parent households become more common, they also become more widespread across racial/ethnic and socioeconomic groups (Branum and Schoendorf, 2002; Demissie et al., 2001; King and Bearman, 2011; McLanahan and Percheski, 2008). As more boys and girls experience these environmental and health risks, boys may externalize disproportionately more than girls. As such, the growth in the gender gap in externalizing problems by the 2000s may then spread across the behavioral distribution. That is, it is likely to show up between the best as well as the worst-behaved children, especially among black children for whom exposure to the risk factors discussed previously is greater.

4.2 Analytic Strategy

By focusing on the gender difference in each group's mean level of externalizing problems, a method such as ordinary least squares (OLS) regression obscures important changes across time in other parts of boys' and girls' externalizing problems distributions. To address this limitation, the present study draws on a statistical method called conditional quantile regression to examine race and gender-specific shifts across cohorts in the distributions of young children's externalizing behavior problems. Conditional quantile regression identifies differences across covariate values on the location of a given quantile (or percentile) along the externalizing problems distribution. Whereas OLS coefficients estimate the magnitude of the association between a one-unit change in a covariate, x , and the change in the expected value (i.e., the mean) of y , a quantile regression coefficient estimates the magnitude of the association between a one-unit change in x and the change on the location of a specified quantile (i.e., or percentile) of y . For example, a covariate indicator for "male" in a 25th quantile (i.e., percentile) regression identifies if there is a gender difference on the location of the 25th percentile of behavior problems. Substantively, this is important because boys' and girls' are socialized differently and their behavior is assessed as "good" or "bad" in distinct ways (Buchmann et al., 2008; West and Zimmerman, 1987). Conditional quantile regression is particularly useful when a researcher thinks that the association between covariates and the outcome vary at different points in the distribution of the outcome variable, as is often the case in non-normal distributions. For example, the gender difference on the location of the 25th percentile may be larger than the gender difference on the location of the 75th percentile of externalizing behavior problems scores.

Analogous to the OLS approach of estimating conditional mean models by minimizing the sum of squared residuals using maximum likelihood estimation, quantile regression uses a weighted least squares estimator to estimate conditional quantile functions by minimizing the sum of absolute residuals (Koenker and Bassett, 1978). Conditional quantile estimation minimizes the sum of symmetrically weighted absolute errors in the case of median regression and the asymmetrically weighted sum of absolute errors in the case

of quantile functions at other points in a distribution (Koenker and Hallock, 2001). All observations are thus used to identify the location of a given quantile (or percentile), but observations closest to the specified quantile are weighted more heavily. In the present study, standard errors are obtained via bootstrapping, using 500 independent draws with replacement. Analyses are replicated using the “bsqreg” package available for Stata 11 as well as using the “quantreg” package in R.

The first set of conditional quantile regression analysis used in this study is descriptive in nature. It examines, within-race/ethnicity and time period, gender differences on the location of the 10th, 25th, 50th, 75th, and 90th percentiles of externalizing problems. Importantly, given this study’s focus on gender-within-race gaps in externalizing problems, the estimation sample is stratified by race and then quantiles are estimated for each gender and time period group using main effects indicators for male and for the 2001 cohort and an interaction term between male and the 2001 cohort dummies. The dummy variable for male identifies the magnitude of the gender gap in the 1980s cohorts. The dummy variable for the 2001 birth cohort (henceforth “the later time period”) identifies the average difference in externalizing problems scores for females between the two cohorts. The interaction term between male and 2001 birth cohort identifies the change (i.e., the growth or shrinkage) in the gender gap between the 1980s and the 2001 cohorts. The aim of this analysis is to identify and visually present differences in the distributions of externalizing problems by gender, race, and time period (i.e., cohort). Appendix Figure C.2 displays the number of children with each gender, racial/ethnic, and cohort group at each of the percentiles of interest.

The second set of quantile regression analysis introduces additional covariates for socioeconomic status, family structure, and early childhood health. These models test the mechanisms laid out at the start of this paper. Models are estimated separately for each racial/ethnic group. These models identify each of the quantiles where a growth in the gender gap occurs. For brevity, I focus on the results for black and white children, but results for Hispanics are available in Appendix B.4. Because the first part of each hypothesis relates to differences in exposure to the family and health factors by gender and

time period, corresponding descriptive figures depicting the expected values and 95% confidence intervals of each of the potential family and health mechanisms are displayed for each of the quantiles of interest, by gender, race/ethnicity, and time period. Expected values of the covariates for a particular quantile are calculated by limiting the sample to the subset of observations that lie at the corresponding value of externalizing problems at that quantile (sample sizes are shown in Figure C.2).

The second part of each hypothesis investigates the possibility of gender and time period differences within each racial/ethnic group in the influence of each set of family and health factors on the location of a given externalizing problems quantile for boys compared to girls. These models (numbered 4, 6, 8, 10, and 12, below) shed light on whether boys and girls at a particular quantile respond (i.e., externalize) differently in response to exposure to a given set of family and health factors. Hypotheses are tested through the interactions described below. In the analysis of potential mechanisms of the growing gender gap, covariates are added in six groups, corresponding to the hypotheses discussed above.

Covariates are introduced in order from the most “fundamental causes” to the most “proximate causes” (Link and Phelan, 1995):⁶ (1) no demographic controls beyond indicators for male, the 2001 birth cohort, and the interaction for male*2001 birth cohort, (2) demographic controls and internalizing behavior, (3) socioeconomic status main effects, (4) interactions between socioeconomic status variables and gender, time period, and gender and time period, (5) family structure main effects, (6) interactions between family structure variables and gender, time period, and gender and time period, (7) health main effects, (8) interactions between the health variables and gender, time period, and gender and time period, (9) socioeconomic status and family structure main effects together as “economic and cultural resources”, (10) interactions between socioeconomic status and family structure and gender, time period, and gender and time period, (11) socioeconomic status, family structure, and health main effects, and (12) interactions between socioe-

⁶The exception to this pattern of adding covariates is internalizing behavior problems, which are added along with demographic controls in order to isolate the component of externalizing problems that are not co-morbid with internalizing problems.

conomic status, family structure, and health and gender, time period, and gender and time period. Note that, when included in a given model, mother’s years of schooling, per capita household income in 2011 dollars (in \$1,000s), internalizing, mother’s age at birth, and receptive vocabulary are centered at their overall sample mean.

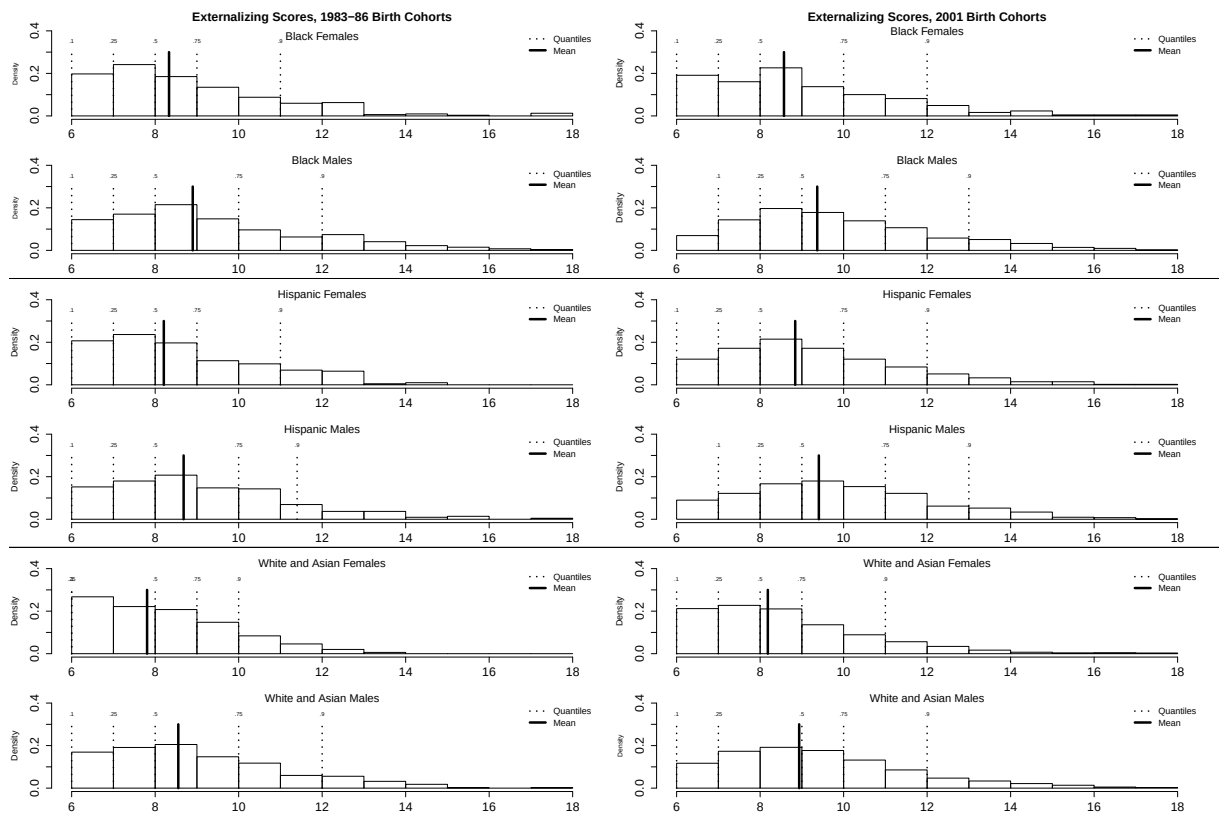
4.3 Results: Racial/Ethnic Disparities in the Spread of the Gender Gap in Externalizing Problems Across Cohorts

Figure 4.3 displays the externalizing problems distributions for both the 1983-86 (column 1) and the 2001 (column 2) birth cohorts.⁷ Vertical lines document the location of the 10th, 25th, 50th, 75th, and 90th percentiles and the mean value of externalizing problems for each gender, race, and cohort group. The first panel shows that, among blacks in the 1980s, the 10th, 25th and 50th quantiles (or percentiles) align for black females and black males. A gender difference (i.e., the “gender gap”) appears on the location of the 75th and 90th percentiles in the 1983-86 cohorts. Among blacks in the 2000s relative to the 1980s, the entire male distribution shifts outward to higher externalizing problems scores. By contrast, only the right (i.e., the top) half of the female distribution shifts outward toward higher externalizing problems scores. The result is the emergence of a one point (or roughly 0.4 standard deviations) gender difference on the location of the 10th, 25th, and 50th percentiles. The one point gender difference present in the 1980s cohorts is maintained in the locations of the 75th and 90th percentiles in the 2001 cohort. Conceptually, this one point is the difference between a mother reporting that a child “sometimes” vs. “often” displays one of the six externalizing behavior problems assessed in the present study. Although this may seem to be a modest difference in practical terms, a one point difference between boys and girls in the top half of externalizing problems scores equates to a roughly 0.4-0.5 standard deviation increase (depending on whether one divides by the standard deviation of girls or boys in the early or late period; see Figure 4.5 of descriptive statistics).

⁷Shifts by gender and time period for the aggregated samples (i.e., not broken down by race/ethnicity) are shown in the Appendix.

Panel 2 of Figure 4.3 displays the distribution of externalizing problems scores among Hispanics by gender and time period. Similar to the picture for blacks, there is a gender difference on the location of the 75th and 90th percentiles of externalizing problems scores in the 1980s; the gender gap is concentrated among the worst-behaved boys and girls. By contrast, the location of the 10th, 25th, and 50th percentiles of externalizing problems aligns among Hispanic boys and girls in the 1980s cohorts; there is no gender gap between the best-behaved Hispanic boys and girls.

Figure 4.3: Externalizing Problems Distribution by Time Period, Gender, and Race



Panel 3 of Figure 4.3 shows the distribution of externalizing problems scores among whites and Asians by gender and time period. In the 1980s, females are heavily concentrated at the lowest externalizing problems score. Because just under 30% of girls receive a score of 6 in the 1980s cohorts, there is a gender gap on the location of the 25th percentile of externalizing problems, between the better-behaved girls and the better-behaved boys. There is also a gender difference on the location of the 75th and 90th percentiles of externalizing problems between the worst-behaved girls and the worst-behaved boys.

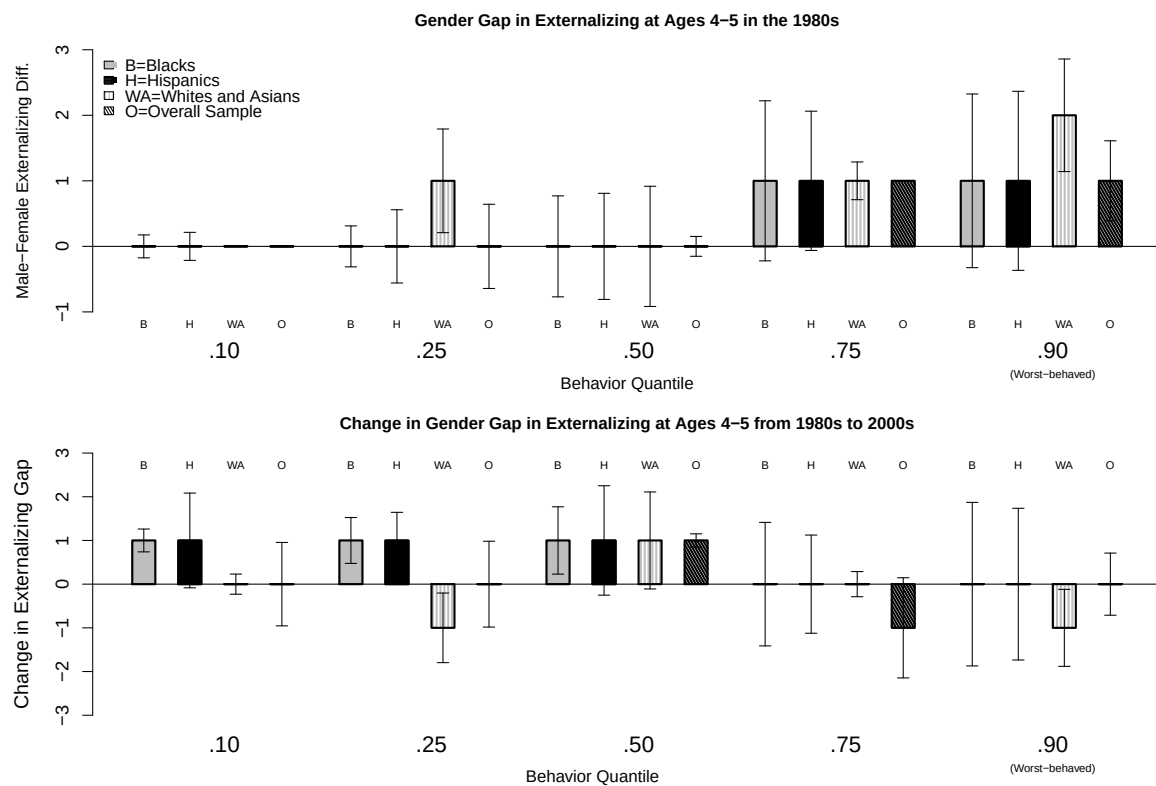
In the later time period, the gender gap emerges on the location of the 50th percentile of externalizing problems, extending the gender gap across the entirety of the top half of the externalizing problems distributions.

Whereas Figure 4.3 displays the entire distributions, Figure 4.4 highlights the locations in the distributions where a gender gap occurs.⁸ Panel 1 shows the gender gap on the location of the various externalizing problems quantiles by race. Panel 2 displays the change in the magnitude of the gender gap that accompanies the changing locations of the quantiles between the 1980s and 2000s cohorts. In the 1980s cohorts, the gender gaps in externalizing problems among blacks, Hispanics, and whites and Asians are concentrated between the top quartile of boys and girls. The large errors around the point estimates for blacks and Hispanics are likely due to power issues. The one point gap between white and Asian boys and girls on the location of the 25th percentiles results from the large proportion of white and Asian girls clustered at a score of 6. Note that the expected values of the externalizing problems scores corresponding to the 25th percentiles are lower for both boys and girls than the expected values of externalizing problems of their same-gender peers located at the 50th, 75th, and 90th percentiles.

Panel 2 of Figure 4.4 shows that by the 2000s, the gender gap in externalizing problems had spread to the lowest two quartiles (i.e., the best-behaved) black and Hispanic boys and girls. The growth of the gender gap between Hispanic boys and girls on the location of their 10th percentiles of externalizing problems may not be statistically significant due to large standard errors around these estimates. Nonetheless, the race/ethnicity by cohort trend toward a growing gender gap in location of the 10th and 25th percentiles of externalizing problems among both blacks and, to a somewhat lesser degree, Hispanics is apparent. The emergence of a gender gap on the location of the 10th and 25th percentiles results from the rightward shift of the entire male distribution, but of only the top half of the female distribution (as discussed previously). By contrast, among whites and Asians, the gender gap only spreads to the location of the 50th percentile, extending throughout the top half of the externalizing problems distribution in the 2000s cohort.

⁸Expected values of externalizing problems at these quantiles are shown by gender and race in Appendix Figure B.5.

Figure 4.4: Gender Gap in Externalizing Problems at the 10th, 25th, 50th, 75th, and 90th Percentiles Within Girls' and Boys' Respective Behavioral Distributions and Change in Gender Gaps Between the 1980s and 2001 Cohorts, by Race/Ethnicity



Changes in Health and Family Exposures as Possible Explanations for the Growing Gender Gap in Externalizing Problems

By the 2000s, the gender gap in externalizing problems had spread throughout the “best-behaved” (i.e., the bottom) half of the externalizing problems distribution among black and, to a lesser-extent, Hispanic boys and girls. It spread only to the middle of the behavioral distribution among whites. This spread may be partially explained by concomitant shifts in health and families between the 1980s and 2000s cohorts.

Figure 4.5 presents race-, gender-, and period-specific means for the observed covariates at the value of externalizing problems that corresponds to each subgroup’s 10th percentile of externalizing problems (i.e., the best behaved children).⁹ For the purposes of this study, the focal point of these descriptive figures is the difference in the gender dif-

⁹Corresponding descriptive figures for the 25th-90th percentiles of externalizing problems are shown in the Appendix.

ference of each covariate across the two cohorts. That is, whether the difference between females and males in the 1980s cohorts (i.e., the first two bars in each predictor variable's column) differs from the difference between females and males in the 2001 cohort (the third and fourth columns). A second consideration is whether there are noticeable differences in the levels of each gender's exposure in the early vs. late periods.¹⁰

One of the most striking overall trends in the descriptive statistics is that family and health shifts are typically highly concentrated within black communities.¹¹ In the case of family structure, early health, and cognitive development, even the most behaviorally-advantaged black children fare worse than the most behaviorally-advantaged white and Hispanic children. Long-standing disparities in health and families by race/ethnicity may explain some of the growing gender gap in externalizing problems as it has emerged among even the most behaviorally advantaged children in the later time period. It may also account for some of the long-standing gender gap in externalizing problems, which in the 1980s was concentrated between boys and girls whose externalizing problems score place them in the top quartile of all children within their racial/ethnic group.

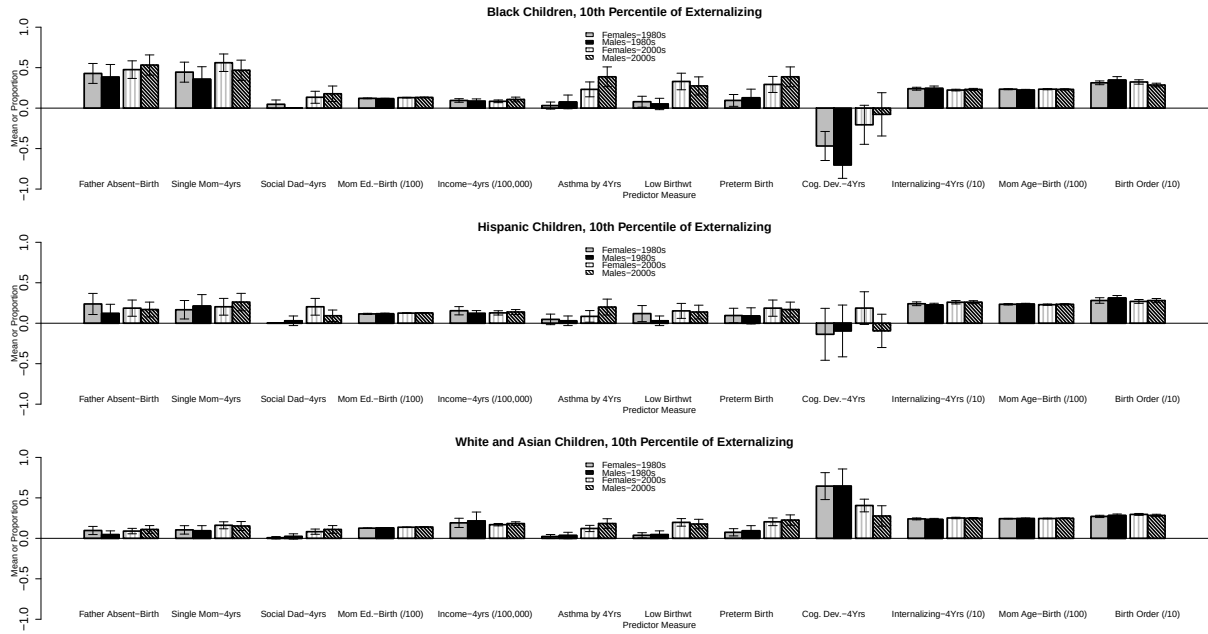
Gender Differences in Exposures and “Effects”: Families, Health, and the Growth of the Gender Gap in Externalizing Problems

The growth of the gender gap on the location of a given externalizing problems percentile and for a particular racial/ethnic group may be explained by differences between boys and girls in levels or types of family and health exposure, as discussed above, or by differences in the “effects” of family structures and health on boys and girls' externalizing problems. Although there was a growth in the gender gap on the location of the 10th, 25th, and 50th percentiles of externalizing problems among black and Hispanic children between the 1980s and 2000s cohorts, discussion will focus on the drivers of the growth among black

¹⁰Confidence intervals appear around each mean for descriptive purposes of indicating spread around each mean and may be used to identify statistically significant differences in exposure by gender and time period. However, even without reaching statistical significance, differences in levels of exposure may still help explain the growing gender gap in externalizing problems at that percentile across the two cohorts.

¹¹A more detailed discussion of racial/ethnic, gender, and time period differences in the descriptive statistics at the values of externalizing corresponding to the location of the 10th percentile of externalizing problems are presented in the Appendix.

Figure 4.5: Means and 95% Confidence Intervals of Predictor Variables, by Race, Gender, and Time Period, at Each Sub-Group's Respective 10th Percentile of Externalizing Problems



Note: Variables shown here are rescaled for display purposes only. Variables in the analyses are not rescaled in the models themselves unless noted in a given table or figure.

children.¹² The results focus on the lower half of the externalizing problems distributions (i.e., on the location of the 10th, 25th, and 50th percentiles of externalizing problems), where the gender gap emerged between the 1980s and 2001 cohorts.

Results shown in the top panel of Figure 4.6 indicate that only a relatively small proportion of the growth in the gender gap on the location of the 10th percentile among black children is accounted for by changes in families and health over this period (also see Appendix Table B.1). The coefficient in model (1) on the interaction term for males in the 2001 birth cohort shows the unadjusted one point (roughly .43 standard deviation) growth in the gender gap. Models (2) and (3) reveal that neither compositional differences between males and females in levels of internalizing problems, mother's age at birth, nor family economic and cultural resources account for this growth. Model (4) indicates that 11% of the growth is accounted for by the more negative relationship between mother's years of schooling at birth and externalizing problems for males than females (even though

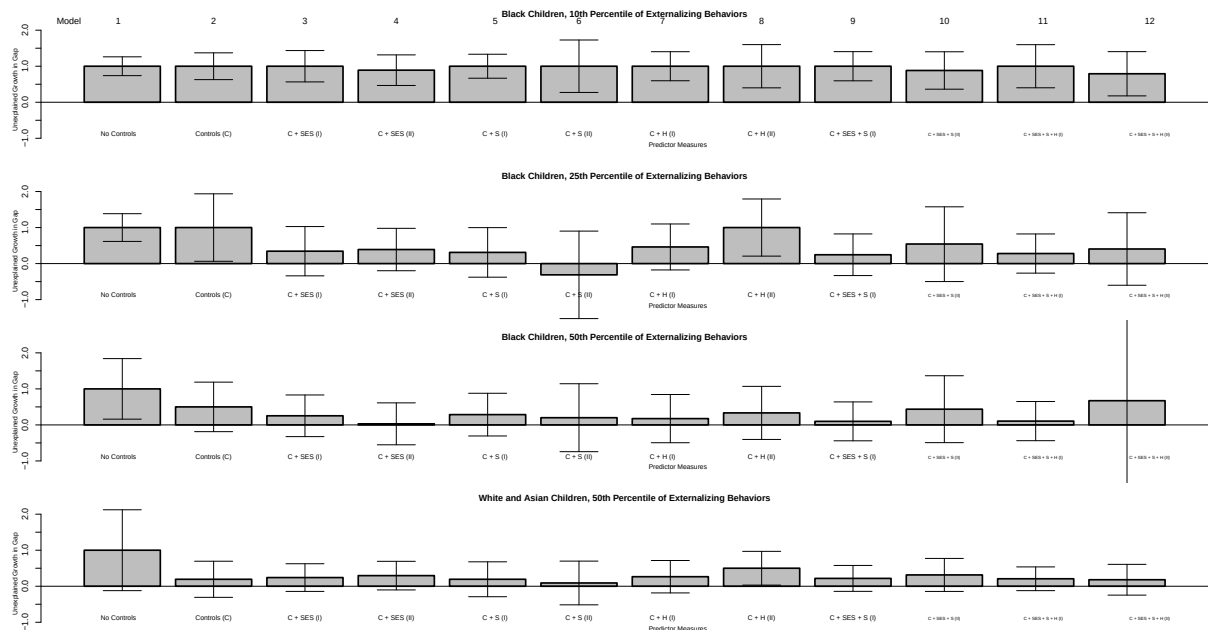
¹²Results for Hispanic children at the 10th-50th percentiles of externalizing problems are presented and discussed in the Appendix.

statistical significance is not reached on the interaction between mother's years of schooling * Male * 2001 cohort). Models (5)-(9) indicate that neither gender differences in levels of exposure to family structures and health, nor their gender-specific effects, account for any of the growth in the gender gap on the location of the 10th percentile of externalizing problems among black children. Model (11) shows that gender differences in low birth weight, pre-term birth, and asthma diagnosis by age 4 do not account for any of the growth. Models (10) and (12) adjust for the fact that being born to a mother who has above sample average schooling at birth confers disproportionately beneficial effects on boys' externalizing problems in the later period. Models (10) and (12) also account for the fact that father absence at birth and social father presence at age 4 have a less-negative association with externalizing problems for boys than girls. Adjusting for the differential effects of these family factors on boys and girls together accounts for 11.8% (model 10) and 20.9% (holding constant gender and period differences in early health, model 12) of the growth in the gender gap on the location of the 10th percentile among black children. Note that the three-way interaction terms between each early childhood health factor, gender, and time period are dropped from these models because of multicollinearity, indicating no differential effect of these early childhood health factors for males and females in the 2001 birth cohort.

Both blacks and Hispanics experienced a one point growth of the gender gap on the location of the 25th percentile of externalizing problems.¹³ Among black children, comparing models (1)-(2) of the second panel in Figure 4.6 with model (3) reveals that roughly 65% of this growth is accounted for by compositional differences by gender in family economic resources (also see Appendix Table B.2). Black females with an externalizing problems score that places them at the 25th percentile of children are raised in households with slightly higher levels of per capita income than black males with an externalizing problems score that places them at black males' 25th percentile of externalizing problems. In practice, income differences are correlated with differences in family structures and in early childhood health experiences. Because model (2) does not compare children in the

¹³Results for Hispanics are discussed in the Appendix.

Figure 4.6: Potential Family and Health Mediators of the Growth of the Gender Gap in the Location of the 10th, 25th, and 50th Percentiles of Externalizing Behavior Problems at Ages 4-5, by Race



Notes: See the Appendix for the full table of results. Model labels refer to: Controls (C): Internalizing problems (centered), mother's age at birth (centered), birth order, dummies for year of birth (1984-1986); SES (I): mother's years of schooling at birth (centered) and per capita household income at child age 4, in \$1,000s, adjusted to 2011 dollars (centered); SES (II): mother's years of schooling and per capita household income separately interacted with each of the following: male, time period (2001 cohort indicator variable), and male*time period; Family Structure (S) (I): father absent at birth dummy and dummies for single mother at age 4 or social father at age 4 (two biological parents at age 4 is the reference); S (II): interactions between each of the S (I) variables and male, time period, and male*time period; Early Childhood Health (H) (I): a dummy for low birth weight, a dummy for pre-term, and a dummy for asthma diagnosis by age 4 or 5; H (II): interactions between each H (I) variable and male, time period, and male*time period.

same family types and/or with the same early health experiences, it attributes to income what may in reality manifest as differences in number of adults in the household or early childhood health complications. Among black children, the effects of compositional differences in economic resources do not account for any more of the externalizing problems gap on the location of the 25th percentile (model 4), nor do differences in exposure to or the effects of early health problems (models 7 and 8). Models (5) and (6) point to the importance of gender differences in exposure and effect of family structure, which accounts for the entirety of the growth in the gap on the location of the 25th percentile among black children. Females have less exposure to single mothering at age 4 and externalize less in response to being raised by a single mother than males.

By the 2000s, a gender gap in externalizing problems appeared on the location of the median of the behavior distribution among black and Hispanic children, who also exhibited a growth of the gap on the location of the 10th and 25th percentiles of externalizing problems. The gap also appeared among white and Asian children, who did not exhibit a gender gap on the location of their 10th or 25th percentiles. Model (1) of the third panel of Figure 4.6 displays the one point (0.4 standard deviation) growth in the gender gap on the location of the 50th percentiles of externalizing problems of black children between the 1980s and 2000s cohorts. This growth owes largely to the rise in black males' level of internalizing between the 1980s and 2000s, as shown in model 2 (see also Appendix Table B.3).

Comparing black females and males with the same level of internalizing accounts for 50% of the growth of the gender gap on the location of the 50th percentile of externalizing problems.¹⁴ Model (3) indicates that minor gender differences in socioeconomic resources, particularly income, account for an additional 24 percentage-points (for a total of 74%) of the growth in the gap in externalizing problems. The gap is further reduced by 23 percentage points (accounting for a total of 97% of the growth) when accounting for the fact that more-educated mothers in the later time period report higher levels of behavior problems among black males with externalizing problems that place them in the middle of the distribution than among black females with externalizing problems scores in the middle of the female distribution (model 4). Models (5)-(11) indicate that gender differences in family structures and early health, which are correlated with differences in socioeconomic status, but not included in models (3) and (4), also are implicated in the growth of the gender gap on the location of the 50th percentile of externalizing problems among black children. This is true even though these family and health factors do not account for any more of the growth than that attributable to gender differences in exposure to and effects of socioeconomic resources.

¹⁴Appendix Tables B.8-B.11 display models that include a control for cognitive development in the form of receptive vocabulary. These results indicate that black females' higher level of receptive vocabulary in the 2000s vs. the 1980s combined with the rise in males' level of internalizing between the 1980s and 2000s accounts for almost 100% of the growth in the gender gap in externalizing problems.

Among white and Asian children with externalizing problems scores that place them at the 50th percentile of externalizing problems, roughly 80% of the one point (0.48 standard deviation) growth in the gap in behavior problems is accounted for by compositional differences between females and males in level of internalizing and birth cohort, as shown in the fourth panel of Figure 4.6 (see also Appendix Table B.4). Of the remaining 20% of the growth in the gap, up to 11 percentage-points (for a total of 91% of the growth) is explained by boys' tendency to externalize more than girls in response to social father presence or single mother households at age 4 (model 6). None of the family socioeconomic status or health factors explain any additional, unexplained component of the gap beyond that explained by these gender differences in response to family structures.

4.4 Discussion

This study is the first to my knowledge to begin to paint a picture of trends and underlying mechanisms implicated in the evolution of the gender gap in externalizing behavior problems across two national samples of young children born nearly two decades apart. Results lend support to the hypothesis that gender-specific trends in externalizing problems over the past two decades mirror trends seen over the same period in rates of ADHD diagnosis and elementary school suspension. Like these two behavioral phenomena, the gender gap in externalizing problems also has spread to a wider cross-section of children over the past 20 years. Across racial/ethnic groups in the 1980s, the gender gap was concentrated among females and males with the highest externalizing problems scores relative to their same-gender peers within their racial/ethnic sub-group. By the 2000s, the gender gap had spread to the 50th percentile across racial/ethnic groups.

This study is of importance to gender scholars interested in processes of early gender socialization, to demographers interested in trends in early population processes linked to later health, education, and socioeconomic attainment, and to developmental psychologists and family sociologists concerned with cross-cohort gender differences in early behavioral and cognitive development. The study is also relevant for criminologists, education researchers, and stratification scholars interested in gender gaps in educational

achievement, delinquency, and the intergenerational transmission of inequality. Finally, this work is pertinent to medical researchers and epidemiologists concerned with trends in the medicalization of early childhood chronic diseases and behavior problems and the population level trends in externalizing problems that underly trends in clinical diagnosis.

A primary contribution of the present study is to encourage attention among researchers and policy makers to the race-specific patterns of the evolution of gender differences in behavior problems. Although the gender gap in externalizing problems has spread to a wider cross-section of children across racial/ethnic groups, it is markedly concentrated among black and, to a somewhat lesser extent, Hispanic children. For black children, a statistically non-zero gender gap, equivalent to a growth of roughly 0.4 standard deviations, appears even between the “best-behaved” boys and girls – those with the lowest mother-rated behavior problems scores. This growth of the gender gap even among the “best-behaved” black females and males results from the disproportionate upward shift among black males with the lowest levels of mother-rated behavior problems.

A pressing question under-riding this study’s findings is that of the practical significance of a one point increase in the gender gap in behavior problems. A one point increase in the gender gap in mothers’ reports of externalizing problems results from a shift from a rating of “rarely” to “often” or from “often” to “always” on one of the six behaviors that comprise the externalizing problems scale. In clinical terms, a one point increase from not exhibiting to exhibiting a particular externalizing behavior problem is equivalent to one sixth of the criteria necessary for an ADHD diagnosis according to the Diagnostic and Statistical Manual (DSM)-IV in effect since 1994. Although each item in the externalizing problems scale consists of three- (or five-) point frequency range, the corresponding items in the DSM-IV are binary; they rely on assessments of whether or not a child exhibits a particular behavior.

Another way to contextualize the importance of a one point increase is in terms of the variation within the externalizing problems scale used here. As depicted in Figure 4.3, between 25% and 35% of externalizing problems scores fall within one point of the mean value of externalizing problems in each racial/ethnic, gender, and cohort group. A one point

increase translates into an upward or downward shift roughly 12 to 17 percentage-points in the behavioral distribution, therefore encompassing a large amount of the variation in the ratings that lead to differentiation between “well-behaved” and “badly-behaved” children.

A related matter that deserves some discussion is the decision to rank children’s behavior problem scores relative to their same gender, same race/ethnicity, same cohort peers. Substantively, a large body of sociological and social psychological research documents the gender-specific socialization processes through which boys and girls learn and internalize different understandings of socially-acceptable behavior (Deaux and Major, 1987; Maccoby, 1988; West and Zimmerman, 1987). This scholarship indicates that boys’ and girls’ behavior is judged according to different metrics and that different meanings are assigned to the same behaviors based on a child’s gender. Similarly, research suggests that behaviors are interpreted differently and assigned different meanings based on a child’s race and based on the intersectionalities in the performance of racial and gender identities (Crenshaw, 1991; Deater-Deckard and Dodge, 1997; Miner and Clarke-Stewart, 2008). Children’s behaviors also are more likely to be assessed against others of their same racial/ethnic group because of the extent of persistent racial segregation within American neighborhoods and schools (Conley, 1999; Massey and Denton, 1993; Oliver and Shapiro, 2006) and the racially-tracked nature of the incarceration system (Western, 2006).

Research points to the subjectivity of ratings of children’s behavior problems based on the identities of the rater, the use of parent or teacher ratings, high-stakes testing regimes, and the percent of children exposed to disciplinary tactics such as school suspension, expulsion, retention of special services/disability referral (Elder and Lubotsky, 2009; Miner and Clarke-Stewart, 2008; Ouazad, 2008). As high-stakes testing, the use of stringent disciplinary tactics in schools, and the incidence of behavioral disorder diagnosis each have become more ubiquitous over the past few decades (Mendez, 2003; Olfson et al., 2003), children may receive higher ratings of behavior problems across cohorts – with or without a true change in behaviors. Taken together, these factors may translate across cohorts into a shift in the very nature of the behavioral rating categories. This

shift may produce a fundamental change in the behavioral scales themselves that may be imperceptible without studies designed specifically to investigate this possibility.

The second primary aim of this study is to begin to investigate whether the apparent growth of the gender gap in behavior problems among even the “best-behaved” black and Hispanic children in the 2001 cohort is due to real changes in behavior or due to shifts in perceptions of behaviors in gender- and race-specific ways across the past two decades. This question is especially important in light of research showing dramatic jumps in externalizing-linked behavior problems prevalence – like the diagnosis of ADHD – with changes in diagnostic criteria (Wolraich et al., 1996). Even if changes in diagnostic criteria with the release of subsequent DSM ratings lead to an artificial jump in ADHD diagnosed prevalence, internalized perceptions of behavior problems have real consequences. Parents may view and treat their sons as worse behaved today than parents did in past decades, and millions of children may grow up with the label and associated belief in the validity of their “problem child” status.

Results lend mixed support to the notion of a true change in children’s behavior problems underlying the growth in the gender gap in externalizing problems. Among blacks, 97% of the growth in the gender gap in the location of the 50th percentile of externalizing problems, 95% among Hispanics, and 91% among whites and Asians is accounted for by observed family and health factors. The increase across the two samples in the expected value of internalizing problems alone accounts for over 50% of the growth of the gap in the location of the 50th percentile of externalizing problems within each racial/ethnic group.

Both blacks and Hispanics experienced a growth of the gender gap in the location of the 25th and 10th percentiles of externalizing problems. However, observed family and health factors explain much more of the growth of the gap in the location of the 25th and 10th percentiles of externalizing problems among Hispanics than among blacks. For Hispanics, key explanatory factors included: (1) gender differences in levels of internalizing problems and pre-term births in the later period and, (2) boys’ tendency to externalize more than girls in response to rearing in single mother households and pre-term birth

status. Together, these factors account for 100% of the growth of the gap in the location of the 25th percentile of externalizing problems among Hispanics. By comparison, only 65% of the growth of the gap in the location of the 25th percentile of externalizing problems is accounted for by observed family and health factors. The 65% that is explained is accounted for by gender differences exposure to non-traditional family structures and associated socioeconomic resource disparities.

Similarly, between Hispanic females and males, 73% of the growth of the gender gap in the location of the 10th percentile of externalizing problems is explained by observed factors. These include the rise in males' expected value of internalizing problems (accounting for 50% of the growth), gender differences in family structure (for a total of 67%) and socioeconomic and cultural resources (for a total of 73% on top of controls). By contrast, only 20% of the growth of the gender gap in the location of the 10th percentile of externalizing problems among blacks is accounted for by observed family and health factors. The 20% explained is due to boys' tendency to externalize less than girls when born to more highly-educated mothers and to families with more economic resources.

Results of the present study also highlight the large gender difference evident in early childhood receptive vocabulary – a proxy for cognitive development at young ages. A key question left unanswered by the present study is that of the link between receptive vocabulary and externalizing problems. This study finds that in some cases, gender differences in receptive vocabulary account for almost the entirety of the growth of the gender gap in externalizing problems. This raises a number of questions about the direction of causality and/or a key omitted variable in the pathways between behavior and cognitive development. Relatedly, because it is unclear to what extent behavior produces cognitive development as opposed to the other way around, issues of biological or genetic predispositions are often implicated. Research shows that cognitive development and to some extent behavior – primarily executive function – are both at least somewhat biologically influenced (Blair, 2002).

At the same time, research shows that social factors like socioeconomic status and in utero environment are key predictors of cognitive development and behavior (Bradley and

Corwyn, 2002). Certainly, given the growth in the gender gap across cohorts born only 15-20 years apart, at least a significant component of behavior must be socially constructed and reinforced. Similarly, research shows that language development difficulties are most identifiable when paired with behavior problems (Stowe et al., 1999). The same study also finds that lower levels of language development were more strongly associated with disruptive behavior and poor peer relationships among pre-school aged boys than girls (Stowe et al., 1999). Taken together, this evidence consistent with the social construction of cognitive ability suggests that we would expect lower levels of language development among boys to explain much of the gender gap in behavior problems at ages 4-5. Future work should directly investigate the degree to which factors such as gender differences in perceptions and/or reporting of behavior problems and/or changes in diagnostic criteria or medical coverage account for the growth in the gap in externalizing problems, especially within more behaviorally and socioeconomically advantaged black communities.

Despite the possibility of a spread of the gender gap in early behavior problems reports to the most behaviorally and socioeconomically advantaged children in recent decades, interest in this phenomenon should not eclipse the importance of the fact that mother's reports of children's behavior problems continue to be highest among low socioeconomic status children. This is important not only for social inequality in childhood, since perceptions of behavior are linked to educational performance and attainment, but also for understanding the evolution of the gender gap in adult educational attainment. Chapter 3 finds that the gender gap in behavior is linked to the gap in attainment. Chapter 4 shows that the gender gap has become most widespread among black and Hispanic children. In light of these findings, Chapter 5 investigates whether the gender gap in reports of behavior problems has followed a similar pattern in its spread across socioeconomic status as racial/ethnic groups, potentially mirroring the evolution of the gender gap in educational attainment evident in recent decades.

Chapter 5

Social Class, Gender, and Children's Behavior

Problems Across Two Decades

5.1 Introduction

One of the most startling demographic shifts in recent decades is the widening gap in the family structures of the most- and least-educated Americans (McLanahan, 2004). Fifty years ago, the majority of American children grew up in families with two biological parents regardless of their parents' educational attainment. Today, parental possession of a four year bachelor of arts or sciences degree (henceforth "a college degree") is one of the most predictive factors of whether a child is born into and raised within a stable union, one with two biological parents living at home (Cherlin, 2011). Given the correlation between education and income (Sewell et al., 1970) and the tendency of Americans to marry within their educational bracket (Mare, 1991; Schwartz and Mare, 2005), the divergence in a child's chances of being born into a one- vs. two-parent household based on their parents' education can also be extended to an analysis based on parents' income (Carlson and England, 2011). The divergence in the economic, social, and cultural resources of children born to more- compared to less-educated parents is further reinforced by selection processes in which men and women with greater resources receive the most education and form stable unions in the first place.

Combined with the rise in women's higher educational attainment and employment rates over the past fifty years, the result is that children born to more-educated parents also have greater economic, social, and cultural resources (i.e., higher socioeconomic status, or SES).¹ The additional economic, social, and cultural resources provided by highly-educated mothers working outside the home allow parents to provide their children with quality health care, child care, education, safe neighborhoods, extracurricular activities, and lower-stress home environments (Morris et al., 2004). These resources together benefit children's cognitive and behavioral development (Becker, 1981).

Family resources, especially parental education, also are predictive of a variety of child health outcomes. These include low birth weight, pre-term birth status, and early childhood asthma (Almqvist et al., 2005). Exposure to these risk factors set children up for a variety of additional disadvantages later on in life (Almqvist et al., 2005). As higher education has become less and less affordable for lower-income Americans and income inequality itself has risen, there also has been divergence in the early health outcomes of children by parents' education and family income. Pre-term birth, low birth weight, and asthma all are on the rise (Demissie et al., 2001; Horbar et al., 2002; CDC, 2007). The divergent socioeconomic trajectories of Americans and the dwindling of the middle class has meant that a wider cross section of children (i.e., the children who once would have been protected because of their families middle class status) are raised in low SES families and exposed to unstable family environments and health risks in early childhood (Almqvist et al., 2005).

It is relatively well-documented that these socioeconomic, family, and health changes have dramatic implications for the behavioral and cognitive development of children raised in low, compared to high, SES families (Dawson, 1991; Hack et al., 1995). What is much less clear, however, is how the divergence in family socioeconomic resources in recent decades affects the evolution of the long-standing, gender gap in early childhood behavioral development. This is the first question addressed in this chapter.

¹Some scholars have investigated whether the rise in paid work outside the home on the part of mothers in two-parent households who would have otherwise been home-makers decreases quality of parenting and/or parents' time with children, but this research has found limited support (Bianchi, 2000).

The second question of this chapter is whether rising numbers of single parent households and early childhood health problems serve as proximate determinants, or mechanisms, linking divergent socioeconomic trajectories to the growing gender gap in externalizing behavior problems. I first test whether the growth of the gender gap in behavior problems is concentrated among the poorest children. I then test whether gender differences in exposure to or the effects of these early family structure and health factors explain the growth of the gender gap in behavior problems. For example, the underlying mechanisms through which father absence may have disproportionately negative effects for boys' behavioral development remain unclear. When exposed to the material hardship that accompanies many single-earner households, even the best-rated boys from low SES families may externalize more than girls from low SES families. Or, father absence may reflect the selection regime in which less-educated parents are more likely to experience divorce or non-marital childbearing. Father absence also may reflect the potentially negative effects on boys' development of lacking a positive male role model (see Carlson (2006)).

Alternatively, the socioeconomic divergence in the gender gap in externalizing problems may be a result of social shifts in perceptions and/or reporting of behavior problems that do not reflect a true change in children's (particularly boys') behavior (Mayes et al., 2009). I do not directly test this hypothesis here. However, if this is the case, I would not expect the population shifts investigated here to explain the anticipated socioeconomic divergence of the gender gap in parents' reports of boys' and girls' externalizing problems.² One way in which to indirectly begin to examine this hypothesis with the use of survey data is to investigate whether mothers' reporting of another important behavior problem – “internalizing problems” – have risen more for boys than for girls. Internalizing problems are comprised of displays of sadness and anxiety, which are often linked to depression (Zill and West, 2001). Girls have historically had higher ratings of internalizing problems than boys (Zill and West, 2001). But, if boys are subjectively rated as exhibiting higher levels of behavior problems overall in recent decades, we may see a shift

²The exception would be if changes in perceptions and/or reports of externalizing problems are associated with changes in families or health.

in reports of boys' internalizing problems as well. Reports of a shrinkage or closing of the female disadvantage in internalizing problems may then help explain some of the growth in the gender gap in boys' externalizing problems.

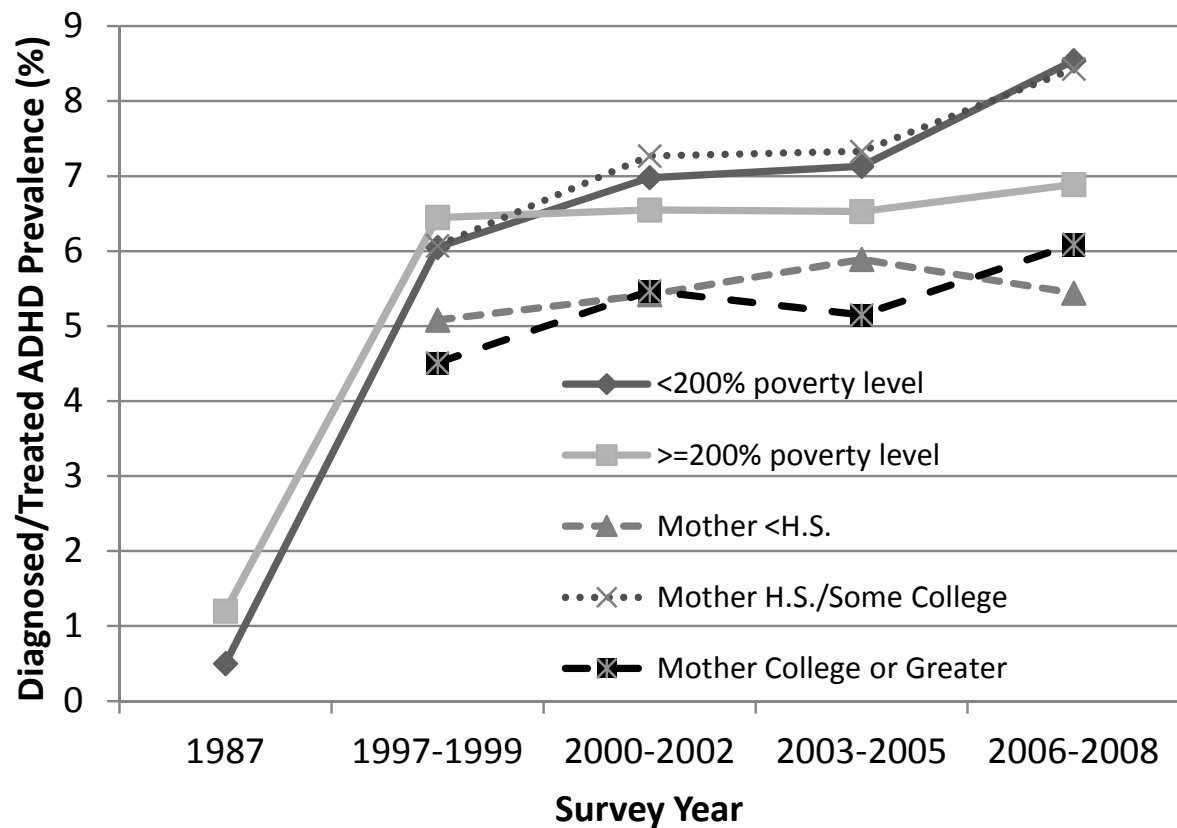
5.2 Links Between Family Socioeconomic Status and Child Behavior Problems: The Case of ADHD

The consequences of the socioeconomic divergence in family structure at a child's birth across recent decades appear clearly when examining trends in diagnosis of an early childhood behavioral disorder called attention deficit hyperactivity disorder (ADHD). ADHD is diagnosed based on physician assessments of children's externalizing problems (i.e., self-regulation problems and social problems) and other closely related behavior problems (Lange et al., 2010). As shown in Figure 5.1, ADHD diagnosis has been on the rise in recent decades (Boyle et al., 2011; Olfson et al., 2003). And, in addition to the overall rise, recent years have seen a further divergence in ADHD diagnosed prevalence by SES. Figure 5.1 shows that lower SES children, whether based on income or parental educational attainment, have higher rates of ADHD diagnosed prevalence than do higher SES children.

Over the past several years, the gap in ADHD diagnosed prevalence by SES has grown. By the 2006-2008 period, prevalence among children from families with household incomes under 200% of the poverty line or in which mothers did not hold a bachelor's degree was between 1.5 and 2.5 percentage points higher than among children from families making more than 200% of the poverty line or whose mothers had a college degree or higher. At the population level, ADHD diagnosed prevalence among children under 17 years was roughly 8.1 million in 2006 (CDC, 2013; ChildStats.gov, 2012). Therefore, between 122,000 and 203,000 more children from low-SES compared to high-SES families had received an ADHD diagnosis in 2006 (CDC, 2013; ChildStats.gov, 2012).³

³Note that the seeming anomaly of the lower (and declining) prevalence among children whose mothers have less than a high school degree may be explained by factors surrounding access to health care to aid with costs associated with diagnosis and treatment (Ferguson, 2000). Because ADHD is physician-diagnosed, many of the poorest children may not have the medical coverage or other economic resources necessary for diagnosis.

Figure 5.1: Rates of Diagnosed/Treated ADHD Prevalence Among American Children 3-18 Years by Socioeconomic Status, 1987-2008



Sources: ¹1987 data come from Olsson et al. (2003), which draws on the National Medical Expenditure Survey item about rates of ADHD treatment among children aged 3-18 years in the U.S.

²1997-2008 data come from Boyle et al. (2008) and draw on the National Health Interview Survey item about prevalence of ADHD diagnosis among children aged 3-17 years in the U.S.

5.3 Child Gender and Links Between Family Socioeconomic Status, Family Structure, Early Health, and Behavior Problems

Some research shows that growing inequality in socioeconomic resources and rising divorce, non-marital childbearing, and early childhood health disparities in recent decades have had more negative consequences for the behavioral (and cognitive) development of boys than girls (Alexander et al., 1997; Davies and Lindsay, 2004; Demo and Acock, 1988; Elsmen et al., 2004). For example, the prior chapter displayed the marked gender gap in ADHD diagnosis and in elementary school suspensions. I expect to see the socioeco-

nomie divergence in ADHD diagnosis shown in Figure 5.1 also to be patterned by gender inequality.⁴

Diagnosed ADHD prevalence may be higher for boys compared to girls in the same socioeconomic group because boys have higher levels of exposure to early health problems linked to ADHD diagnosis. Boys have higher rates of pre-term birth and are more likely to be diagnosed with asthma.⁵ Pre-term birth and asthma are associated with higher levels of both behavioral and cognitive development problems, in particular ADHD and related externalizing problem behaviors (Aylward, 2002; Blackman and Gurka, 2007; Luciana, 2003). It also is in part because boys may externalize more than girls in response to the same or even lower levels of exposure to some risk factors. Boys and girls have roughly equivalent exposure to father absence and lower levels of low birth weight. But, recent research shows that father absence has more negative consequences for the behavioral development of boys than girls (Harris and Morgan, 1991; Rossi and Rossi, 1990).⁶ Research also shows that despite their lower prevalence, low birth weight boys externalize more than girls (Pharoah et al., 1994).

The rise in these family and health risk factors, combined with boys' greater exposure and/or more severe externalizing response, suggests we may see two population dynamics emerge across the two decades considered in this study. First, the gender gap may become more ubiquitous and deeply entrenched within a wider cross-section of socioeconomically disadvantaged children. In prior decades, the gender gap in externalizing problems may have existed between a more highly-selected group of low-SES boys and girls: those with the highest externalizing problems ratings relative to their same-gender, low-SES peers. But today, even the best-rated, boys from low-SES families may be perceived to or may actually exhibit worse behavior than the best-rated girls from low-SES families. Second, a larger proportion and a more socioeconomically advantaged cross-section of children may have become exposed to these family and health risks. This may lead to the appearance

⁴Due to data availability issues, Figure 5.1 is not shown by gender in addition to socioeconomic status.

⁵Boys' may be diagnosed with asthma at higher rates because they act out more than girls when they experience asthma symptoms. They therefore may be more likely to be taken to the doctor by parents or teachers for behavior and/or health problems

⁶Note, however, that a variety of literature does not find support for this hypothesis; see Carlson (2006) for one example.

of a gender gap in externalizing problems among a more socioeconomically advantaged cross-section of boys and girls. The first aim of this study is to test these hypotheses.

Potential Mechanisms of A True Widening of the Gender Gap in Externalizing Problems: Trends in Families and Early Childhood Health by Social Class

Single Parent Families

Figure 5.2A shows that over the past several decades, there has been a persistent socioeconomic gradient in children's exposure to single parent households. Since at least the 1980s, children from the lowest income quartile (quartile 1) consistently have had higher exposure to rearing in single parent households than children from the top income quartile(s). Research shows this same trend extends to parental education: children whose primary care-giver has only a high school degree or some college consistently have had much higher exposure to rearing in a single parent household than children whose primary care-giver had a college degree (McLanahan, 2004).

Low Birth Weight

Figure 5.2B displays the time trend in rates of low birth weight by maternal educational attainment between 1995 and 2002.⁷ Despite different baseline prevalences in 1995, Figure 5.2B reveals an overall rise in rates of low birth weight across all maternal education groups except for mothers with less than a high school degree. For children born to the least-educated mothers, rates of low birth weight were highest – roughly 9% in 1995 – and show a slight downward trend falling to just below 9% by 2002. In spite of this slight decline, mothers with less than a high school education continue to have low birth weight offspring at higher rates than mothers in every other educational group.

Pre-Term Birth

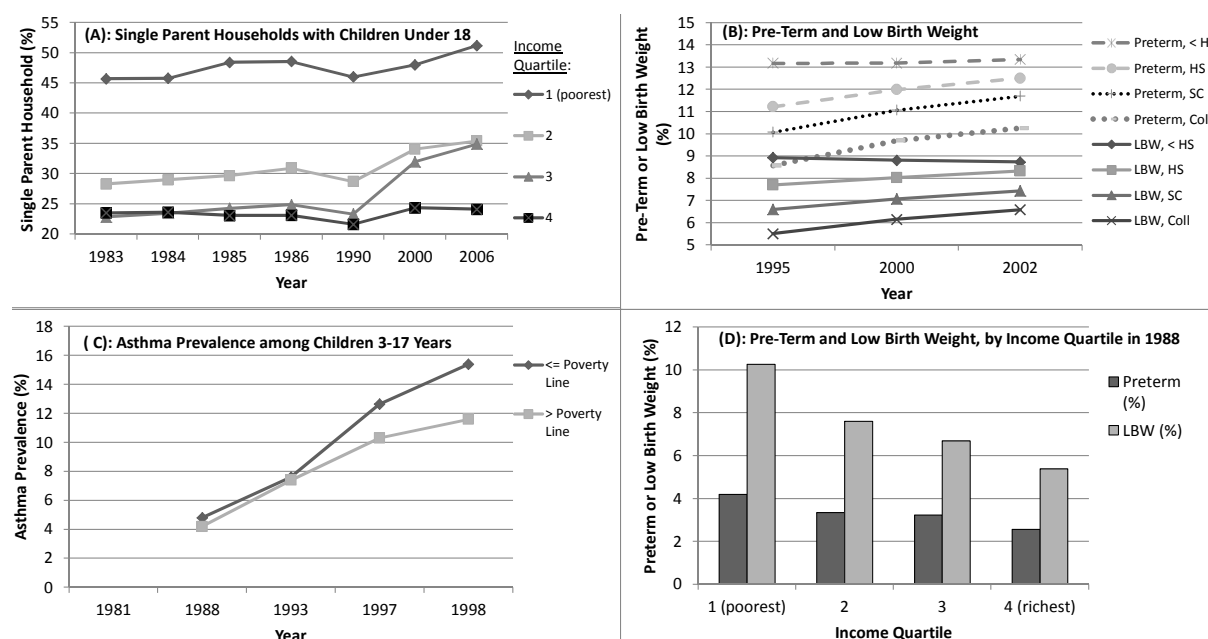
Figure 5.2B also shows a remarkably similar trend by maternal education level between low birth weight and pre-term birth status.⁸ There has been an overall rise in levels of

⁷Due to limitations in data availability for low birth weight by maternal education prior to 1995, Figure 5.2B focuses on this seven year period. However, there is not reason to suspect the trend would not extend back to the 1980s.

⁸As described above for low birth weight, data availability limit the time-frame for which information on pre-term by maternal education is available in a national sample. But, the pattern is expected to extend back to the 1980s.

pre-term birth for all but the least-educated mothers (those without a high school degree). This has led to a slight convergence in the absolute magnitude of the maternal education gradient in pre-term birth, but pre-term birth continues to be patterned by socioeconomic disparities at higher overall levels of prevalence.

Figure 5.2: Single Parent Households, Low Birth Weight & Pre-Term, and Asthma among Children by Socioeconomic Status and Year



Notes: Low birth weight is defined as fewer than 2,500g (5.5 pounds). Rates of pre-term are lower than one might expect. This is because the IHIS defines pre-term as fewer than 36 weeks gestation. Low birth weight is defined as fewer than 2,500g (5.5 pounds). Pre-term is defined as fewer than 37 weeks gestation.

Sources: (A) and (D): Author's tabulations from Minnesota Population Center and State Health Access Data Assistance Center, Integrated Health Interview Series: Version 5.0. Minneapolis: University of Minnesota, 2012. <http://www.ihis.us>. Accessed Online June 9, 2013. (B): Author's tabulations from the United States Department of Health and Human Services, Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS), Division of Vital Statistics, Natality public-use data 1995-2002, on CDC WONDER Online Database, November 2005. Accessed at <http://wonder.cdc.gov/natality-v2002.html> on June 9, 2013. (C): Weitzman et al. (1990), Halfon & Newacheck (1993), Akinbami, LaFleur, and Schoendorf (2002), Smith et al. (2005), and Blackwell & Tonthat (2002).

Figure 5.2D shows the pattern of low birth weight and pre-term birth status by income quantile in 1988. Figure 5.2D reveals that the absolute magnitude of the differences in low birth weight by income quartile are much larger than those in pre-term birth status,

but both are patterned by income. Rates of pre-term and low birth weight are almost twice as high for the poorest compared to the richest children.⁹

Asthma

Figure 5.2C displays trends in lifetime asthma prevalence among children ages 3-17 years by poverty status for selected years between 1981 and 1998. Over this entire period, childhood lifetime asthma prevalence has been on the rise for across all socioeconomic groups. Lifetime asthma prevalence among children born into families earning less than the poverty line has increased faster than for children from families earning above the poverty line. By 1998, prevalence among children in poverty was 33% higher than among children from families not under the poverty line.¹⁰

Gender and Family and Health Risk Factors

Research suggests the above trends in families and health by SES are associated with different externalizing responses between boys and girls. In the case of pre-term and asthma, this in part may be because of boys' higher levels of exposure, as discussed in Chapter 4 (Ingemarsson, 2003; Weitzman et al., 1990; Zeitlin et al., 2002). Or, for certain factors, it is possible that boys externalize more than girls when exposed. Boys and girls are raised within single mother households at similar rates (Cooper et al., 2011). Low birth weight status is more common among girls than boys (Van Vliet et al., 2009). However, some research suggests boys externalize more than girls in response to these factors (Davies and Lindsay, 2004; Elsmen et al., 2004; Pharoah et al., 1994; Shaw et al., 1998). In the case of low birth weight, this may be because girls are on average 0.5 pounds lighter than boys at birth, whereas most thresholds for low birth weight are not gender-

⁹Again, due to data limitations, pre-term and low birth weight by income quartile in a national sample of children were only available for a limited number of years.

¹⁰Appendix Figure C.1 also shows the socioeconomic gradient in childhood asthma prevalence by parental education. In 1981, lifetime asthma prevalence among children born to parents whose highest level of education was less than a high school degree was twice as high as for children born to parents with higher than a high school degree. Although this gap has shrunk in recent decades due to the overall rise in prevalence, children born to parents with less than a high school degree continued to have over 11% (or 1 percentage-point) higher prevalence than children born to parents with more than a high school degree. Unfortunately, limitations in published reporting of the educational gradient in asthma in the National Health Interview Survey prevent further disaggregation by college degree. However, the disparity by parental education is likely to be even larger if comparisons were available between the children of bachelor degree holders vs. high school dropouts.

specific. As a result, more girls qualify as low birth weight when in fact their lower weight is less often indicative of developmental problems (Rothman et al., 2008).

Why the Gender Gap in Externalizing Problems May Have Spread

In past decades, parents may have reported lower levels of externalizing behavior problems for both boys and girls, leading to a smaller absolute gender gap in externalizing problems. Although the gender gap in externalizing problems appeared across socioeconomic groups in past decades (Deater-Deckard and Dodge, 1997; Gaub and Carlson, 1997; Hetherington et al., 1985; Lahey et al., 2007), the gap was likely to have been concentrated among the children of a given socioeconomic group with the highest externalizing problems scores (i.e., between the “worst-behaved” boys and girls in a given socioeconomic group).¹¹ There are a number of reasons for this hypothesis. In past decades, population prevalence of diagnosed ADHD was lower. Rates of school suspension were lower and there were fewer zero-tolerance policies in schools (Mendez, 2003). There was wider social acceptance of children’s acting out behaviors and the idea that “boys will be boys” (Bertrand and Pan, 2011). With lower prevalence of the social, family, and health factors linked to externalizing problems, the long-standing externalizing problems gap was likely to have been concentrated among the worst-behaved children of their socioeconomic group.

In recent decades, however, awareness of behavioral disorders such as ADHD has increased. Zero-tolerance policies in daycares and schools as well as early childhood health problems and single parent households are on the rise. Together, these changes may have slowly begun to erode the “boys will be boys” paradigm. The erosion of this paradigm may be most pronounced among the most socioeconomically disadvantaged boys. These are the boys who are least buffered from these social and health shifts. At the same time, as low birth weight, pre-term birth, early childhood chronic health problems, and single parent households become more common, they also become to some extent more widespread across socioeconomic groups (Branum and Schoendorf, 2002; Demissie et al., 2001; King and Bearman, 2011; McLanahan and Percheski, 2008). As exposure to

¹¹However, the gap was likely to exist at lower levels of externalizing problems for higher SES children.

these environmental and health risks increases, the growth of the externalizing problems gap may spread further across the behavioral distribution if boys continue to externalize disproportionately more than girls in response. That is, the gender gap is likely to show up between the best- as well as the worst-rated children. The gap is likely to be most pronounced among children from low-SES families for whom exposure to the risk factors discussed previously is greater.

5.4 Analytic Strategy

The results shown in the previous chapter indicate that ordinary least squares (OLS) regression is potentially misleading: the mean of a distribution may remain nearly constant over time, meanwhile the tails of a distribution may change dramatically. For example, a distribution may become bimodal with increasing clustering at both the low and high ends of behavior problem scores. When comparing males' and females' externalizing problems distributions, OLS regression may suggest a small or non-existent gender difference in the mean levels of behavior problem ratings, even if one distribution is becoming more bimodal and the other distribution increasingly clustered within a small range of externalizing problems scores. Quantile regression can identify patterns of growing gender difference in particular segments of the distribution. Here, there is reason to believe the gender difference, the gender gap, is becoming largest and most ubiquitous throughout the bottom half (i.e., the worst-behaved) of the externalizing problems distribution among low-SES children. As such, the present study draws on the same statistical method employed in the previous chapter: conditional quantile regression (see the previous chapter for details on this method).

The first set of conditional quantile regression analysis used in this study is descriptive in nature. It examines, within SES and time period, gender differences on the location of the 10th, 25th, 50th, 75th, and 90th percentiles of externalizing problems. Importantly, given this study's focus on gender-within-SES gaps in externalizing problems, the estimation sample is stratified by one of the two measures of SES (i.e., per capita household income or mother's educational attainment at the birth of the child). Quantiles are esti-

mated for each gender and time period group using main effects indicators for male and for the 2001 cohort. An interaction term is estimated between male and the 2001 cohort indicators. The dummy variable for male identifies the magnitude of the gender gap in the 1980s cohorts. The dummy variable for the 2001 birth cohort (henceforth “the later time period”) identifies the average difference in externalizing problems scores for females between the two cohorts. The interaction term between male and 2001 birth cohort identifies the change (i.e., the growth or shrinkage) in the gender gap between the 1980s and the 2001 cohorts.

The goal of this part of the analysis is to identify differences in the distributions of externalizing problems by gender, SES, and time period (i.e., cohort). I compare differences in the location of the 10th, 25th, 50th, 75th, and 90th percentiles of externalizing problems within-gender, within-SES, and within-time period. Doing so enables an understanding of where gender gaps emerge between females and males within each of the two time periods under study. Appendix Figure C.2 displays the number of children in each gender, SES, and cohort group at each of the percentiles of interest.

The second set of quantile regression analysis tests the mediating role of the family and health factors laid out at the start of this paper. I introduce covariates for demographic controls and internalizing problems, whichever SES measure is not used to stratify the sample, family structure, and early childhood health factors. In addition to estimating models separately for each SES group (first by income then by mother’s education), separate models are also estimated for each of the five quantiles of interest.

At each quantile, covariates are added in six groups, corresponding to the hypotheses discussed above. Covariates are introduced in order from the most “fundamental causes” to the most “proximate causes” (Link and Phelan, 1995):¹² (1) no demographic controls beyond indicators for male, the 2001 birth cohort, and the interaction for male*2001 birth cohort, (2) demographic controls and internalizing behavior, (3) SES main effects, (4) interactions between socioeconomic status variables and gender, time period, and

¹²The exception to this pattern of adding covariates is internalizing behavior problems, which are added along with demographic controls in order to isolate the component of externalizing problems that are not co-morbid with internalizing problems.

gender and time period, (5) family structure main effects, (6) interactions between family structure variables and gender, time period, and gender and time period, (7) health main effects, (8) interactions between the health variables and gender, time period, and gender and time period, (9) SES and family structure main effects together as “economic and cultural resources”, (10) interactions between SES and family structure and gender, time period, and gender and time period, (11) SES, family structure, and health main effects, and (12) interactions between SES, family structure, and health and gender, time period, and gender and time period. Note that, when included in a given model, mother’s years of schooling, per capita household income in 2011 dollars (in \$1,000s), internalizing problems, mother’s age at birth, and receptive vocabulary are centered at their overall sample mean.

Because the first part of each hypothesis relates to differences in exposure to the family and health factors by gender and time period, corresponding descriptive figures depicting the expected values and 95% confidence intervals of each of the potential family and health mechanisms are displayed at each of the quantiles of interest, by gender, SES, and time period. Expected values of the covariates at the particular quantiles are calculated by limiting the sample to the subset of observations that lie at the corresponding value of externalizing problems at that quantile (sample sizes shown in Figure C.2). The second part of each hypothesis investigates gender-by-time period response differences within SES groups. The purpose of these models is to understand whether response differentials between boys and girls when they are exposed to each of the family and health factors affect the location of a given quantile of externalizing problems. Note that for brevity due to similarities in the general pattern of results across household income quartile and mother’s education level, I focus on the results by income. However, all results by mother’s education level are shown in the Appendix.

5.5 Results: Socioeconomic Disparities in the Spread of the Gender Gap in Externalizing Problems Across Cohorts

Figure 5.3 displays the distribution of mother-reported externalizing behavior problems for females and males in each of the two time periods by per capita household income

quartile (adjusted to 2011 dollars). Panel 1 reveals that, among the poorest (income quartile one) children in the 1980s sample, there was only a one point gender gap between the females and males whose externalizing problems scores located them at the 75th and 90th percentiles of their respective externalizing problems distributions. There was a gender gap of 0.5 points between the means of the female and male distributions. By the 2000s, even though the difference between females' and males' mean levels of externalizing problems did not increase, the one point gender gap had spread throughout the entire distribution. This was due to a rightward shift of the entire distribution of externalizing problems among the poorest males. Even the boys with the lowest reported externalizing problems received ratings of higher externalizing problems. Meanwhile, a one point increase in externalizing problems occurred only among the lowest income quartile females with the highest reported levels of externalizing problems. A similar pattern played out among females and males in the second income quartiles, shown in panel 2 of Figure 5.3.

Panels 3 and 4 document that, for children from higher-income families (those in quartiles 3 and 4 of household income), the upward shift in males' externalizing problems distribution occurred only for those whose externalizing problems scores placed them at the 50th, 75th, and 90th percentiles of the externalizing problems distribution. This shift produced a gender gap in the location of quantiles in the top half of the distribution in the 2000s that existed only in the location of the top 25 percent of externalizing scores in the 1980s distribution. The result was that, by the 2000s, a gender gap existed only between the higher income females and males with behavior problems scores that placed them in the top 50% (i.e., poorly-behaved) of their respective externalizing problems distributions.

Figure 5.4 facilitates comparisons in the levels of externalizing problems across genders and time periods among children within a given income quartile (i.e., it displays females' and males' within- gender, -time period, and -income quartile expected values of externalizing problems). Figure 5.4 shows that, compared to their peers from higher-income families, children from lower-income families tend to have higher levels of externalizing problems throughout the externalizing problems distribution. This is especially true

Figure 5.3: Externalizing Problems Distribution, by Per Capita Household Income Quartile, Gender, and Cohort

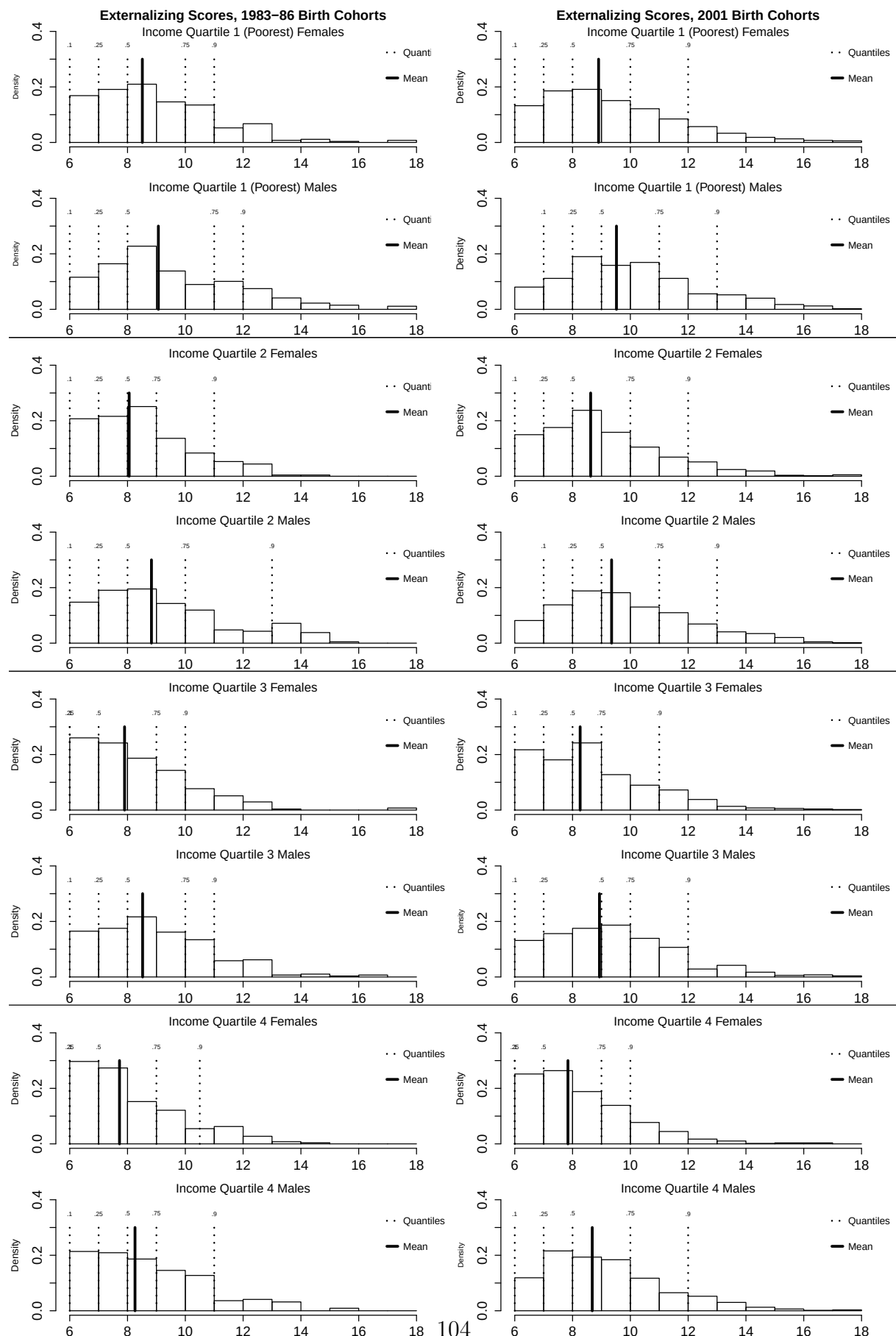
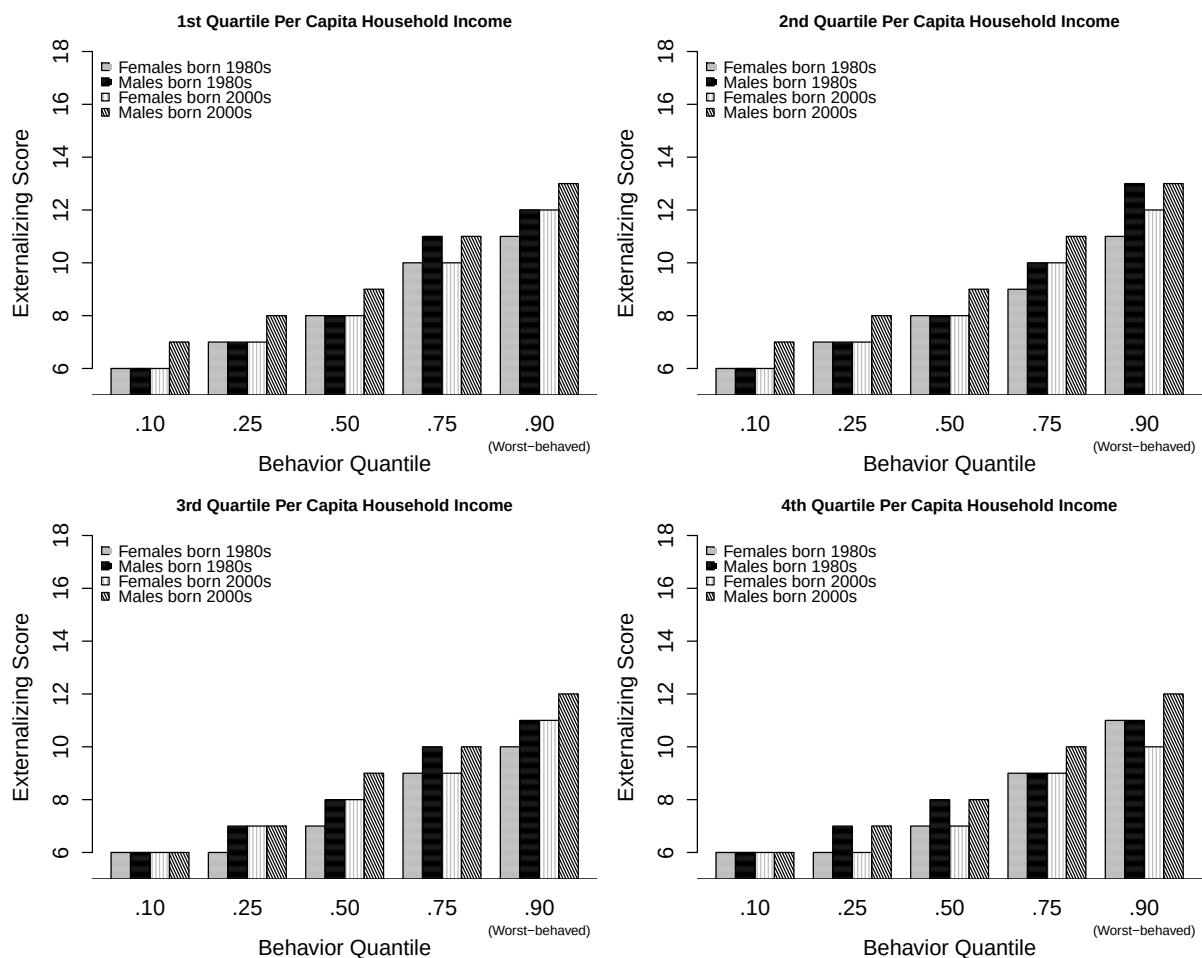


Figure 5.4: Expected Values of Externalizing Problems at Ages 4 and 5 at Various Points in the Behavioral Distribution, by Per Capita Household Income Quartile, Cohort, and Gender



among the children from lower-income families who received externalizing problems ratings that placed them in the 75th and 90th percentiles of behavior problems. In the 2000s, even males from lower-income families whose externalizing problems scores placed them in the bottom 25 percent of the externalizing problems distribution tended to have higher levels of externalizing problems than males in the 1980s and females in both periods. The latter fact led to a gender gap in the later period even between the “best-behaved” first and second income quartile children. There was no gender gap in either period between the “best-behaved” higher income (i.e., third and fourth income quartile) children.

Whereas Figure 5.4 depicts clearly levels of externalizing problems by gender and time period across socioeconomic groups, Figure 5.5 highlights gender gaps in these external-

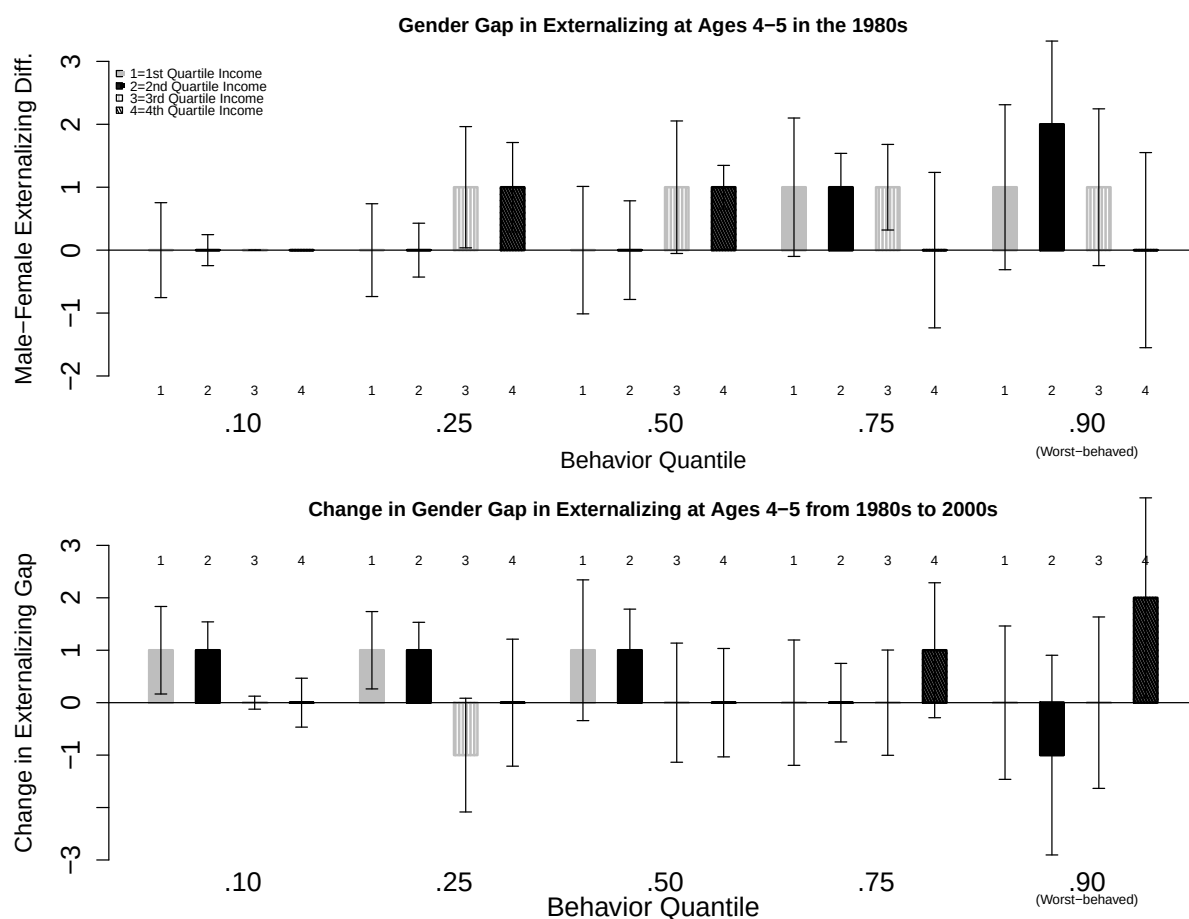
izing problems scores, also by income quartile. Panel 1 of Figure 5.5 shows that, in the 1980s, a one or two point gender gap existed in the location of the 75th and 90th percentiles of externalizing problems between females and males from families across all but the highest household income brackets (i.e., the males among the highest behavior problem ratings had higher externalizing problems scores than the females among the highest behavior ratings). Interestingly, a one point gender gap in the location of the 25th and 50th percentiles of externalizing problems existed between only the females and males from families in the highest two income quartiles. However, this gap appears to be due to mothers in the highest two income quartiles reporting lower behavior problem scores for their daughters than did mothers in the lowest two income quartiles. Across income quartiles, there was no gender gap in the location of the 10th percentile of externalizing problems.

Panel 2 of Figure 5.5 displays the change in the magnitude of the gender gap by income quartile between the 1980s and the 2000s. Panel 2 shows that, by the 2000s, the gender gap had spread across a wider cross-section of the behavioral distribution among children from the two lowest income quartiles. Whereas there was no gender gap in the location of the 10th, 25th, or 50th percentiles of children from families in the lowest two income quartiles in the 1980s, the gap became ubiquitously dispersed by the 2000s. And, the gap occurred at higher levels of externalizing problems among the two lowest income quartiles of children. For the children from the two highest income quartiles, the gap did not spread any further than it had in the 1980s. In fact, the gap that did exist among children from the third income quartile at the 25th percentile of externalizing problems disappeared by the 2000s.

Gender Differences in Exposures and “Effects”: Families, Health, and the Growth of the Gender Gap in Externalizing Problems

The growth of the gender gap in the location of a given percentile of externalizing problems among children from families in a given income quartile may be explained by differences between boys and girls in levels or types of family and health exposure. Or, the growth of

Figure 5.5: Gender Gap in Externalizing Problems at the 10th, 25th, 50th, 75th, and 90th Percentiles Within Girls' and Boys' Respective Behavioral Distributions and Change in Gender Gaps Between the 1980s and 2001 Cohorts, by Per Capita Household Income Quartile



the gap may be explained by differences in the “effects” of family structures and health on boys and girls’ externalizing problems. Children in the bottom two income quartiles each experienced a growth of the gender gap in the location of the 10th, 25th, and 50th percentiles of externalizing problems between the 1980s and 2000s cohorts. Because the following results at corresponding percentiles follow a relatively similar pattern across income quartiles 1 and 2, results from income quartile 2 are shown in the Appendix. Descriptive means and 95% confidence intervals for females and males in the early and late time periods within each income quartile and at each observed percentile of externalizing problems are shown in Appendix Figures C.3-C.5. The results presented here also focus on the lower half of the externalizing problems distributions (i.e., on the location of the

10th, 25th, and 50th percentiles of externalizing problems), where the gender gap emerged between the 1980s and 2001 cohorts.

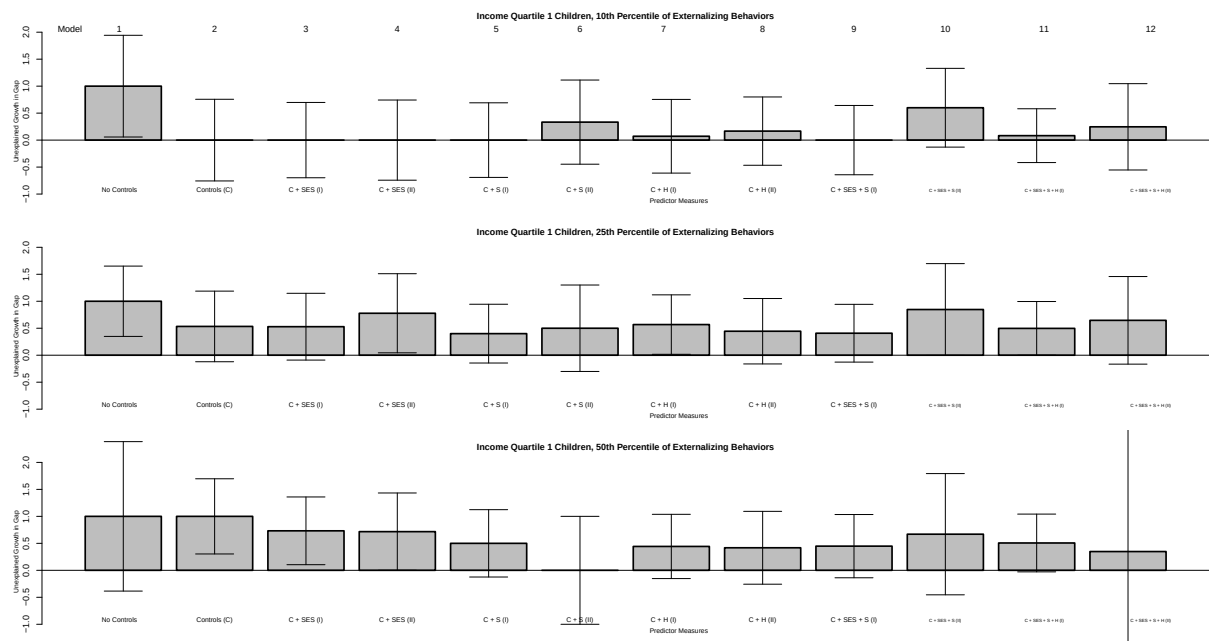
Results shown in the top panel of Figure 5.6 indicate that the entire one point (roughly 0.45 standard deviation) growth of the gender gap in the location of the 10th percentile of externalizing problems among the lowest income quartile children is accounted for by the rise in mothers' reports of boys' internalizing problems across these two cohorts (see also Appendix Table C.1). The coefficient in model (1) on the interaction term for males in the 2001 birth cohort shows the unadjusted one point growth in the gender gap. By adjusting for males' slightly higher level of internalizing problems, therefore comparing females and males with the same level of internalizing problems, model (2) accounts for the growth of the gender gap in externalizing problems. Models (3)-(12) reveal that neither compositional differences between males and females in levels of exposure to family structure and health, nor gender differences in response play an important role in explaining the growth of the gender gap in the location of the 10th percentile of externalizing problems among the lowest income children. Note that in this and all subsequent models, the three-way interaction terms between each early childhood health factor, gender, and time period are dropped because of multicollinearity. This indicates no differential effect of the observed early childhood health factors for males and females in the 2001 birth cohort.

The second panel of Figure 5.6 shows that, among the lowest income quartile boys and girls, 47% of the one point growth of the gender gap in the location of the 25th percentile of externalizing problems shown in model (1) is explained by gender differences in the internalizing problems added in model (2) (see also Appendix Table C.2). Although boys had lower levels of internalizing problems than girls in the 1980s cohorts, the boys in the 2001 cohort had slightly higher levels of internalizing problems than girls. Models (3) and (4) show that, among the lowest income quartile children, neither compositional differences nor differences in the effects of mothers' years of schooling account for any more of the growth in the gender gap. Model (5) indicates that an additional 13 percentage points of the growth in the gap is accounted for by boys' slightly higher exposure to single mother and social father households at age 4, both of which are associated with higher levels of

externalizing problems compared to being raised by two biological parents. Models (6)-(7) indicate that neither gender differences in the effects of non-traditional family structures nor gender differences in exposure to early health risks account for any more of the growth in the gap than that explained by gender differences in internalizing problems. Model (8) reveals that, due to males' greater exposure to pre-term birth and asthma diagnosis, the more negative (though not statistically significant) association between pre-term status and asthma diagnosis and externalizing problems for the 2001 compared to the 1980s sample accounts for an additional 9 percentage points of the growth in the gap than that accounted for by gender differences in internalizing problems (model 2). Models (9)-(12) document that jointly modeling family and health factors does not help explain any more of the growth in the externalizing problems gap.

Models (1)-(2) of the third panel of Figure 5.6 show that, among the lowest income quartile females and males, gender differences in internalizing problems do not account for any of the one point growth of the gender gap in the location of the 50th percentile of externalizing problems (see also Appendix Table C.3). Model (3) reveals that 26% of the growth is accounted for by the fact that children of mothers with above the sample average years of schooling are rated on average as having lower levels of externalizing problems. Among the lowest income quartile children whose externalizing score locates them at the 50th percentile of externalizing problems, females are born to slightly more educated mothers than their male counterparts. Model (4) shows that boys tend to benefit slightly less than girls from having more educated mothers. In the later period, boys are rated as having slightly higher levels of externalizing problems by mothers with above-average years of schooling, accounting for an additional 2.5 percentage-points of the growth of the gap compared to that explained by the factors in model (3). Model (5) shows that, compared to model (2), males' higher level of exposure to single mother and social father compared to two biological parent households at age 4 accounts for 50% of the growth of the gender gap in the location of the 50th percentile of externalizing problems among the lowest income quartile children. Model (6) reveals that, in the 2001 sample, males with single mothers or social fathers at age 4 (compared to 2 biological parents at home) are

Figure 5.6: Potential Family and Health Mediators of the Growth of the Gender Gap in the Location of the 10th, 25th, and 50th Percentiles of Externalizing Behavior Problems at Ages 4-5 among Children from Families in Income Quartile 1



Notes: See the Appendix for the full table of results. Model labels refer to: Controls (C): Internalizing problems (centered), mother's age at birth (centered), birth order, dummies for black and Hispanic (reference is white or Asian) and year of birth (1984-1986); SES (I): mother's years of schooling at birth (centered); SES (II): mother's years of schooling interacted with each of the following: male, time period (2001 cohort indicator variable), and male*time period; Family Structure (S) (I): father absent at birth dummy and dummies for single mother at age 4 or social father at age 4 (two biological parents at age 4 is the reference); S (II): interactions between each of the S (I) variables and male, time period, and male*time period; Early Childhood Health (H) (I): a dummy for low birth weight, a dummy for pre-term, and a dummy for asthma diagnosis by age 4 or 5; H (II): interactions between each H (I) variable and male, time period, and male*time period.

rated as having higher levels of externalizing problems than their female counterparts. This differential association with rated externalizing problems for boys compared to girls raised in single mother and social father households accounts for the entirely (100%) of the growth of the gender gap in the location of the 50th percentile of externalizing problems among the lowest income children. Model (7) reveals that, compared to model (2), boys' higher levels of pre-term birth and asthma diagnosis account for 66% of the growth in the gap in externalizing problems. Model (8) shows that, although not statistically different, pre-term birth and asthma diagnosis are associated with higher ratings of externalizing problems among children in the later compared to the earlier period. Due to boys' higher levels of pre-term birth and asthma diagnosis, the larger association between pre-term

and asthma and externalizing problems in the later period accounts for an additional 2.4 percentage points of the growth in the gap. Models (9)-(12) indicate that these family and health factors are highly correlated. Jointly modeling them does not account for anymore of the growth in the gap than that explained by modeling these factors independently.

5.6 Discussion

The past fifty years have witnessed a dramatic rise in income inequality among American families (Gottschalk and Danziger, 2005). Comparing the inflation- and household size-adjusted incomes of families at the 90th percentile to those at the 10th percentile, research shows that family income inequality increased by more than 50% between 1975 and 2002 (Gottschalk and Danziger, 2005). Strikingly, over the same period, the income achievement gap between children from families at the 90th percentile compared to children from families at the 10th percentile of household incomes (i.e., “the income achievement gap”) also grew by 30 to 40 percent (Reardon, 2011). Research shows that the income achievement gap has grown rather steadily for children born in 1975 compared to those born in 2001 (Reardon, 2011). Another remarkable component of the income achievement gap is that, by roughly 2010, it was almost twice as large as the black-white achievement gap – even though the opposite was true fifty years prior (Reardon, 2011).

Early childhood is an important time to consider the gender gap in externalizing problems within the context of the income achievement gap because both the gender gap in achievement and the income achievement gap are apparent by kindergarten entry and persist through schooling (DiPrete and Jennings, 2012; Duncan and Magnuson, 2011). Therefore, the gender and income achievement gaps with which children enter school lay the foundations for much of the persisting inequality evident throughout childhood and well into adolescence. However, despite the presence of both the gender and income achievement gaps throughout the early life-course and their dramatic implications for socioeconomic and gender inequality at the population level, little research has examined the evolution of these two gaps in tandem. The present study sought to begin to remedy this shortcoming in prior research.

This study draws on a comparison of externalizing behavior problems among children ages 4 or 5 in two national samples – one from the 1980s, the other from the 2000s. Results show that, as the prevalence of ADHD diagnosis in recent decades has increased faster among lower compared to higher socioeconomic status children, so too has the gender gap in the closely-linked externalizing behavior problems that produce ADHD become more entrenched within low socioeconomic status children. As the gender gap in externalizing problems has spread to a wider cross-section of children, it has become markedly concentrated among the two lowest income quartiles of children. For these children, a one point (or roughly 0.45 standard deviations) growth in the gender gap appears even between the “best-behaved” lowest income quartile boys and girls – those with the lowest mother-rated behavior problems. This one point increase in the gender gap in mothers’ reports of externalizing problems results from a shift from a rating of “rarely” to “often” or from “often” to “always” on one of the six behaviors that comprise the externalizing problems scale. In clinical terms, a one point increase from not exhibiting to exhibiting a particular externalizing behavior is equivalent to one sixth of the criteria necessary for an ADHD diagnosis according to the Diagnostic and Statistical Manual (DSM)-IV in effect since 1994. Although each item in the externalizing problems scale consists of a three-point to five-point frequency range, the corresponding items in the DSM-IV are binary; they rely on assessments of whether or not a child exhibits a particular behavior or not.

Among children in the bottom half of the distribution of family incomes in the 1980s (i.e., those in the two lowest per capita household income quartiles), the gender gap was concentrated among the top half of these children’s behavioral distribution – i.e., it was largest among those with the worst-rated externalizing problems behavior. By the 2000s, the gender gap in externalizing problems had spread throughout the entire distribution of children, showing up between the girls and boys with the lowest behavior problem ratings. This spread of the gender gap in externalizing problems across the entire range of low-income children resulted from the larger increase in mothers’ reports of boys’ compared to girls’ behavior problems among virtually all boys, including those with the lowest rated

behavior problems. Although the gender gap appeared up through the 25th percentile of children among those from the top two income quartiles back in the 1980s, this gap appeared at much lower levels of reported behavior problems. The gap in the location of the 25th percentile among children in the second-highest income quartile also closed by the 2000s. In light of these results, a primary contribution of the present study is to encourage attention among researchers and policy makers to the social class-specific patterns of the evolution of gender differences in behavior problems.

The second primary aim of this study was to begin to understand whether the apparent growth of the gender gap in behavior problems among even the “best-behaved” low-income children in the 2001 cohort was due to real changes in behavior across the past two decades. Alternatively, the growth in the reported gap may have been due to shifts in perceptions of externalizing problem behaviors in gender- and social class-specific ways. This question is especially important in light of research showing dramatic jumps in externalizing problems-linked behavior problem prevalence – like the diagnosis of ADHD – with changes in diagnostic criteria (Wolraich et al., 1996). Similarly, with the passage of the Affordable Care Act and other changes that may increase medical coverage for low income Americans, we may see a continued rise in prevalence of ADHD diagnosis and shifts in reporting of children’s behavior problems in the coming decades. Given these changes, even if changes in diagnostic criteria with the release of subsequent DSM ratings or newly-found access to medical coverage lead to an artificial jump in diagnosed ADHD prevalence, internalized perceptions of behavior problems and the stigma of medical labels have real consequences. Parents may view and treat their sons as worse behaved today than parents did in past decades, and millions of children may grow up with the label and associated belief in the validity of their “problem child” status.

One of the most interesting results of the second part of the present study is the importance of gender differences in mother reports of internalizing problems. The gender difference in internalizing problems accounts for much of the growth of the gender gap in externalizing problems among low-income children rated in the bottom half of the behavior problem distribution (i.e., the “better-behaved” children). For example, gender

differences in internalizing problems account for the entirety of the growth in the gender gap in externalizing problems among the “best-behaved” of the lowest income children. Internalizing behavior problems also are measured based on mothers’ subjective reports of boys’ and girls’ externalizing problems. High-stakes testing, the use of stringent disciplinary tactics in schools, the incidence of behavioral disorder diagnosis, and the rise in awareness of depression and other mental health factors in shaping academic achievement each have become more ubiquitous over the past few decades (Duncan and Magnuson, 2011; Mendez, 2003; Olfson et al., 2003). Amid these changes, mothers may have not only become more inclined to rate their sons as having higher levels of externalizing problems, but also internalizing problems. The finding of the importance of gender differences in the rise in reports of boys’ internalizing problems is as consistent with the story that behavior ratings may have changed across time as it is with the possibility that there has been a true increase in boys’ internalizing behavior problems.

At the same time, results also suggest that at least part of the spread in the gender gap in externalizing problems to a wider cross-section of low income children is associated with observed changes in families and, to a lesser extent, early childhood health risks. Interestingly, gender differences in reports of internalizing problems account for less of the growth in the gender gap in externalizing problems when examining children with relatively higher levels of externalizing problems compared to their same-gender peers. Gender differences in mother’s internalizing problems ratings of boys and girls account for half as much (roughly 50%) of the growth of the gap in the location of the 25th percentile of externalizing problems, and none of the growth of the gap at the 50th percentile of externalizing problems. Here instead, gender differences in exposure to or the effects of factors like single mother or social father households or pre-term birth status account for more of the growth. This suggests that subjective perceptions of behavior problems may drive the growth in the gender gap in externalizing problems among the “better-behaved” children (i.e., those rated as having relatively lower levels of externalizing problems). By contrast, the growth in the gender gap in externalizing among the “worse-behaved” children may be less influenced by gender differences in subjective behavior assessments.

Unfortunately, due to power issues as a result of relatively small sample sizes withing behavior percentiles and income categories, this study is not able to accurately identify which specific family and health factor(s) accounts for the growth in the gender gap in externalizing problems, where it occurs. The result is the lack of ability to begin to think more closely about targeting specific policy or other interventions to addressing these factors as a route to closing the gender gap in behavior and educational achievement. Another limitation of the present study is the inability to account for gender differences in cognitive development in light of the high correlation between cognitive and behavioral skills. Future work may include examination of changes across cohorts and genders in the development of early receptive vocabulary, which appears to be closely linked to externalizing behavior. Finally, it is important to note that a shift across cohorts in the reporting of behavior problems may produce a fundamental change in the behavioral scales themselves that is undetectable within the survey data used here. Future studies designed specifically to investigate this possibility are essential.

Chapter 6

Conclusion

6.1 Overview of Findings

This dissertation analyzes reasons for today's educational attainment gap between males and females in the United States. The gender gap in educational attainment is larger among minority children and children from low-income families than among white and Asian children and children more affluent families. In the dissertation, I hypothesize that a significant portion of the gap in educational attainment reflects rising gender differentials in childhood externalizing behavior problems, which in turn arise from broader changes in U.S. society. Ordinary Least Squares regression analysis of data from the Children of the NLSY79 reveals that the gender gap in childhood externalizing problems, through direct and indirect pathways, explains 25% of the gender gap in high school completion and 15% of the gender gap in college completion.

Combining the Children of the NLSY79 data with data from the Early Childhood Longitudinal Study-Birth Cohort, the dissertation then analyzes the widening of the gender gap in externalizing problems by race and social class using quantile regression methods. Although the average gender gap has not changed much over the two decades under study among whites and Asians, minorities, or the poor, it has spread to a much wider segment of minority and low-income populations, characterizing the best- as well as the worst-behaved children. Some of the spreading gap is attributable to race- and class-specific changes in family structure and health conditions, the data also suggest that the grow-

ing gender gap in behavior stems from heightened scrutiny of the behaviors of black and Hispanic and low-income boys.

6.2 Theoretical and Practical Contributions

Prior to the early 1980s, men graduated from high school and completed college at higher rates than women (Diprete and Buchmann, 2006). Since the early 1980s, women have comprised a growing majority of those earning high school and college diplomas (Diprete and Buchmann, 2006). The growing female advantage in educational attainment in the United States represents one of the most striking demographic shifts in recent decades. It is a rare case of a complete reversal in an outcome that is of high social significance in its own right, and also one that is a key predictor of subsequent occupation, earnings, social mobility, family formation, fertility, and longevity, among other social processes. In light of the tendency of men and women to marry others of similar social standing, including educational attainment (Mare, 1991), the growing gender gap in educational attainment is of consequence for growing income and broader socioeconomic inequality in American society.

Most scholarly accounts of the growing, female-favoring gender gap in educational attainment have attributed this phenomenon to macro-level “pull factors”: shifts in the labor market and the internalized social norms and expectations for women to have “careers” rather than “jobs” (Goldin and Katz, 2000; Goldin, 2006). These labor market accounts tell a story about how women’s rising educational attainment is a response to the opening of white-collar occupations to women, where women had previously been excluded (Goldin et al., 2006). At the same time, the blue-collar labor market has shrunk (Jacob, 2002). With the decline of manufacturing and factory work and the automation of many rote labor jobs previously filled by women, the blue-collar jobs that remain are disproportionately male-dominated (England and Farkas, 1986; Reskin, 1990). The result is that incentives for a college education have actually risen faster for women than for men, producing the gender reversal in educational attainment seen in the early 1980s (Murphy and Welch, 1989). Despite the validity of these accounts, still 40 to 70 percent

of the gender gap in educational attainment remains unexplained after accounting for changing labor market incentives in large-scale analyses of the gender gap in educational attainment (Goldin et al., 2006).

Recent scholarship has begun to highlight the importance of a micro-level “push factor” in accounting for gender gaps in elementary and middle school grades and test score performance: childhood behavior problems, such as self-regulation problems and social problems (Bertrand and Pan, 2011; DiPrete and Jennings, 2012; Jacob, 2002). Although grades and test scores are distinct from educational attainment per say, they are an important predictor of later educational attainment (Goldin et al., 2006). Research also has linked micro-level early behavior to individuals’ level of high school completion and college enrollment using national longitudinal surveys of children and adolescents (McLeod and Kaiser, 2004). Taken together, these pieces of evidence suggest that the gender gap in early childhood behavior may help explain the gender gap in college completion evident today. However, a prior lack of longitudinal data following a national sample of children from birth through college completion combined with a lack of detailed information on children’s self-regulation problems and social problems, has precluded the examination of the link between gender differences in micro-level behavior problems and the macro-level gender gap in educational attainment.

This dissertation aimed to begin to address this gap in prior research. It did so first by drawing on newly-available data on a national sample of children born in the 1980s and followed until 2010 at which point educational attainment information was collected. The first notable insight of the dissertation is to show how these individual-level processes scale up to produce a macro-level trend in which boys’ higher level of behavior problems than girls, on average, helps explain the macro-level gender gap that we see in educational attainment as of 2010.

Children internalize – or assimilate into their sense of self – the labels they receive (e.g., “bad boy” or “good girl”) about them (Steele and Aronson, 1995). Therefore, whether due to changes in perceptions and expectations of socially appropriate behavior or due to real changes in behavior, mothers’ reporting of increases in boys’ – and especially low

income and minority boys' – externalizing problems have real consequences. A large body of research on social stigma shows that in contexts in which negative-ability stereotypes become assigned as traits of a particular group, the messages received by members of that stigmatized group lead to a self-fulfilling prophesy (Link and Phelan, 2001; Steele and Aronson, 1995). Research has documented this in a wide variety of realms, including minorities who experience academic underachievement and women to underperform on tests of complex math (Charles et al., 2009; Owens and Massey, 2011; Spencer et al., 1999). This dissertation is just one example of the way in which assessments of behavior shape the key outcomes, in this case within education, that affect children's life chances.

The second and third parts of the dissertation draw on a comparison of the behavior problems of children from two national samples of children born nearly two decades apart. The second significant insight of the dissertation is that, although the mean gender gap produced by boys' higher average level of behavior problems has not changed between the cohorts born in the 1980s and those born in the 2000s, the gender gap has spread across a wider segment of children, appearing among the best-behaved boys and girls (those with among the lowest externalizing behavior problems ratings). Importantly, the pattern of growth has been unequal: the gender gap in behavior problems has grown the fastest among minority and low socioeconomic status children. Among these racially and socioeconomically disadvantaged children, the gender gap has spread throughout the entire behavioral distribution, whereas it has not become as ubiquitous among white or Asian or higher socioeconomic status kids. These findings are consistent with a prediction that the gender gap in educational attainment will continue to reproduce racial/ethnic and socioeconomic inequality in American society in the coming decades.

Although far from the last word on this issue, these findings are important because they suggest that the gender gap in educational attainment will continue to grow in the coming decades as the children born in the early 2000s come of age. The findings also are consistent with the story that the gender gap in attainment will continue to be largest among the most disadvantaged American children. These findings raise important consequences for inequality in educational and economic opportunities for minority and

low-income men, as well as for their ability to form stable relationships and families. This carries significant concern for their children’s social and economic well-being, and for the transmission of intergenerational inequality.

6.3 Directions for Future Work

A challenge to this research is that the externalizing behavior problems used in this dissertation are subjectively reported by mothers, not clinically ascribed by at least somewhat more objective observers.¹ The findings of this dissertation are consistent with the story that the growing gender gap in early childhood externalizing problems, concentrated within minority and low socioeconomic status communities, is partially due to changing perceptions of boys’ behavior. The results of the second and third empirical chapters (dissertation Chapters 4 and 5) show that the spread of the gender gap in externalizing problems across a wider segment of children – especially black and Hispanic and low income children – is explained in part through changes in family structure and child health.

But, much of the gap that appears between the boys and girls with the lowest behavior problem ratings is unexplained by these factors. In fact, in some cases, the growth in the gender gap at the far tail of the externalizing problems distribution is explained by another subjectively-rated factor: children’s sadness and anxious behavior, known as internalizing problems. In other cases, the gender gap at the tail of the distribution is not explained by any of the observed factors. It is possible that at least part of the newly-emergent gender gap in externalizing problems between the “best-behaved” minority and low-income boys and girls may be the result of heightened scrutiny of the behaviors of black and Hispanic and low-income boys. However, without direct testing of this hypothesis, the validity of this claim of perception change is limited.

A variety of social changes – such as shifts in women’s employment, a gradual opening of previously “male” occupations to women, and in the social norms and expectations about the educational prospects of women – may have affected mothers’ (and other adults’) reporting of children’s behavior in and of itself. Accompanying these changes in

¹It is not clear that even physician or psychiatrist assessments, however, are “objective” (see Mayes et al. (2009) for discussion).

the “pull factors” driving the gender gap in educational attainment have been a variety of social changes in accompanying “push factors” within schools and families. These include the rise of zero tolerance policies around acting out and the rise in hours spent in day care and a changes in the norms of “acceptable” male behavior. Changes in these “push factors” may lead to shifts in adults’ perceptions of child behaviors, such as heightened scrutiny and/or increased awareness of boys’ self-regulation problems and social problems. The result may be a growth in the gender gap in externalizing problems without much of a change in children’s actual behavior patterns.

Future research should directly test whether perceptions of boys’ behavior problems have changed across cohorts. One way in which to do this is to draw upon the same videotapes from the 1980s in which children were rated by mothers and teachers while engaging in designated tasks. By showing these videotapes to mothers and teachers today, the researcher will have set up a controlled environment from which to draw comparisons of behavioral ratings across time.

Given the significant consequences associated with bad behavior (or the stigmatizing labels that accompany especially boys’ behavior (Link and Phelan, 2001)) shown in Chapter 3, the growing gender gap in behavior sheds light on the need for future reserach to scrutinize the structure of the very social institutions – families and schools foremost among them – that facilitate processes of gender socialization during children’s formative years. As parents, siblings, teachers, administrators, and other everyday actors, we play an active role in shaping the ways in which schools and families are structured and how they function on the ground. We contribute to collective decision-making about which behaviors our society fosters and then sanctions and how we do so differently for boys and girls. From the micro-interactions – our every day exchanges with young children – to the disciplinary policies and practices to which we consent and expose our children, and the way we structure learning within homes and schools, we train and expect boys and girls to behave differently. In the long run, these rigid gender-specific social norms of behavior neither benefit our sons nor our daughters: Within the current structure of American education, sitting still, being quiet, and following instructions may help girls

get good grades and graduate from college (Burke, 1989; Thorne, 1993). But these behaviors do not help them get ahead in the work place (Acker, 1990; Martin, 2003). As this dissertation shows, these rigid gender-specific social norms and perceptions of behavior certainly don't help boys get through school.

Perhaps most importantly, the teaching and sanctioning of gendered behavior perpetuates a system of male privilege that plays out as double standards around socially acceptable behavior. Aggression in men in the workplace may be interpreted as "ambition" and "leadership", whereas in women it may be labeled negatively (Acker, 1990). Labeling boys as "bad" or "trouble-makers" while at the same time expecting that they display these behaviors as signs of "masculinity" sets up a Catch 22 in which "being a man" comes for many at the cost of mainstream success within schools (Thorne, 1993). Moving forward, parents, educators, scholars, and policy makers need to restructure home and school environments so as to interrupt the teaching that "masculinity" and "femininity" are linked to gender-specific behaviors.

Future work also needs to investigate more closely the relationship between receptive vocabulary and assessments of externalizing problems, as well as between the gender gap in each. Chapters 4 and 5 find that the gender gap in children's early development of receptive vocabulary helps explain the gender gap in externalizing behavior problems. The gender gap in early receptive vocabulary is not a new finding (Bornstein and Haynes, 1998; Pan et al., 2004). However, future research in this area is especially important in light of the debate over the validity of the distinction between behavioral and cognitive skills (McClelland et al., 2007). Because of the high correlation between behavior and literacy, it is unclear whether modeling them as distinct constructs makes sense. Because in a number of instances the growth in the gender gap in externalizing problems is explained in full by the growing gender gap in children's receptive vocabulary, future research may want to treat cognitive development as the outcome. Doing so would allow for investigation of whether the gender gap in receptive vocabulary serves as another point of intervention for addressing the link between gender disparities in early behavioral development and educational outcomes.

Our knowledge on gender and behavior problems may also benefit from further investigation of the link between externalizing behavior problems and ADHD. Here, I used trends in ADHD by gender and gender within race- and SES as motivation for why we may see a growing gender gap in externalizing problems, especially within minority and low income communities. But, it is very possible that the gender gap in mothers' reports of externalizing problems is a product of the rise in ADHD as much as the cause of this rise in ADHD. That is, if mothers are more aware of boys' externalizing problems because of their heightened sensitivity to behavioral disorders like ADHD, future research should examine whether there has been a shift across cohorts in how attention deficits are treated and labeled in schools and the implications of these labels for children's later academic success.

Appendix A

Chapter 3 Appendix

A.1 Scale Construction

Externalizing problems, self-regulation problems, social problems, and internalizing problems scales are commonly used in the child development literature (Peterson and Zill, 1986). Although complete sets of well-known scales, such as the Pre-Kindergarten Behavioral Skills, 2nd Edition (PKBS-2), are most comprehensive, many studies use subsets of the full scales due to time and budget constraints when fielding surveys (Crone and Whitehurst, 1999). In the NLSY-C, the Behavior Problems Index (BPI) derived from the Achenbach Child Behavior Checklist consists of ten externalizing behaviors items. However, research shows that a subset of these ten externalizing behaviors items – those that overlap with the externalizing behaviors scale derived from the equally well-known PKBS-2 – are a more valid set of measures (Guttmannova et al., 2008). Of the ten externalizing behaviors items in the NLSY-C, six items overlap across the both the subset of BPI externalizing behaviors items in the NLSY-C and the PKBS-2 externalizing problems scale. That the externalizing problems scale used here includes only 60% of all 10 BPI items available is common practice. For example, the full PKBS-2 externalizing problems scale consists of 27 externalizing problems items, but a subset of only 8 are used to measure externalizing problems in large, national datasets such as the Early Childhood Longitudinal Study, Birth Cohort (ECLS-B). Importantly, items common across both datasets are worded virtually identically, measured at the same ages, and collected from

the same reporting party (in this case, maternal reports). Similarly, of the fifteen items in the PKBS-2 internalizing problems scale, two are available in the NLSY-C through the BPI. For the validity and comparability reasons discussed above, I rely on these two internalizing problems items described in the variables section.

Sensitivity analyses to examine the internal and predictive validity of the externalizing problems, self-regulation problems, social problems, and internalizing problems scales revealed high correlations between each scale and the complete corresponding scale from which the subset items draw (results available upon request). For example, in the NLSY-C, the externalizing problems behaviors scale comes from the Behavior Problems Index, which is a subset of ten items taken from the Achenbach Child Behavior Checklist. Each sub-scale is highly correlated (above 0.90) with the complete set of externalizing problems items available within its respective dataset. Similar sensitivity analyses were carried out in the construction of the internalizing problems scale discussed below.

Table A.1: Means and Standard Deviations of Variables Used in the Analyses, by Gender

Variable	Females (N=867)		Males (N=901)		Raw Item Range	
	Mean	Std. Dev.	Mean	Std. Dev.	Min	Max
<i>Educational Attainment</i>						
High School Completion	0.806	0.395	0.736	0.441	0	1
Four-Year College Completion	0.239	0.426	0.166	0.373	0	1
Years of Schooling Completed	13.023	2.397	12.342	2.308	1	21
<i>Behavior Problems Scales (Ages 10-11)</i>						
Self-Regulation Problems	5.494	1.670	6.378	2.081	3	9
Social Problems	4.934	1.264	5.317	1.554	4	12
Externalizing Behavior Problems	7.770	1.930	8.624	2.396	6	18
<i>Behavior Problems Scales (Ages 4-5)</i>						
Self-Regulation Problems	5.941	1.638	6.411	1.793	3	9
Social Problems	5.106	1.268	5.401	1.419	4	12
Externalizing Behavior Problems	8.299	1.982	8.888	2.177	6	18
<i>Educational Expectations</i>						
Of Mother for Child at Ages 8-9	3.482	1.026	3.309	1.082	0	6
Of Child for Him/herself at Ages 8-9	3.825	1.137	3.703	1.152	0	6
<i>Family Dynamics (Age 4)</i>						
Parental Conflict Scale	2.019	0.518	2.099	0.530	1	4
Parental Harshness Scale	1.275	0.621	1.289	0.590	0	2
Positive Discipline and Warmth Scale	1.977	1.051	1.967	1.089	0	4
Cognitive Support Scale	1.412	1.133	1.330	1.080	0	5
<i>Structural Factors Affecting Childhood</i>						
Mother's Years of Schooling at Birth	11.655	2.157	11.778	2.076	0	20
Household Income at Age 4 (/25,000)	1.161	0.970	1.155	0.920	0	7.347
Father Absent at Birth	0.301	0.459	0.248	0.432	0	1
Biological Parents Married at Age 4	0.536	0.499	0.575	0.494	0	1
Biological Parents Cohabiting at Age 4	0.117	0.321	0.115	0.319	0	1
Single Mother at Age 4	0.321	0.467	0.280	0.449	0	1
Social Father at Age 4	0.027	0.161	0.030	0.171	0	1
<i>Demographic Factors and Health Context</i>						
Mother's Age at Birth	23.316	2.549	23.460	2.432	18	29
PPVT Score	0.022	0.949	-0.021	0.971	-4.037	3.644
Internalizing Score	3.079	1.684	3.139	1.644	0	4
Birth Weight in Pounds	7.089	1.300	7.373	1.390	0.823	16.750
Gestation Time in Weeks	38.769	2.254	38.726	2.302	24	46.514
Birth Order	1.900	1.021	1.940	1.005	1	7
Asthma Diagnosis by Age 4	0.044	0.205	0.073	0.261	0	1
Ear Infection Diagnosis by Age 4	0.011	0.104	0.015	0.122	0	1
White or Asian	0.509	0.500	0.531	0.499	0	1
Black	0.307	0.461	0.276	0.447	0	1
Hispanic	0.183	0.387	0.192	0.394	0	1
Born 1983	0.306	0.461	0.279	0.448	0	1
Born 1984	0.245	0.430	0.253	0.435	0	1
Born 1985	0.220	0.414	0.249	0.432	0	1
Born 1986	0.229	0.420	0.219	0.414	0	1

Table A.2: Demographic, Health, Family, and Behavioral Factors as Predictors of H.S. Completion, and as Mechanisms to Help Explain the Gender Gap in H.S. Completion (Reporting Odds Ratios)

	(1)	(2)	(3)	(4)	(5)	(6)	(7a)	(7b)	(7c)
<i>Gender Gap:</i>							(Self-Reg)	(Social)	(Extern)
Male	0.643*** (0.077)	0.652*** (0.074)	0.654*** (0.078)	0.658*** (0.078)	0.665*** (0.078)	0.665*** (0.081)	0.731* (0.091)	0.757* (0.095)	0.755* (0.096)
<i>Demographic & Health Context and Internalizing Behaviors:</i>									
Internalizing Behavior Score ¹		0.944 (0.061)	0.969 (0.063)	0.967 (0.063)	0.959 (0.063)	0.985 (0.066)	0.995 (0.067)	0.993 (0.069)	0.999 (0.070)
Mother's Age at Birth of Child ¹		1.124*** (0.031)	1.085** (0.031)	1.083** (0.031)	1.083** (0.031)	1.082** (0.031)	1.077* (0.031)	1.075* (0.032)	1.073* (0.032)
PPVT Score ¹		1.243** (0.097)	1.164+ (0.093)	1.169+ (0.094)	1.189* (0.096)	1.131 (0.093)	1.134 (0.094)	1.151+ (0.097)	1.159+ (0.098)
Birth weight ¹		0.942 (0.051)	0.923 (0.050)	0.920 (0.050)	0.925 (0.051)	0.919 (0.051)	0.923 (0.051)	0.924 (0.052)	0.920 (0.052)
Gestation ¹		1.017 (0.034)	1.024 (0.035)	1.024 (0.035)	1.025 (0.035)	1.024 (0.035)	1.023 (0.035)	1.021 (0.035)	1.024 (0.035)
Birth Order		0.669*** (0.040)	0.733*** (0.046)	0.733*** (0.046)	0.725*** (0.047)	0.734*** (0.047)	0.742*** (0.048)	0.745*** (0.049)	0.742*** (0.049)
Asthma Diagnosis by Age 4		0.967 (0.215)	0.977 (0.219)	0.963 (0.216)	0.979 (0.221)	0.980 (0.222)	0.990 (0.226)	0.935 (0.212)	0.979 (0.224)
Ear Infection Diagnosis by Age 4		4.230+ (3.131)	4.228+ (3.137)	4.322* (3.212)	4.535* (3.376)	4.460* (3.323)	4.777* (3.602)	4.715* (3.562)	4.732* (3.578)
Black (ref=White or Asian)		1.401* (0.219)	1.406* (0.225)	1.427* (0.244)	1.378+ (0.237)	1.265 (0.221)	1.263 (0.222)	1.262 (0.225)	1.257 (0.225)
Hispanic (ref=White or Asian)		1.042 (0.164)	1.180 (0.190)	1.175 (0.190)	1.171 (0.190)	1.066 (0.176)	1.072 (0.178)	1.071 (0.180)	1.074 (0.181)
Born 1984 (ref=born 1983)		1.102 (0.180)	1.108 (0.182)	1.115 (0.184)	1.130 (0.194)	1.129 (0.195)	1.156 (0.201)	1.151 (0.204)	1.145 (0.204)
Born 1985 (ref=born 1983)		1.067 (0.178)	1.039 (0.175)	1.038 (0.175)	1.044 (0.189)	1.042 (0.190)	1.078 (0.198)	1.054 (0.197)	1.061 (0.199)
Born 1986 (ref=born 1983)		1.073 (0.196)	0.998 (0.184)	1.016 (0.188)	1.018 (0.196)	1.036 (0.201)	1.047 (0.205)	1.050 (0.209)	1.049 (0.209)
<i>Family Structure & Economic Resources:</i>									
Mother's Years of Schooling ¹			1.117*** (0.036)	1.120*** (0.036)	1.121*** (0.036)	1.095** (0.037)	1.096** (0.037)	1.095** (0.038)	1.095** (0.038)
Income (in \$1,000s) ¹			1.219* (0.105)	1.170+ (0.107)	1.178+ (0.109)	1.134 (0.104)	1.145 (0.106)	1.143 (0.106)	1.149 (0.107)
Father Absence at Child's Birth				1.154 (0.191)	1.144 (0.192)	1.183 (0.200)	1.188 (0.202)	1.260 (0.218)	1.265 (0.220)
Social Father at Age 4 (ref=married or cohabiting at 4)				0.874 (0.309)	0.877 (0.310)	0.899 (0.320)	0.898 (0.324)	0.865 (0.311)	0.873 (0.314)
Single Mother at Age 4 (ref=married or cohabiting at 4)				0.775+ (0.118)	0.784 (0.120)	0.780 (0.120)	0.805 (0.125)	0.799 (0.126)	0.807 (0.127)
<i>Interpersonal Family Behaviors:</i>									
Parental Conflict Score					1.194 (0.199)	1.194 (0.204)	1.188 (0.207)	1.205 (0.207)	1.212 (0.210)
Maternal Harshness Score					0.967 (0.101)	0.964 (0.101)	0.973 (0.103)	0.969 (0.104)	0.984 (0.106)
Maternal Discipline and Warmth Score					0.941 (0.058)	0.938 (0.059)	0.930 (0.058)	0.944 (0.061)	0.935 (0.060)
Maternal Cognitive Support Score					0.949 (0.057)	0.944 (0.057)	0.946 (0.058)	0.945 (0.058)	0.947 (0.059)
<i>Educational Expectations:</i>									
Mother's Educational Expectations of Child ¹						1.248*** (0.081)	1.237** (0.081)	1.194** (0.081)	1.204** (0.082)
Child's Educational Expectations of Self ¹						1.040 (0.060)	1.035 (0.061)	1.047 (0.062)	1.040 (0.062)
<i>Behavioral Development at Age 4 or 5:</i>									
Externalizing/Self-Regulation Problems/ Social Problems Score ¹							0.946* (0.065)	0.906* (0.074)	0.929** (0.050)
Constant	4.183*** (0.352)	7.513*** (1.442)	6.295*** (1.230)	6.604*** (1.323)	6.055*** (2.623)	2.514+ (1.260)	2.561+ (1.288)	2.558+ (1.299)	2.519+ (1.284)
<i>Cum. % of Gender Gap Explained:</i> ²	--	2.521	3.081	4.202	6.162	6.162	24.650	31.933	31.373
N	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752

Robust standard errors in parentheses. *** p<0.001, ** p<0.01, * p<0.05, + p<0.10. Results based on 20 imputed datasets.

¹Variable centered at the sample-specific mean. See Appendix A.1 for uncentered means.

²The cumulative percent of the gender gap explained = $((e^{B_{\text{baseline}} - 1}) - (e^{B_{\text{model } m} - 1})) / (e^{B_{\text{baseline}} - 1} - 1)$, where baseline refers to the baseline model (1) and m refers to a given subsequent, nested model (2 through 7).

Table A.3: Demographic, Health, Family, and Behavioral Factors as Predictors of 4-Year College Completion, and as Mechanisms to Help Explain the Gender Gap in 4-Year College Completion (Reporting Odds Ratios)

	(1)	(2)	(3)	(4)	(5)	(6)	(7a)	(7b)	(7c)
<i>Gender Gap:</i>							(Self-Reg)	(Social)	(Extern)
Male	0.547*** (0.068)	0.550*** (0.073)	0.558*** (0.072)	0.577*** (0.072)	0.584*** (0.074)	0.592*** (0.079)	0.668** (0.090)	0.643** (0.088)	0.650** (0.089)
<i>Demographic & Health Context and Internalizing Behaviors:</i>									
Internalizing Behavior Score ¹		0.715*** (0.059)	0.732*** (0.063)	0.734*** (0.063)	0.745*** (0.065)	0.746** (0.068)	0.771** (0.070)	0.748** (0.070)	0.755** (0.070)
Mother's Age at Birth of Child ¹		1.199*** (0.034)	1.091** (0.034)	1.088** (0.034)	1.086** (0.035)	1.086* (0.035)	1.093** (0.035)	1.081* (0.036)	1.082* (0.036)
PPVT Score ¹		1.598*** (0.112)	1.391*** (0.104)	1.392*** (0.104)	1.347*** (0.102)	1.232** (0.097)	1.215* (0.096)	1.238** (0.098)	1.237** (0.098)
Birth weight ¹		1.033 (0.060)	0.990 (0.061)	0.982 (0.061)	0.981 (0.061)	0.974 (0.062)	0.984 (0.062)	0.991 (0.064)	0.989 (0.064)
Gestation ¹		1.009 (0.036)	1.014 (0.038)	1.016 (0.039)	1.016 (0.039)	1.017 (0.040)	1.011 (0.040)	1.010 (0.040)	1.010 (0.040)
Birth Order		0.697*** (0.054)	0.862+ (0.072)	0.862+ (0.072)	0.861+ (0.073)	0.874 (0.076)	0.867+ (0.074)	0.889 (0.078)	0.887 (0.077)
Asthma Diagnosis by Age 4		0.687 (0.199)	0.723 (0.212)	0.708 (0.208)	0.672 (0.199)	0.707 (0.213)	0.722 (0.216)	0.730 (0.220)	0.747 (0.225)
Ear Infection Diagnosis by Age 4		1.061 (0.468)	1.083 (0.503)	1.151 (0.538)	1.086 (0.514)	0.927 (0.461)	0.941 (0.471)	0.892 (0.446)	0.895 (0.446)
Black (ref=White or Asian)		0.925 (0.154)	0.798 (0.140)	0.839 (0.156)	0.902 (0.170)	0.731 (0.143)	0.754 (0.146)	0.747 (0.147)	0.747 (0.147)
Hispanic (ref=White or Asian)		0.907 (0.152)	1.038 (0.183)	1.050 (0.185)	1.051 (0.187)	0.852 (0.156)	0.896 (0.163)	0.860 (0.159)	0.862 (0.160)
Born 1984 (ref=born 1983)		0.802 (0.146)	0.778 (0.146)	0.783 (0.147)	0.691+ (0.135)	0.728 (0.147)	0.787 (0.156)	0.756 (0.153)	0.751 (0.152)
Born 1985 (ref=born 1983)		0.758 (0.137)	0.719+ (0.134)	0.718+ (0.134)	0.624* (0.127)	0.654* (0.136)	0.717 (0.147)	0.681+ (0.143)	0.675+ (0.141)
Born 1986 (ref=born 1983)		0.771 (0.147)	0.656* (0.131)	0.661* (0.132)	0.574** (0.120)	0.616* (0.133)	0.650* (0.138)	0.636* (0.138)	0.632* (0.137)
<i>Family Structure & Economic Resources:</i>									
Mother's Years of Schooling ¹			1.402*** (0.060)	1.403*** (0.061)	1.390*** (0.061)	1.310*** (0.059)	1.280*** (0.055)	1.315*** (0.059)	1.313*** (0.059)
Income (in \$1,000s) ¹			1.234** (0.096)	1.189* (0.097)	1.172+ (0.097)	1.115 (0.094)	1.136 (0.096)	1.134 (0.097)	1.135 (0.097)
Father Absence at Child's Birth				0.999 (0.203)	1.046 (0.214)	1.140 (0.242)	1.120 (0.235)	1.141 (0.243)	1.149 (0.245)
Social Father at Age 4 (ref=married or cohabiting at 4)				0.522 (0.250)	0.525 (0.253)	0.570 (0.283)	0.569 (0.282)	0.558 (0.278)	0.557 (0.277)
Single Mother at Age 4 (ref=married or cohabiting at 4)				0.802 (0.145)	0.789 (0.144)	0.756 (0.141)	0.794 (0.147)	0.762 (0.143)	0.764 (0.144)
<i>Interpersonal Family Behaviors:</i>									
Parental Conflict Score					0.905 (0.151)	0.853 (0.154)	0.848 (0.149)	0.835 (0.151)	0.839 (0.151)
Maternal Harshness Score					0.838 (0.093)	0.839 (0.095)	0.845 (0.094)	0.839 (0.095)	0.847 (0.097)
Maternal Discipline and Warmth Score					1.201** (0.084)	1.195* (0.086)	1.162* (0.083)	1.193* (0.086)	1.191* (0.086)
Maternal Cognitive Support Score					1.053 (0.066)	1.045 (0.066)	1.027 (0.065)	1.045 (0.067)	1.045 (0.067)
<i>Educational Expectations:</i>									
Mother's Educational Expectations of Child ¹						1.528*** (0.129)	1.533*** (0.128)	1.522*** (0.128)	1.520*** (0.129)
Child's Educational Expectations of Self ¹						1.338*** (0.101)	1.328*** (0.099)	1.343*** (0.102)	1.335*** (0.102)
<i>Behavioral Development at Age 4 or 5:</i>									
Externalizing/Self-Regulation Problems/ Social Problems Score ¹							0.912* (0.042)	0.928* (0.038)	0.922* (0.038)
Constant	0.386*** (0.029)	0.747 (0.154)	0.474*** (0.104)	0.509** (0.114)	0.519 (0.241)	0.041*** (0.025)	0.043*** (0.026)	0.041*** (0.025)	0.041*** (0.025)
Cum. % of Gender Gap Explained: ²	--	0.662	2.428	6.623	8.168	9.934	26.711	21.192	22.737
N	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752

Robust standard errors in parentheses. *** p<0.001, ** p<0.01, * p<0.05, + p<0.10. Results based on 20 imputed datasets.

¹Variable centered at the sample-specific mean. See Appendix A.1 for uncentered means.

²The cumulative percent of the gender gap explained = $((e^{\beta_{\text{baseline}}} - 1) - (e^{\beta_{\text{model m}}} - 1)) / (e^{\beta_{\text{baseline}}} - 1)$, where baseline refers to the baseline model (1) and m refers to a given subsequent, nested model (2 through 7).

Table A.4: Demographic, Health, Family, and Behavioral Factors as Predictors of Years of Schooling, and as Mechanisms to Help Explain the Gender Gap in Years of Schooling (Reporting OLS Coefficients)

	(1)	(2)	(3)	(4)	(5)	(6)	(7a)	(7b)	(7c)
<i>Gender Gap:</i>							(Self-Reg)	(Social)	(Extern)
Male	-0.680*** (0.114)	-0.634*** (0.106)	-0.630*** (0.103)	-0.629*** (0.102)	-0.612*** (0.103)	-0.563*** (0.101)	-0.448*** (0.100)	-0.475*** (0.102)	-0.458*** (0.102)
<i>Demographic & Health Context and Internalizing Behaviors:</i>									
Internalizing Behavior Score ¹		-0.282*** (0.057)	-0.233*** (0.056)	-0.228*** (0.056)	-0.220*** (0.056)	-0.185*** (0.055)	-0.159** (0.054)	-0.188*** (0.057)	-0.174** (0.057)
Mother's Age at Birth of Child ¹		0.188*** (0.025)	0.111*** (0.026)	0.106*** (0.026)	0.105*** (0.026)	0.101*** (0.025)	0.097*** (0.025)	0.096*** (0.025)	0.099*** (0.025)
PPVT Score ¹		0.556*** (0.067)	0.413*** (0.066)	0.417*** (0.066)	0.409*** (0.067)	0.318*** (0.067)	0.305*** (0.066)	0.323*** (0.067)	0.323*** (0.067)
Birth weight ¹		0.008 (0.049)	-0.028 (0.048)	-0.039 (0.048)	-0.039 (0.048)	-0.047 (0.048)	-0.043 (0.047)	-0.038 (0.048)	-0.043 (0.048)
Gestation ¹		-0.017 (0.030)	-0.007 (0.030)	-0.005 (0.029)	-0.004 (0.030)	-0.007 (0.030)	-0.007 (0.029)	-0.009 (0.030)	-0.007 (0.030)
Birth Order		-0.418*** (0.060)	-0.227*** (0.063)	-0.227*** (0.063)	-0.228*** (0.063)	-0.197** (0.062)	-0.189** (0.061)	-0.180** (0.062)	-0.185** (0.062)
Asthma Diagnosis by Age 4		0.013 (0.187)	0.049 (0.181)	0.027 (0.180)	0.015 (0.181)	0.046 (0.176)	0.056 (0.171)	0.060 (0.173)	0.068 (0.174)
Ear Infection Diagnosis by Age 4		-0.126 (0.350)	-0.121 (0.340)	-0.037 (0.321)	-0.043 (0.320)	-0.131 (0.316)	-0.098 (0.322)	-0.129 (0.322)	-0.125 (0.322)
Black (ref=White or Asian)		0.202 (0.133)	0.143 (0.130)	0.221 (0.139)	0.243+ (0.139)	0.058 (0.142)	0.052 (0.138)	0.052 (0.141)	0.067 (0.141)
Hispanic (ref=White or Asian)		-0.135 (0.151)	0.039 (0.146)	0.042 (0.146)	0.048 (0.147)	-0.143 (0.146)	-0.113 (0.141)	-0.146 (0.145)	-0.137 (0.145)
Born 1984 (ref=born 1983)		-0.267+ (0.160)	-0.263+ (0.157)	-0.251 (0.157)	-0.305+ (0.163)	-0.276+ (0.160)	-0.264+ (0.156)	-0.250 (0.159)	-0.265+ (0.159)
Born 1985 (ref=born 1983)		-0.364* (0.164)	-0.398* (0.159)	-0.396* (0.160)	-0.435* (0.171)	-0.416* (0.168)	-0.374* (0.164)	-0.377* (0.168)	-0.385* (0.168)
Born 1986 (ref=born 1983)		-0.280 (0.171)	-0.411* (0.167)	-0.394* (0.167)	-0.468** (0.173)	-0.412* (0.170)	-0.403* (0.164)	-0.395* (0.169)	-0.403* (0.169)
<i>Family Structure & Economic Resources:</i>									
Mother's Years of Schooling ¹			0.235*** (0.033)	0.235*** (0.033)	0.229*** (0.033)	0.177*** (0.032)	0.181*** (0.030)	0.178*** (0.032)	0.175*** (0.032)
Income (in \$1,000s) ¹			0.288*** (0.066)	0.228*** (0.068)	0.222** (0.069)	0.164* (0.067)	0.177** (0.065)	0.170** (0.066)	0.173** (0.066)
Father Absence at Child's Birth				-0.017 (0.145)	0.006 (0.145)	0.080 (0.144)	0.058 (0.140)	0.088 (0.143)	0.081 (0.144)
Social Father at Age 4 (ref=married or cohabiting at 4)				-0.749* (0.312)	-0.706* (0.314)	-0.603* (0.304)	-0.609* (0.301)	-0.619* (0.303)	-0.626* (0.302)
Single Mother at Age 4 (ref=married or cohabiting at 4)				-0.307* (0.133)	-0.308* (0.134)	-0.313* (0.132)	-0.275* (0.127)	-0.291* (0.130)	-0.294* (0.130)
<i>Interpersonal Family Behaviors:</i>									
Parental Conflict Score					0.165 (0.129)	0.138 (0.134)	0.128 (0.133)	0.120 (0.133)	0.127 (0.134)
Maternal Harshness Score					-0.128 (0.086)	-0.129 (0.085)	-0.107 (0.083)	-0.134 (0.085)	-0.122 (0.084)
Maternal Discipline and Warmth Score					0.063 (0.058)	0.056 (0.057)	0.031 (0.056)	0.049 (0.057)	0.047 (0.057)
Maternal Cognitive Support Score					0.046 (0.054)	0.041 (0.053)	0.036 (0.052)	0.043 (0.053)	0.045 (0.052)
<i>Educational Expectations:</i>									
Mother's Educational Expectations of Child ¹						0.372*** (0.056)	0.353*** (0.055)	0.365*** (0.056)	0.360*** (0.056)
Child's Educational Expectations of Self ¹						0.175*** (0.051)	0.162** (0.050)	0.175*** (0.051)	0.167*** (0.051)
<i>Behavioral Development at Age 4 or 5:</i>									
Externalizing/Self-Regulation Problems/ Social Problems Score ¹							-0.097** (0.031)	-0.076+ (0.041)	-0.088*** (0.027)
Constant	13.018*** (0.081)	13.869*** (0.188)	13.485*** (0.188)	13.588*** (0.191)	13.239*** (0.367)	11.343*** (0.420)	11.477*** (0.411)	11.380*** (0.416)	11.404*** (0.417)
<i>Cum. % of Gender Gap Explained:</i> ²	--	6.765	7.353	7.500	10.000	17.647	34.118	30.147	32.647
N	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752

Robust standard errors in parentheses. *** p<0.001, ** p<0.01, * p<0.05, + p<0.10. Results based on 20 imputed datasets.

¹Variable centered at the sample-specific mean. See Appendix A.1 for uncentered means.

²The cumulative percent of the gender gap explained = $((e^{\beta_{\text{baseline}} - 1}) - (e^{\beta_{\text{model } m} - 1})) / (e^{\beta_{\text{baseline}} - 1} - 1)$, where baseline refers to the baseline model (1) and m refers to a given subsequent, nested model (2 through 7).

Figure A.1: 10th, 25th, 50th, 75th, and 90th Percentile Gender Gaps in Self-regulation and Social Problems in the Late 1980s

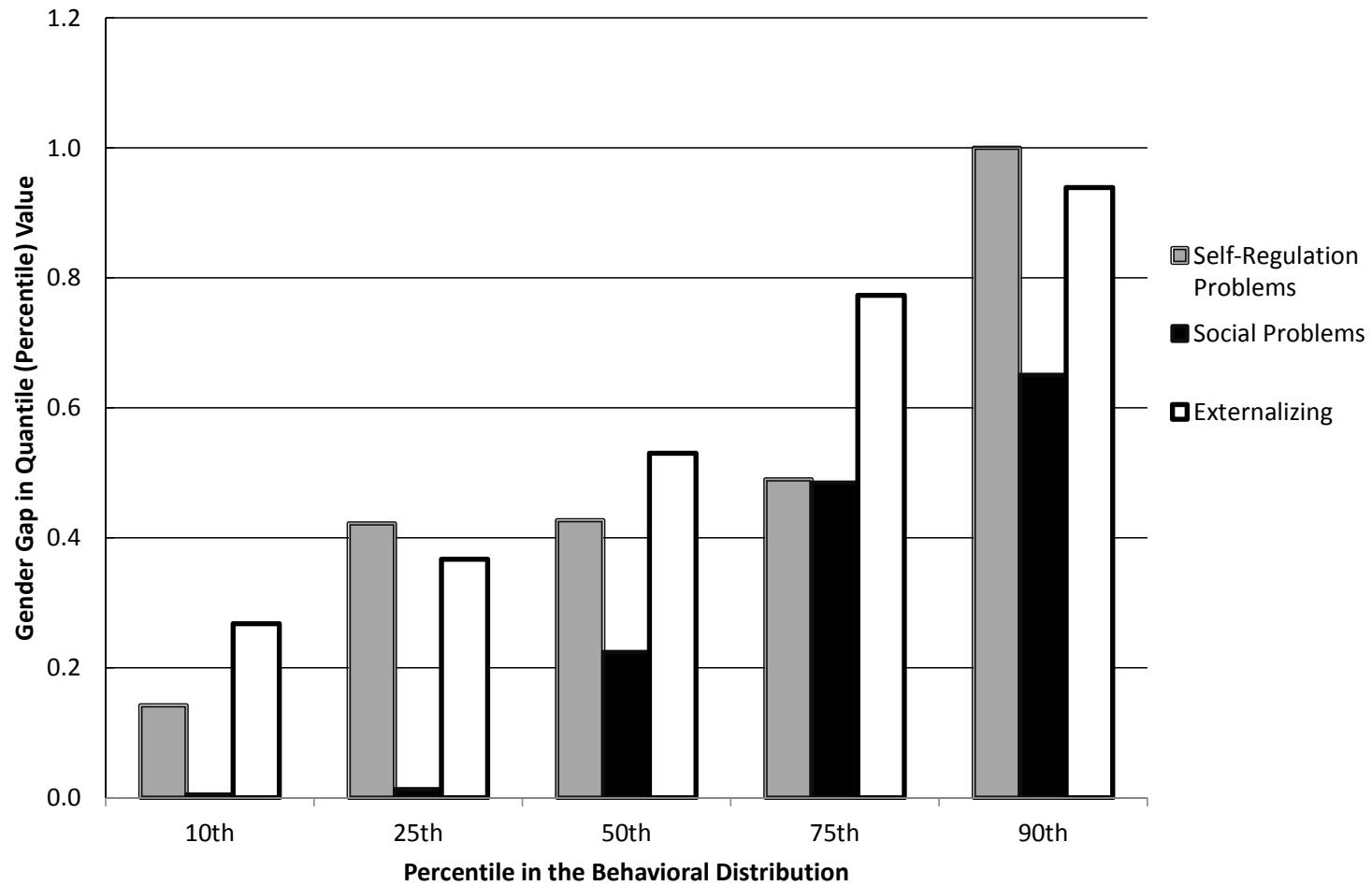
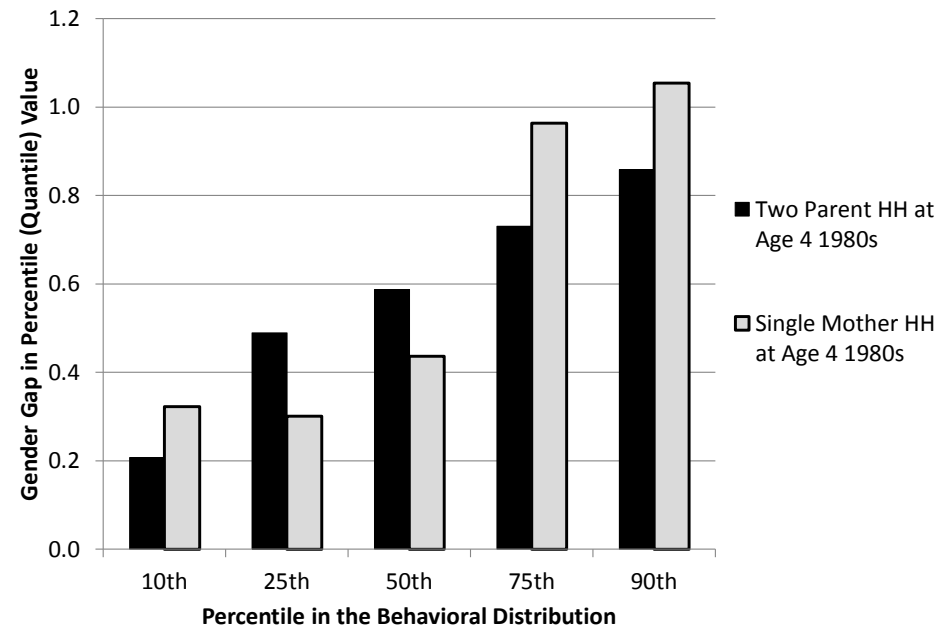
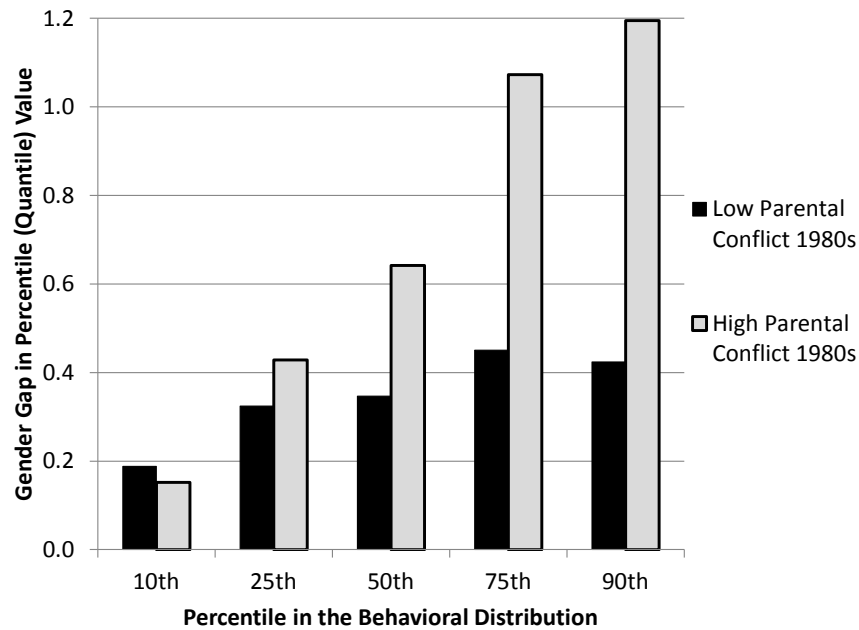


Figure A.2: 10th, 25th, 50th, 75th, and 90th Percentile Gender Gaps in Externalizing Problems in the Late 1980s Among Children in High vs. Low Parental Conflict Families and Single Mother vs. Two Parent Families



Appendix B

Chapter 4 Appendix

B.1 General Supplemental Results

Table B.1: Potential Family and Health Mediators of the Gender Gap in the Location of the 10th Percentile of Externalizing among Black Children Ages 4-5

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
VARIABLES	NC:	C:	C + SES (I):	C + SES (II):	C + S (I):	C + S (II):	C + H (I):	C + H (II):	C + SES + S (I):	C + SES + S (II):	C + SES + S + H (I):	C + SES + S + H (II):
2001 Birth Cohort	0.000 (0.000)	-0.000 (0.253)	-0.000 (0.214)	-0.000 (0.222)	-0.000 (0.231)	-0.000 (0.185)	-0.000 (0.223)	-0.000 (0.265)	-0.000 (0.224)	0.001 (0.599)	-0.000 (0.208)	-0.064 (0.200)
Male	-0.000 (0.109)	-0.000 (0.080)	-0.000 (0.133)	-0.000 (0.174)	0.000 (0.126)	0.000 (0.102)	0.000 (0.096)	0.000 (0.180)	0.000 (0.128)	-0.015 (0.659)	0.000 (0.147)	0.074 (0.175)
2001 Birth Cohort * Male	1.000*** (0.140)	1.000*** (0.160)	1.000*** (0.186)	0.890*** (0.221)	1.000*** (0.181)	1.000** (0.384)	1.000*** (0.190)	1.000** (0.313)	1.000*** (0.192)	0.882 (0.826)	1.000*** (0.280)	0.791* (0.340)
<i>Socio-Economic Status (SES):</i>												
Mother's Years of Schooling at Birth ¹			-0.000 (0.009)	0.000 (0.186)					-0.000 (0.018)	-0.004 (0.515)	-0.000 (0.026)	0.011 (0.041)
Per Capita Household Income at Age 4 (in \$1,000s, 2011 dollars) ¹			-0.000 (0.001)	0.000 (0.013)					0.000 (0.002)	0.004 (1.145)	0.000 (0.003)	0.004 (0.005)
Mother's School * Male				-0.000 (0.193)						0.137 (0.096)		0.092 (0.088)
Household Income * Male				0.000 (0.018)						-0.004 (0.014)		0.002 (0.014)
Mother's School * 2001 Cohort				-0.000 (0.184)						0.004 (1.321)		-0.019 (0.064)
Household Income * 2001 Cohort				0.000 (0.013)						-0.004 (0.068)		-0.004 (0.010)
Mother's School * Male * 2001 Cohort				-0.121 (0.155)						-0.403 (1.075)		-0.332* (0.139)
Household Income * Male * 2001 Cohort				0.007 (0.016)						0.022 (0.343)		0.018 (0.020)
<i>Family Structure:</i>												
Father Absent at Birth					-0.000 (0.016)	0.000 (0.073)			-0.000 (0.026)	0.004 (1.645)	-0.000 (0.054)	0.032 (0.167)
Single Mother at Age 4					0.000 (0.035)	-0.000 (0.144)			0.000 (0.057)	0.046 (0.155)	0.000 (0.091)	0.058 (0.186)
Social Father at Age 4					0.000 (0.039)	-0.000 (0.399)			0.000 (0.065)	0.019 (0.444)	0.000 (0.089)	-0.041 (0.450)
Two Biological Parents at Age 4 (=reference)					ref	ref			ref	ref	ref	ref
Father Absent at Birth * Male					-0.000 (0.398)					0.113 (0.329)		0.124 (0.353)
Single Mother at Age 4 * Male					1.000* (0.471)					0.558 (0.376)		0.498 (0.359)
Social Father at Age 4 * Male					1.000 (0.625)					1.186+ (0.718)		1.037 (0.780)
Father Absent at Birth * 2001 Birth Cohort					-0.000 (0.113)					-0.004 (2.525)		-0.008 (0.259)
Single Mother at Age 4 * 2001 Birth Cohort					0.000 (0.163)					-0.046 (2.934)		-0.070 (0.280)
Social Father at Age 4 * 2001 Birth Cohort					0.000 (0.456)					-0.019 (5.947)		0.036 (0.548)
Father Absent at Birth * Male * 2001 Birth Cohort					0.000 (0.596)					-0.903 (1.081)		-0.842 (0.527)
Single Mother at Age 4 * Male * 2001 Birth Cohort					-1.000 (0.657)					0.131 (0.680)		0.103 (0.566)
Social Father at Age 4 * Male * 2001 Birth Cohort					-1.000 (0.910)					-0.719 (0.831)		-0.687 (0.952)
<i>Early Childhood Health:</i>												
Low Birth Weight (<5.5 pounds, 2,500 g)							-0.000 (0.053)	-0.000 (0.593)			-0.000 (0.105)	-0.247 (0.441)
Pre-Term Birth (<37 weeks gestation)							0.000 (0.040)	0.000 (0.513)			0.000 (0.137)	0.237 (0.342)
Asthma Diagnosis by Age 4 or 5							-0.000 (0.017)	-0.000 (0.250)			-0.000 (0.075)	-0.084 (0.189)
Low Birth Weight * Male							0.000 (0.338)	0.000 (0.430)			0.037 (0.346)	0.112 (0.336)
Pre-Term Birth * Male							-0.000 (0.286)	0.000 (0.548)			-0.008 (0.434)	-0.083 (0.251)
Asthma Diagnosis * Male							0.000 (0.286)	0.000 (0.548)			0.000 (0.434)	0.272 (0.364)
Low Birth Weight * 2001 Cohort							0.000 (0.254)	0.000 (0.217)			-0.208 (0.224)	-0.208 (0.195)
Pre-Term Birth * 2001 Cohort							0.000 (0.523)	0.000 (0.229)			0.070 (0.248)	0.070 (0.215)
Asthma Diagnosis * 2001 Cohort							-0.000 (0.261)	-0.000 (0.430)				
<i>Controls:</i>												
Internalizing ¹		-0.000 (0.103)	-0.000 (0.104)	0.000 (0.521)	-0.000 (0.111)	0.000 (0.130)	-0.000 (0.110)	-0.000 (0.125)	-0.000 (0.107)	0.118 (2.316)	-0.000 (0.134)	0.149 (0.111)
Mother's Age at Birth ¹		0.000 (0.000)	0.000 (0.003)	-0.000 (0.006)	0.000 (0.004)	0.000 (0.006)	0.000 (0.002)	0.000 (0.003)	0.000 (0.008)	0.000 (0.309)	0.000 (0.015)	0.006 (0.019)
Birth Order		-0.000 (0.000)	-0.000 (0.010)	0.000 (0.013)	-0.000 (0.007)	0.000 (0.008)	-0.000 (0.009)	-0.000 (0.016)	-0.000 (0.019)	-0.000 (2.937)	-0.000 (0.047)	-0.013 (0.050)
Child Born 1983		ref	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref
Child Born 1984		-0.000 (0.263)	-0.000 (0.231)	0.000 (0.237)	-0.000 (0.258)	-0.000 (0.184)	-0.000 (0.238)	-0.000 (0.268)	-0.000 (0.235)	-0.017 (0.182)	-0.000 (0.232)	-0.087 (0.167)
Child Born 1985		-0.000 (0.271)	-0.000 (0.250)	-0.000 (0.259)	-0.000 (0.241)	-0.000 (0.183)	-0.000 (0.252)	-0.000 (0.272)	-0.000 (0.243)	-0.015 (0.191)	-0.124 (0.218)	-0.124 (0.196)
Child Born 1986		-0.000 (0.254)	-0.000 (0.217)	-0.000 (0.236)	-0.000 (0.233)	-0.000 (0.207)	-0.000 (0.224)	-0.000 (0.272)	-0.000 (0.229)	-0.102 (0.203)	-0.199 (0.224)	-0.199 (0.195)
Constant	6.000 (0.000)	6.000*** (0.260)	6.000*** (0.231)	6.000*** (0.476)	6.000*** (0.237)	6.000*** (0.199)	6.000*** (0.233)	6.000*** (0.281)	6.000*** (0.238)	6.077*** (0.430)	6.000*** (0.248)	6.179*** (0.215)
Observations	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450

¹Specified variables (including within interactions) are centered at the overall sample mean.

Standard errors in parentheses. *** p<0.001, ** p<0.01, * p<0.05, + p<0.10. Model estimates are based on multiple imputation of 20 datasets. NC = No Controls, C = Controls, SES = Family Socioeconomic and Cultural Resources, S = Family Structure, H = Early Childhood Health. Model (I) refers to main effects models, Model (II) refers to models with interactions by gender, time period, and gender * time period.

Table B.2: Potential Family and Health Mediators of the Gender Gap in the Location of the 25th Percentile of Externalizing among Black Children Ages 4-5

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
VARIABLES	NC:	C:	C + SES (I):	C + SES (II):	C + S (I):	C + S (II):	C + H (I):	C + H (II):	C + SES + S (I):	C + SES + S (II):	C + SES + S + H (I):	C + SES + S + H (II):
2001 Birth Cohort	0.000 (0.078)	-0.000 (0.250)	0.156 (0.233)	0.030 (0.239)	0.224 (0.235)	0.438 (0.475)	-0.154 (0.278)	-0.500 (0.345)	0.290 (0.222)	0.139 (0.421)	0.136 (0.247)	-0.015 (0.367)
Male	-0.000 (0.109)	-0.000 (0.307)	0.469+ (0.255)	0.387 (0.632)	0.414 (0.253)	0.750+ (0.397)	0.462+ (0.238)	0.500+ (0.277)	0.484* (0.220)	0.524 (0.373)	0.458* (0.201)	0.496 (0.366)
2001 Birth Cohort * Male	1.000*** (0.228)	1.000* (0.451)	0.344 (0.371)	0.390 (0.297)	0.310 (0.354)	-0.313 (0.589)	0.462 (0.324)	1.000* (0.414)	0.245 (0.307)	0.543 (0.515)	0.279 (0.285)	0.405 (0.512)
<i>Socio-Economic Status (SES):</i>												
Mother's Years of Schooling at Birth ¹			-0.125* (0.060)	0.008 (0.247)					-0.113* (0.050)	0.019 (0.055)	-0.096* (0.045)	0.016 (0.060)
Per Capita Household Income at Age 4 (in \$1,000s, 2011 dollars) ¹			0.000 (0.006)	0.001 (0.020)					0.003 (0.005)	0.003 (0.006)	0.001 (0.005)	0.003 (0.006)
Mother's School * Male				0.009 (1.960)						0.039 (0.102)		0.052 (0.097)
Household Income * Male				-0.006 (0.505)						0.004 (0.019)		0.003 (0.019)
Mother's School * 2001 Cohort				-0.169 (0.178)						-0.130 (0.085)		-0.176+ (0.097)
Household Income * 2001 Cohort				-0.003 (0.020)						0.013 (0.019)		0.006 (0.017)
Mother's School * Male * 2001 Cohort				-0.171 (0.148)						-0.249+ (0.138)		-0.218 (0.135)
Household Income * Male * 2001 Cohort				0.007 (0.026)						-0.013 (0.028)		0.002 (0.027)
<i>Family Structure:</i>												
Father Absent at Birth					0.103 (0.190)	-0.062 (0.258)			0.141 (0.157)	0.018 (0.242)	0.222 (0.157)	-0.053 (0.241)
Single Mother at Age 4					0.345 (0.225)	0.625+ (0.344)			0.202 (0.198)	0.502 (0.333)	0.158 (0.185)	0.514+ (0.285)
Social Father at Age 4					-0.241 (0.350)	-0.125 (0.793)			-0.133 (0.282)	-0.172 (0.839)	-0.298 (0.259)	-0.363 (0.815)
Two Biological Parents at Age 4 (=reference)					ref	ref			ref	ref	ref	ref
Father Absent at Birth * Male						-0.063 (0.530)				-0.121 (0.478)		-0.072 (0.500)
Single Mother at Age 4 * Male						-0.375 (0.580)				0.082 (0.534)		0.048 (0.517)
Social Father at Age 4 * Male						0.938 (1.032)				1.287 (1.145)		1.502 (1.112)
Father Absent at Birth * 2001 Birth Cohort						1.062* (0.414)				0.860* (0.378)		0.915* (0.372)
Single Mother at Age 4 * 2001 Birth Cohort						-1.187* (0.558)				-0.720 (0.510)		-0.959* (0.426)
Social Father at Age 4 * 2001 Birth Cohort						-0.437 (0.900)				-0.022 (0.907)		0.041 (0.898)
Father Absent at Birth * Male * 2001 Birth Cohort						-1.000 (0.773)				-1.158+ (0.629)		-1.322* (0.632)
Single Mother at Age 4 * Male * 2001 Birth Cohort						1.812* (0.875)				0.537 (0.754)		1.065 (0.729)
Social Father at Age 4 * Male * 2001 Birth Cohort						-0.375 (1.240)				-1.282 (1.200)		-1.352 (1.196)
<i>Early Childhood Health:</i>												
Low Birth Weight (<5.5 pounds, 2,500 g)							0.231 (0.231)	0.000 (0.859)			0.036 (0.188)	-0.417 (0.769)
Pre-Term Birth (<37 weeks gestation)							0.615* (0.269)	0.500 (0.374)			0.489* (0.196)	0.448 (0.378)
Asthma Diagnosis by Age 4 or 5							-0.231 (0.265)	0.000 (0.279)			-0.060 (0.195)	-0.138 (0.262)
Low Birth Weight * Male								-0.500 (0.458)				0.018 (0.322)
Pre-Term Birth * Male								0.000 (0.458)				-0.288 (0.376)
Asthma Diagnosis * Male								-0.500 (0.426)				0.327 (0.374)
Low Birth Weight * 2001 Cohort								0.500 (0.837)				0.533 (0.745)
Pre-Term Birth * 2001 Cohort								0.500 (0.424)				0.348 (0.430)
Asthma Diagnosis * 2001 Cohort								-0.000 (0.431)				-0.149 (0.355)
<i>Controls:</i>												
Internalizing ¹		-0.000 (0.204)	0.438** (0.158)	0.425** (0.145)	0.414** (0.145)	0.438** (0.152)	0.462** (0.141)	0.500*** (0.148)	0.419*** (0.124)	0.430*** (0.103)	0.448*** (0.096)	0.458*** (0.091)
Mother's Age at Birth ¹		0.000 (0.023)	0.031 (0.028)	0.023 (0.085)	0.017 (0.023)	-0.000 (0.019)	-0.000 (0.023)	-0.000 (0.022)	0.030 (0.025)	0.031 (0.026)	0.026 (0.026)	0.030 (0.026)
Birth Order		-0.000 (0.066)	0.000 (0.066)	0.003 (0.177)	0.086 (0.075)	0.063 (0.072)	0.077 (0.061)	0.000 (0.058)	0.012 (0.066)	0.045 (0.077)	0.020 (0.077)	0.038 (0.078)
Child Born 1983		ref	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref
Child Born 1984		-0.000 (0.291)	-0.219 (0.245)	-0.219 (0.245)	-0.155 (0.275)	-0.000 (0.277)	-0.154 (0.248)	0.000 (0.284)	-0.120 (0.263)	-0.181 (0.260)	-0.115 (0.252)	-0.193 (0.233)
Child Born 1985		-0.000 (0.309)	-0.250 (0.288)	-0.135 (0.281)	-0.138 (0.283)	-0.062 (0.280)	-0.077 (0.275)	0.000 (0.307)	-0.102 (0.266)	-0.220 (0.265)	-0.137 (0.262)	-0.279 (0.265)
Child Born 1986		-0.000 (0.369)	-0.219 (0.309)	-0.183 (0.307)	-0.121 (0.311)	-0.125 (0.324)	-0.385 (0.307)	0.000 (0.326)	-0.031 (0.289)	-0.286 (0.296)	-0.184 (0.277)	-0.366 (0.294)
Constant	7.000*** (0.045)	7.000*** (0.246)	6.920*** (0.236)	7.041*** (0.402)	6.476*** (0.318)	6.352*** (0.379)	6.767*** (0.229)	6.831*** (0.252)	6.621*** (0.276)	6.592*** (0.373)	6.578*** (0.280)	6.707*** (0.353)
Observations	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450

¹Specified variables (including within interactions) are centered at the overall sample mean.

Standard errors in parentheses. *** p<0.001, ** p<0.01, * p<0.05, + p<0.10. Model estimates are based on multiple imputation of 20 datasets. NC = No Controls, C = Controls, SES = Family Socioeconomic and Cultural Resources, S = Family Structure, H = Early Childhood Health. Model (I) refers to main effects models, Model (II) refers to models with interactions by gender, time period, and gender * time period.

Table B.3: Potential Family and Health Mediators of the Gender Gap in the Location of the 50th Percentile of Externalizing among Black Children Ages 4-5

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
VARIABLES	NC:	C:	C + SES (I):	C + SES (II):	C + S (I):	C + S (II):	C + H (I):	C + H (II):	C + SES + S (I):	C + SES + S (II):	C + SES + S + H (I):	C + SES + S + H (II):
2001 Birth Cohort	-0.000 (0.100)	0.500+ (0.288)	0.548* (0.248)	0.540* (0.251)	0.429 (0.266)	0.400 (0.363)	0.225 (0.283)	0.167 (0.299)	0.541* (0.215)	0.351 (0.340)	0.297 (0.248)	-0.002 (0.369)
Male	-0.000 (0.406)	0.500+ (0.281)	0.570* (0.242)	0.661** (0.254)	0.571* (0.240)	0.600+ (0.357)	0.642* (0.249)	0.667* (0.262)	0.676** (0.212)	0.478 (0.364)	0.620* (0.243)	0.437 (0.351)
2001 Birth Cohort * Male	1.000* (0.406)	0.500 (0.333)	0.253 (0.293)	0.030 (0.306)	0.286 (0.303)	0.200 (0.517)	0.175 (0.309)	0.333 (0.359)	0.099 (0.278)	0.436 (0.470)	0.106 (0.284)	0.672 (0.463)
<i>Socio-Economic Status (SES):</i>												
Mother's Years of Schooling at Birth ¹			-0.139* (0.066)	0.066 (0.133)					-0.146* (0.062)	0.046 (0.138)	-0.122+ (0.063)	0.056 (0.128)
Per Capita Household Income at Age 4 (in \$1,000s, 2011 dollars) ¹			-0.003 (0.005)	-0.003 (0.013)					-0.002 (0.005)	-0.003 (0.013)	-0.002 (0.006)	-0.004 (0.013)
Mother's School * Male				-0.120 (0.153)						-0.081 (0.166)		-0.092 (0.166)
Household Income * Male				0.003 (0.021)						0.009 (0.025)		0.010 (0.025)
Mother's School * 2001 Cohort				-0.238 (0.157)						-0.197 (0.161)		-0.183 (0.155)
Household Income * 2001 Cohort				0.002 (0.018)						0.003 (0.018)		0.008 (0.020)
Mother's School * Male * 2001 Cohort				0.012 (0.220)						-0.097 (0.222)		-0.094 (0.224)
Household Income * Male * 2001 Cohort				-0.011 (0.031)						-0.022 (0.033)		-0.023 (0.032)
<i>Family Structure:</i>												
Father Absent at Birth					-0.000 (0.179)	0.200 (0.348)			-0.014 (0.208)	0.129 (0.336)	0.051 (0.220)	0.050 (0.316)
Single Mother at Age 4					0.286 (0.188)	-0.000 (0.350)			0.162 (0.199)	-0.027 (0.341)	0.102 (0.196)	-0.086 (0.322)
Social Father at Age 4					-0.286 (0.299)	-0.200 (0.743)			-0.298 (0.272)	-0.110 (0.784)	-0.271 (0.324)	-0.023 (0.797)
Two Biological Parents at Age 4 (=reference)					ref	ref			ref	ref	ref	ref
Father Absent at Birth * Male						0.000 (0.512)				0.106 (0.525)		0.150 (0.527)
Single Mother at Age 4 * Male						0.000 (0.503)				0.184 (0.581)		0.225 (0.532)
Social Father at Age 4 * Male						-0.800 (0.935)				-0.642 (1.067)		-0.624 (1.115)
Father Absent at Birth * 2001 Birth Cohort						0.800 (0.524)				0.628 (0.511)		0.564 (0.525)
Single Mother at Age 4 * 2001 Birth Cohort						-0.600 (0.552)				-0.502 (0.508)		-0.143 (0.522)
Social Father at Age 4 * 2001 Birth Cohort						-0.800 (0.965)				-0.800 (0.887)		-0.474 (0.985)
Father Absent at Birth * Male * 2001 Birth Cohort						-1.600* (0.722)				-1.612* (0.745)		-1.408+ (0.748)
Single Mother at Age 4 * Male * 2001 Birth Cohort						1.400+ (0.736)				0.874 (0.807)		0.446 (0.778)
Social Father at Age 4 * Male * 2001 Birth Cohort						2.000 (1.239)				1.468 (1.204)		0.833 (1.321)
<i>Early Childhood Health:</i>												
Low Birth Weight (<5.5 pounds, 2,500 g)							0.108 (0.187)	0.500 (0.840)			0.067 (0.177)	0.599 (0.842)
Pre-Term Birth (<37 weeks gestation)							0.558* (0.265)	0.333 (0.701)			0.509+ (0.262)	0.442 (0.744)
Asthma Diagnosis by Age 4 or 5							0.075 (0.200)	0.167 (0.429)			0.106 (0.224)	-0.237 (0.419)
Low Birth Weight * Male								-0.333 (0.415)				-0.201 (0.396)
Pre-Term Birth * Male								-0.333 (0.537)				-0.516 (0.559)
Asthma Diagnosis * Male								0.000 (0.469)				0.274 (0.455)
Low Birth Weight * 2001 Cohort								-0.167 (0.820)				-0.461 (0.804)
Pre-Term Birth * 2001 Cohort								0.500 (0.651)				0.450 (0.701)
Asthma Diagnosis * 2001 Cohort								-0.167 (0.412)				0.070 (0.418)
<i>Controls:</i>												
Internalizing ¹		0.500*** (0.122)	0.571*** (0.105)	0.600*** (0.100)	0.571*** (0.107)	0.600*** (0.124)	0.642*** (0.127)	0.667*** (0.123)	0.593*** (0.096)	0.561*** (0.101)	0.621*** (0.111)	0.578*** (0.103)
Mother's Age at Birth ¹		-0.000 (0.013)	0.030 (0.025)	0.031 (0.024)	0.000 (0.020)	-0.000 (0.021)	0.008 (0.025)	0.000 (0.024)	0.037 (0.027)	0.033 (0.024)	0.044 (0.037)	0.030 (0.029)
Birth Order		-0.000 (0.094)	0.062 (0.064)	0.101 (0.066)	0.143+ (0.081)	0.200* (0.082)	0.192** (0.071)	0.167* (0.071)	0.122+ (0.063)	0.147* (0.062)	0.110+ (0.060)	0.111+ (0.063)
Child Born 1983		ref	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref
Child Born 1984		0.000 (0.316)	-0.341 (0.325)	-0.225 (0.298)	-0.286 (0.325)	-0.200 (0.326)	-0.150 (0.342)	-0.167 (0.320)	-0.380 (0.299)	-0.274 (0.310)	-0.346 (0.304)	-0.290 (0.320)
Child Born 1985		0.500 (0.337)	0.331 (0.345)	0.153 (0.326)	0.143 (0.319)	0.200 (0.315)	0.167 (0.320)	0.167 (0.319)	0.163 (0.322)	0.168 (0.309)	0.206 (0.321)	0.247 (0.338)
Child Born 1986		0.000 (0.286)	0.093 (0.305)	-0.086 (0.296)	-0.143 (0.303)	-0.000 (0.327)	0.092 (0.295)	-0.000 (0.282)	0.005 (0.306)	-0.145 (0.336)	-0.004 (0.344)	-0.151 (0.366)
Constant	8.000*** (0.100)	7.831*** (0.297)	7.683*** (0.245)	7.641*** (0.245)	7.521*** (0.272)	7.397*** (0.318)	7.406*** (0.240)	7.441*** (0.265)	7.558*** (0.225)	7.612*** (0.287)	7.566*** (0.260)	7.693*** (0.321)
Observations	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450

¹Specified variables (including within interactions) are centered at the overall sample mean.

Standard errors in parentheses. *** p<0.001, ** p<0.01, * p<0.05, + p<0.10. Model estimates are based on multiple imputation of 20 datasets. NC = No Controls, C = Controls, SES = Family Socioeconomic and Cultural Resources, S = Family Structure, H = Early Childhood Health. Model (I) refers to main effects models, Model (II) refers to models with interactions by gender, time period, and gender * time period.

Table B.4: Potential Family and Health Mediators of the Gender Gap in the Location of the 50th Percentile of Externalizing among White and Asian Children Ages 4-5

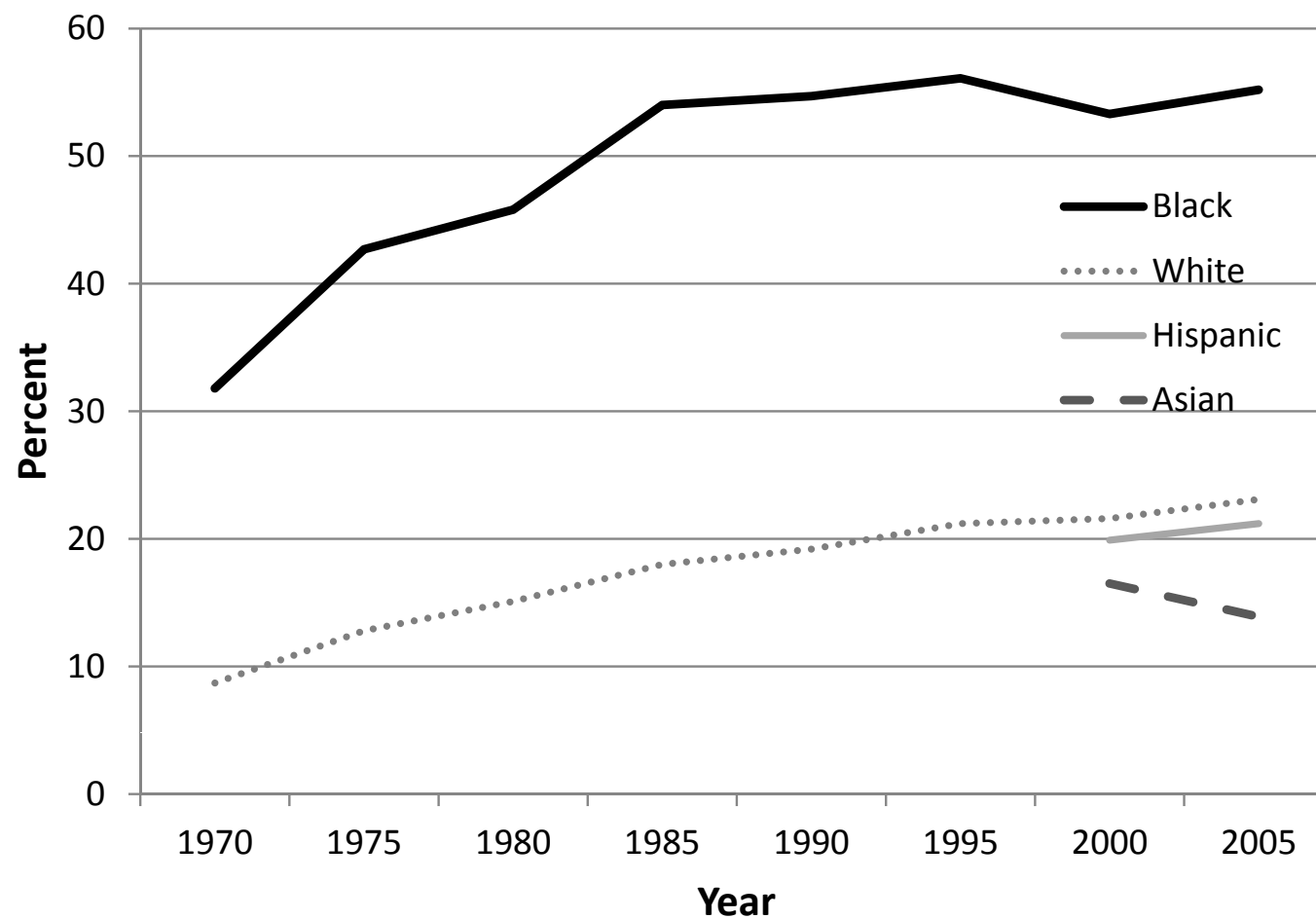
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
VARIABLES	NC:	C:	C + SES (I):	C + SES (II):	C + S (I):	C + S (II):	C + H (I):	C + H (II):	C + SES + S (I):	C + SES + S (II):	C + SES + S + H (I):	C + SES + S + H (II):
2001 Birth Cohort	-0.000 (0.448)	0.034 (0.186)	0.241 (0.204)	0.260 (0.201)	-0.011 (0.240)	0.212 (0.241)	-0.147 (0.244)	-0.500* (0.254)	0.176 (0.221)	0.240 (0.197)	0.072 (0.192)	0.206 (0.217)
Male	-0.000 (0.450)	0.591** (0.195)	0.545*** (0.157)	0.559*** (0.154)	0.559** (0.185)	0.636** (0.226)	0.529** (0.184)	0.500** (0.175)	0.533** (0.170)	0.520*** (0.157)	0.553*** (0.141)	0.541** (0.171)
2001 Birth Cohort * Male	1.000+ (0.541)	0.193 (0.256)	0.240 (0.220)	0.295 (0.211)	0.194 (0.261)	0.091 (0.309)	0.265 (0.227)	0.500* (0.226)	0.218 (0.216)	0.314 (0.215)	0.193 (0.172)	0.181 (0.239)
<u>Socio-Economic Status (SES):</u> Mother's Years of Schooling at Birth ¹			-0.126*** (0.033)	-0.155** (0.057)					-0.123*** (0.033)	-0.128* (0.062)	-0.131*** (0.027)	-0.126* (0.060)
Per Capita Household Income at Age 4 (in \$1,000s, 2011 dollars) ¹			-0.004 (0.003)	0.000 (0.002)					-0.004 (0.003)	0.000 (0.002)	-0.001 (0.003)	0.000 (0.003)
Mother's School * Male				-0.101 (0.083)						-0.091 (0.091)		-0.103 (0.090)
Household Income * Male				-0.004 (0.008)						-0.006 (0.008)		-0.005 (0.010)
Mother's School * 2001 Cohort				0.093 (0.075)						0.065 (0.074)		0.039 (0.074)
Household Income * 2001 Cohort				-0.016* (0.006)						-0.017** (0.006)		-0.014* (0.006)
Mother's School * Male * 2001 Cohort				0.053 (0.107)						0.036 (0.106)		0.050 (0.116)
Household Income * Male * 2001 Cohort				0.006 (0.011)						0.011 (0.012)		0.011 (0.013)
<u>Family Structure:</u> Father Absent at Birth					0.204 (0.197)	0.303 (0.381)			0.092 (0.193)	0.392 (0.343)	0.122 (0.159)	0.282 (0.351)
Single Mother at Age 4					0.280 (0.178)	0.424 (0.352)			0.185 (0.168)	0.171 (0.320)	0.107 (0.122)	0.267 (0.334)
Social Father at Age 4					0.226 (0.225)	1.667* (0.676)			0.167 (0.231)	1.426* (0.691)	0.047 (0.170)	1.601* (0.677)
Two Biological Parents at Age 4 (=reference)					ref	ref			ref	ref	ref	ref
Father Absent at Birth * Male						0.515 (0.576)				0.453 (0.566)		0.471 (0.583)
Single Mother at Age 4 * Male						-0.212 (0.495)				0.014 (0.416)		-0.117 (0.473)
Social Father at Age 4 * Male						-0.515 (1.146)				-0.715 (1.104)		-0.731 (1.180)
Father Absent at Birth * 2001 Birth Cohort						-0.333 (0.494)				-0.428 (0.441)		-0.356 (0.453)
Single Mother at Age 4 * 2001 Birth Cohort						-0.182 (0.453)				-0.025 (0.388)		-0.210 (0.387)
Social Father at Age 4 * 2001 Birth Cohort						-1.667* (0.735)				-1.544* (0.762)		-1.689* (0.708)
Father Absent at Birth * Male * 2001 Birth Cohort						-0.424 (0.712)				-0.521 (0.683)		-0.512 (0.721)
Single Mother at Age 4 * Male * 2001 Birth Cohort						0.182 (0.630)				-0.137 (0.527)		0.245 (0.584)
Social Father at Age 4 * Male * 2001 Birth Cohort						0.818 (1.234)				1.193 (1.187)		0.900 (1.236)
<u>Early Childhood Health:</u> Low Birth Weight (<5.5 pounds, 2,500 g)							0.294+ (0.176)	0.000 (0.342)			0.247* (0.114)	0.023 (0.323)
Pre-Term Birth (<37 weeks gestation)							0.118 (0.206)	0.500 (0.392)			0.116 (0.156)	0.201 (0.398)
Asthma Diagnosis by Age 4 or 5							0.265 (0.174)	-0.000 (0.274)			0.233* (0.117)	-0.042 (0.249)
Low Birth Weight * Male								0.000 (0.325)				-0.019 (0.243)
Pre-Term Birth * Male								-0.500 (0.357)				-0.394 (0.312)
Asthma Diagnosis * Male								0.500 (0.305)				0.407 (0.248)
Low Birth Weight * 2001 Cohort								0.500 (0.309)				0.266 (0.304)
Pre-Term Birth * 2001 Cohort								0.000 (0.394)				0.125 (0.421)
Asthma Diagnosis * 2001 Cohort								-0.000 (0.297)				0.084 (0.269)
<u>Controls:</u> Internalizing ¹		0.580*** (0.101)	0.513*** (0.067)	0.498*** (0.064)	0.548*** (0.073)	0.545*** (0.071)	0.559*** (0.058)	0.500*** (0.062)	0.520*** (0.055)	0.488*** (0.060)	0.530*** (0.055)	0.524*** (0.054)
Mother's Age at Birth ¹		-0.034 (0.023)	0.011 (0.015)	0.017 (0.015)	-0.022 (0.018)	-0.030 (0.021)	-0.029 (0.019)	-0.000 (0.020)	0.016 (0.018)	0.016 (0.015)	0.016 (0.015)	0.026+ (0.015)
Birth Order		0.091 (0.068)	0.002 (0.051)	-0.020 (0.054)	0.097 (0.067)	0.091 (0.068)	0.088 (0.061)	0.000 (0.062)	0.017 (0.049)	-0.029 (0.051)	0.010 (0.047)	-0.033 (0.047)
Child Born 1983		ref	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref
Child Born 1984		0.068 (0.205)	0.093 (0.212)	0.203 (0.200)	0.118 (0.200)	0.182 (0.227)	0.059 (0.184)	0.000 (0.208)	0.083 (0.197)	0.061 (0.195)	0.068 (0.190)	0.106 (0.212)
Child Born 1985		-0.284 (0.222)	-0.325+ (0.197)	-0.309 (0.202)	-0.312 (0.218)	-0.212 (0.256)	-0.353 (0.223)	-0.500* (0.216)	-0.312 (0.201)	-0.418* (0.209)	-0.396* (0.193)	-0.345+ (0.200)
Child Born 1986		-0.034 (0.218)	-0.013 (0.243)	0.008 (0.180)	-0.140 (0.246)	-0.030 (0.241)	-0.176 (0.236)	-0.500* (0.247)	-0.115 (0.195)	-0.052 (0.198)	-0.153 (0.216)	0.013 (0.201)
Constant	8.000*** (0.448)	7.551*** (0.218)	7.675*** (0.175)	7.627*** (0.181)	7.518*** (0.220)	7.368*** (0.230)	7.583*** (0.223)	7.831*** (0.217)	7.645*** (0.189)	7.672*** (0.195)	7.639*** (0.176)	7.607*** (0.192)
Observations	3,700	3,700	3,700	3,700	3,700	3,700	3,700	3,700	3,700	3,700	3,700	3,700

¹Specified variables (including within interactions) are centered at the overall sample mean.

Sample size are rounded to the nearest 50 in compliance with ECLS-B restricted-use data terms. Standard errors in parentheses.

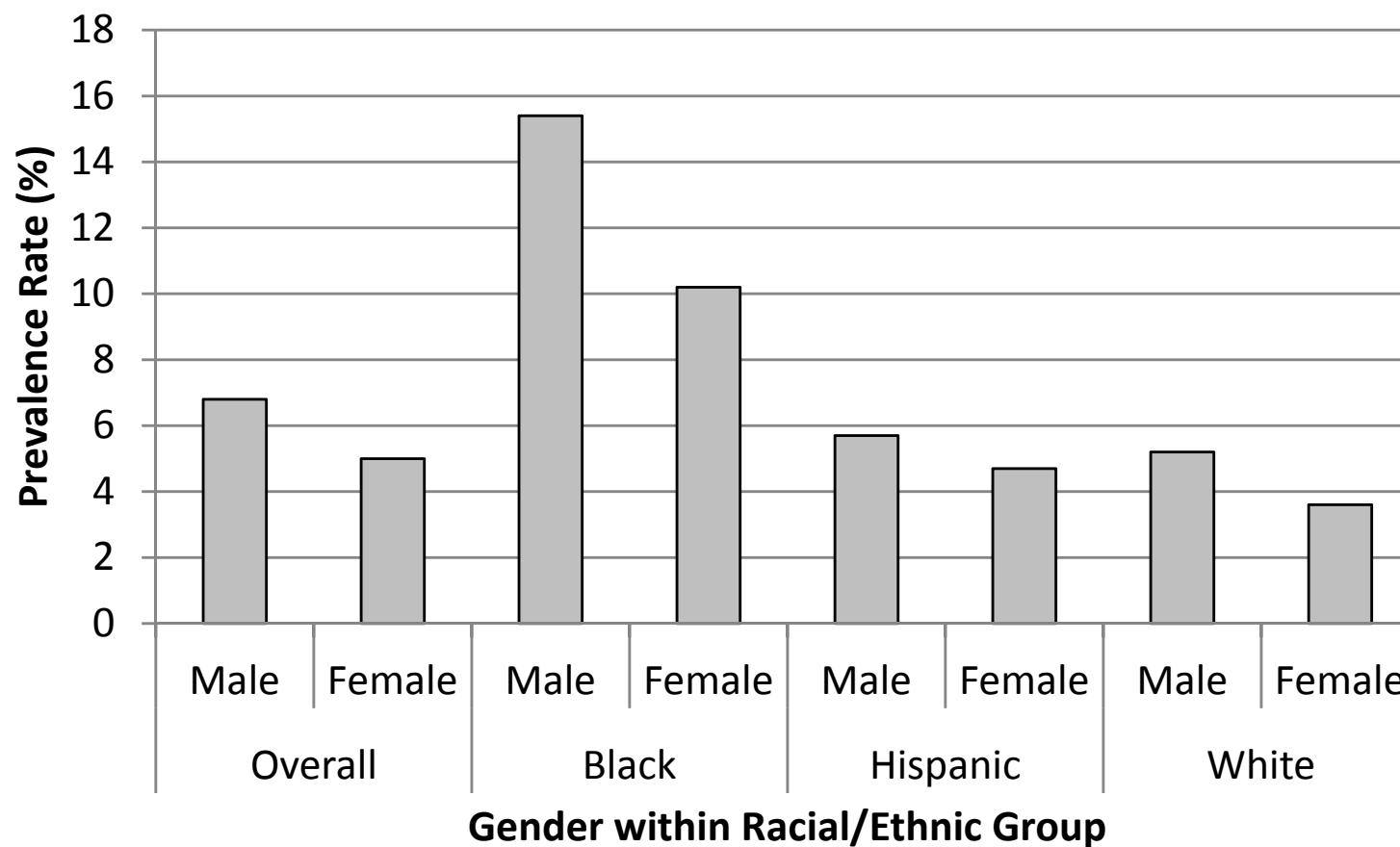
*** p<0.001, ** p<0.01, * p<0.05, + p<0.10. Model estimates are based on multiple imputation of 20 datasets. NC = No Controls, C = Controls, SES = Family Socioeconomic and Cultural Resources, S = Family Structure, H = Early Childhood Health. Model (I) refers to main effects models, Model (II) refers to models with interactions by gender, time period, and gender * time period.

Figure B.1: Prevalence of Single Parent Families with Children Under 18 from 1970-2005, by Race/Ethnicity



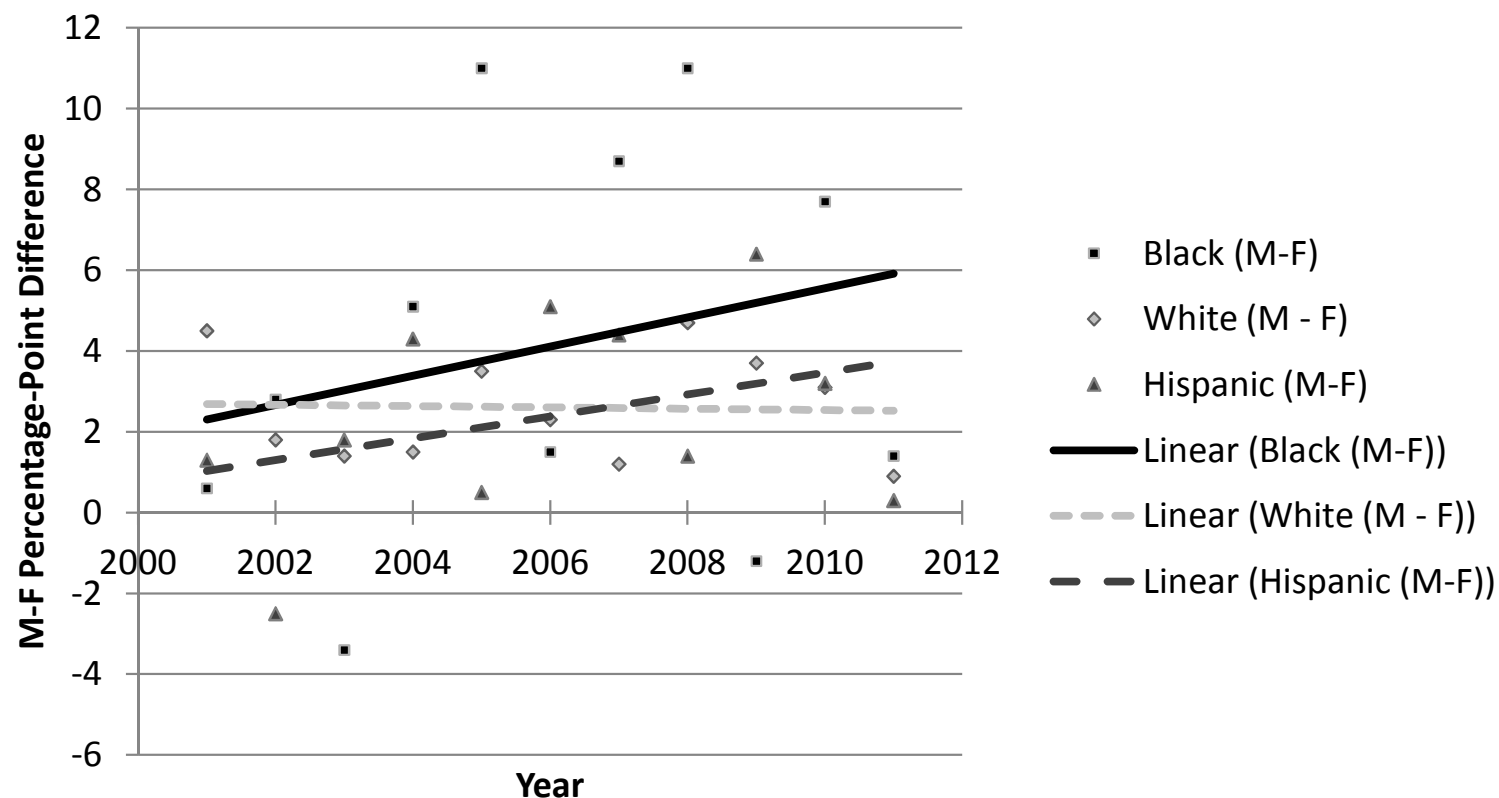
Sources: Child Trends. 2013. "Family Structure". Accessed Online 26 May 2013 at <http://www.childtrends.org/?indicators=family-structure>.

Figure B.2: Asthma Rates for U.S. Children 0-4 Years from 2001-2003, by Race and Gender



Source: Moorman, JE, Rudd, RA, Johnson, CA, King, M, et al. 2007. National Surveillance for Asthma: United States, 1980-2004. National Center for Health Statistics. *Surveillance Summaries*, 56(S S08): 1-14 & 18-54, Table 1. Accessed at <http://www.cdc.gov/mmwr/preview/mmwrhtml/ss5608A1.htm> on May 23, 2013 2:25:00 PM.

Figure B.3: Asthma Rates for U.S. Children 0-4 Years from 2001-2011, by Race and Gender



Sources: United States Department of Health and Human Services, Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS), Division of Vital Statistics, National Health Interview Survey public-use data, on CDC Online Database. Accessed at <http://www.cdc.gov/nchs/nhis.htm> on May 21, 2013 5:34:37 PM.

Figure B.4: Counts (N's) at Each Percentile of Externalizing, by Gender, Race/Ethnicity, and Time Period

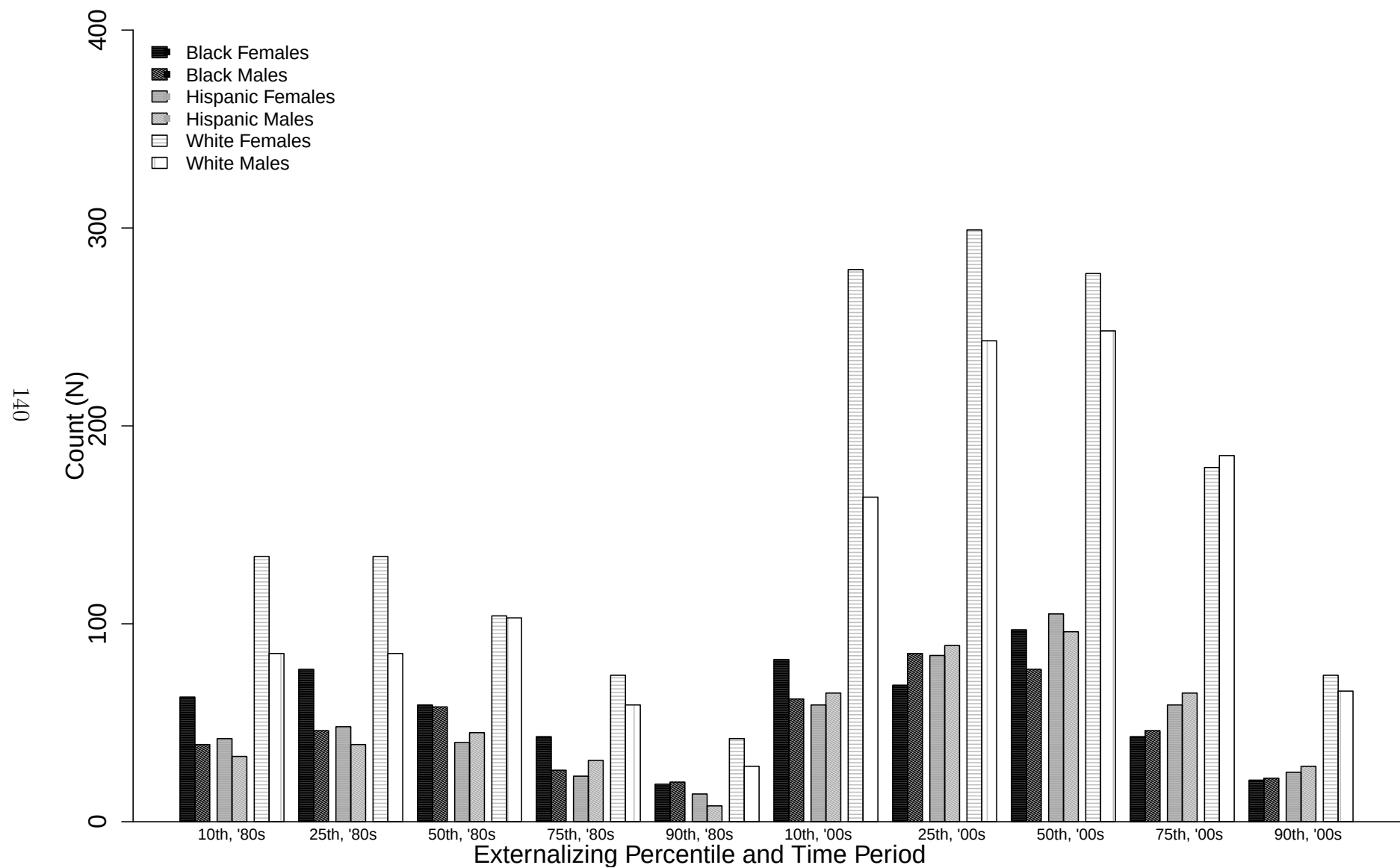
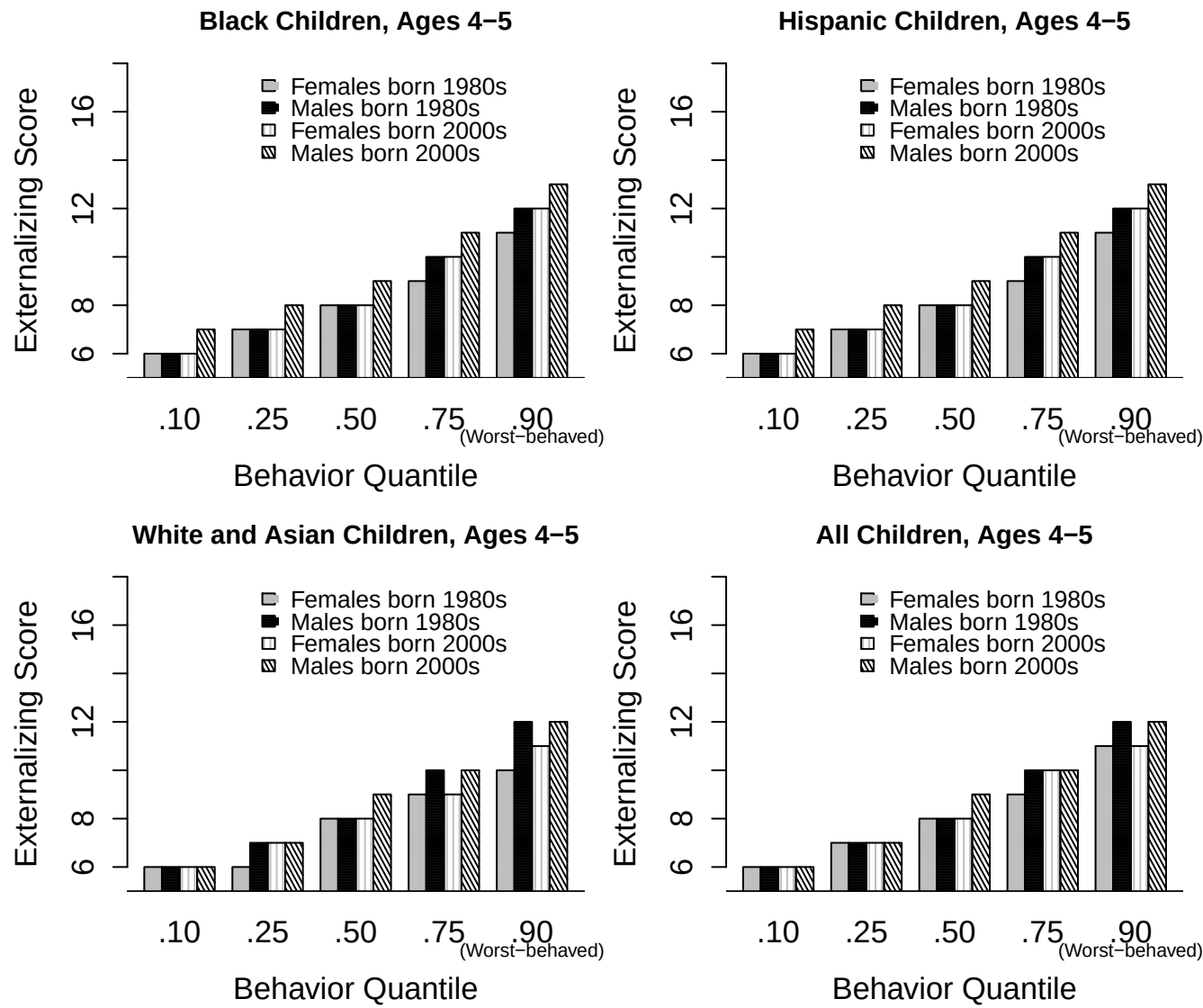


Figure B.5: Expected Values of Externalizing at Ages 4 and 5 at Various Points in the Behavioral Distribution, by Race/Ethnicity, Cohort, and Gender



B.2 Shifts in the Externalizing Distribution Aggregated Across Racial/Ethnic Groups

Figure B.6 displays externalizing problems distributions by gender and time period (i.e., birth cohorts) for the overall samples, aggregating across race/ethnicity. The first column displays externalizing problems for females and males in the 1983-86 birth cohorts; the second column displays externalizing problems for females and males in the 2001 birth cohort. In the early period, the gender gap in externalizing problems at the mean – approximately 0.5 points – occurred because of a divergence between males and females in the top half of the externalizing problems distributions. The 75th percentile of externalizing fell to a score of 9 for girls, but a 10 for boys. The 90th percentile fell at 11 for girls and 12 for boys.

[FIGURE B.6 ABOUT HERE]

There are not a lot of differences in the distributions of the 6-18 point externalizing problems scale when comparing girls in the early and late periods. The exceptions are that the 75th percentile shifts up by one point (but the 90th percentile does not) and the mean increases by just under 0.5 points. Similarly, for boys across time periods, only the 50th percentile shifts up from an 8 to a 9, leading the mean to shift up from an 8.4 to a 9.1. The 75th and 90th percentiles remain at a score of 10 and 12 across both periods. Across genders in the late time period, there is a one point divergence in externalizing problems scores at the 50th and 90th percentiles of externalizing problems. The mean for boys shifts up about 0.45 points and the mean for girls shifts up about 0.35 points. This leads to a difference-in-the-difference in the gender gap in externalizing problems of about 0.10 points across time periods, also known as the growth in the gender gap across this roughly 15 year period.

The top panel of Figure B.7 shows externalizing problems scores at the 10th, 25th, 50th, 75th, and 90th percentiles of the behavior distribution, by gender and cohort, aggregating across racial/ethnic groups. Percentiles are estimated within gender and time period. At the broadest level, Figure B.7 shows that during the 1980s the gender gap

in the location of the 75th and 90th percentiles externalizing problems is concentrated among the worst-behaved boys and girls. In the 2000s cohort, the gender gap emerges in the location of the 50th percentile, among the boys and girls in the middle of their respective behavioral distributions. The top panel shows that the location of the 10th and 25th percentiles of externalizing problems fall to a score of 6 for both females and males within each time period. The 50th percentile falls at a score of 8 for both females and males in the 1983-86 birth cohorts as well as for females in the 2001 birth cohort.

[FIGURE B.7 ABOUT HERE]

The second panel of Figure B.7 highlights the gender gap between females and males in the location of each quantile (i.e., percentile) in the 1980s. The third panel highlights any additional change of the gender gap in the location of each quantile between the 1980s and the 2000s. Panel 2 highlights that the location of the 50th percentile for males in the 2001 birth cohort falls one point (or roughly .4 standard deviations) higher, at a score of 9. A gender gap of one point in the location of the 75th and 90th percentiles is evident between females and males in the 1983-86 cohorts. This indicates that the gender gap in this earlier period is concentrated among the worst behaved girls and boys. In the later time period (i.e., for the 2001 birth cohort), a gender gap of one point in the location of the 90th percentile remains at the same levels of externalizing problems. The gender gap in the location of the 75th percentile that had existed in the 1980s closes, but shifts over in the 2000s, emerging in the location of the 50th percentile, as highlighted in Panel 3.

Figure B.6: Externalizing Distribution by Time Period and Gender

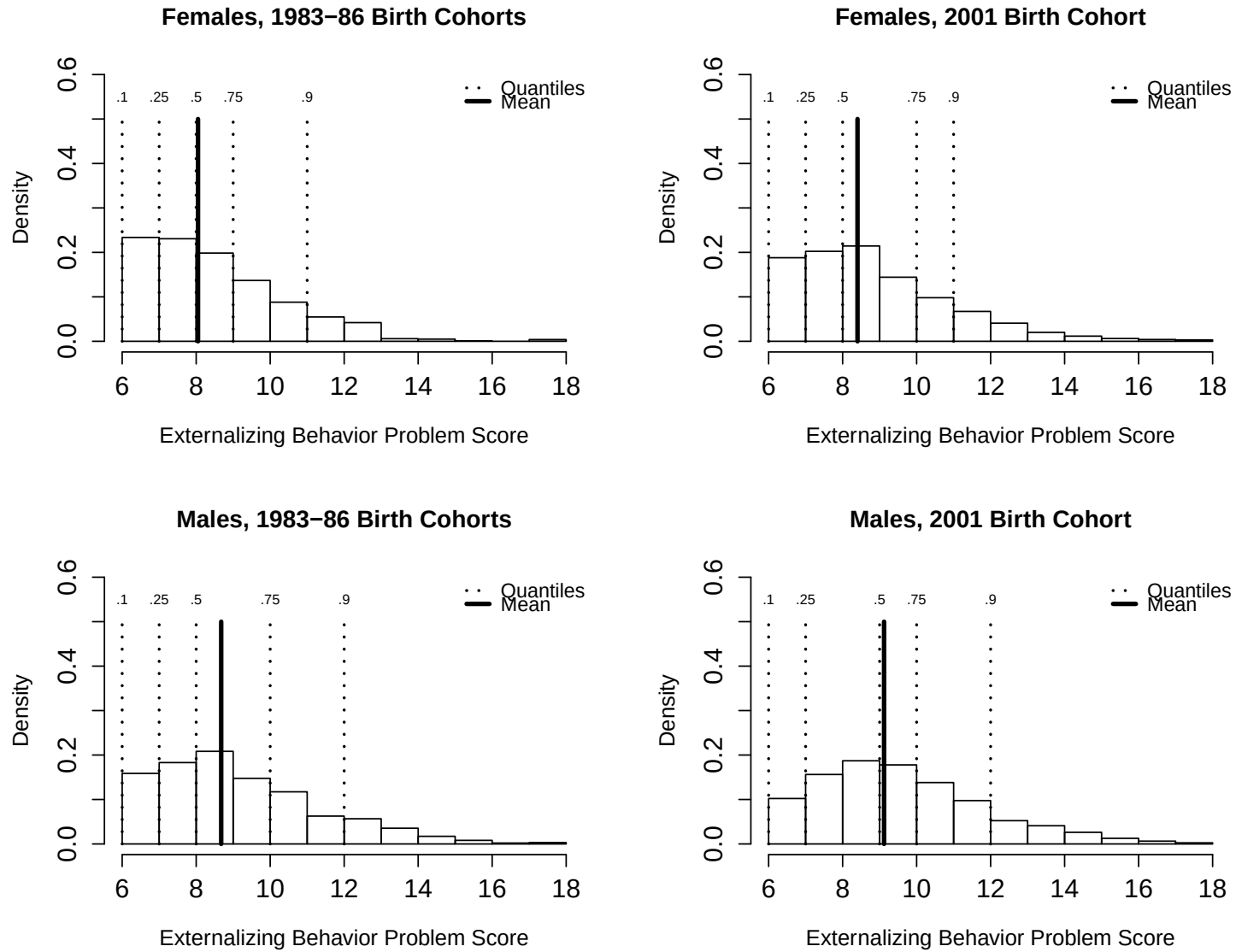
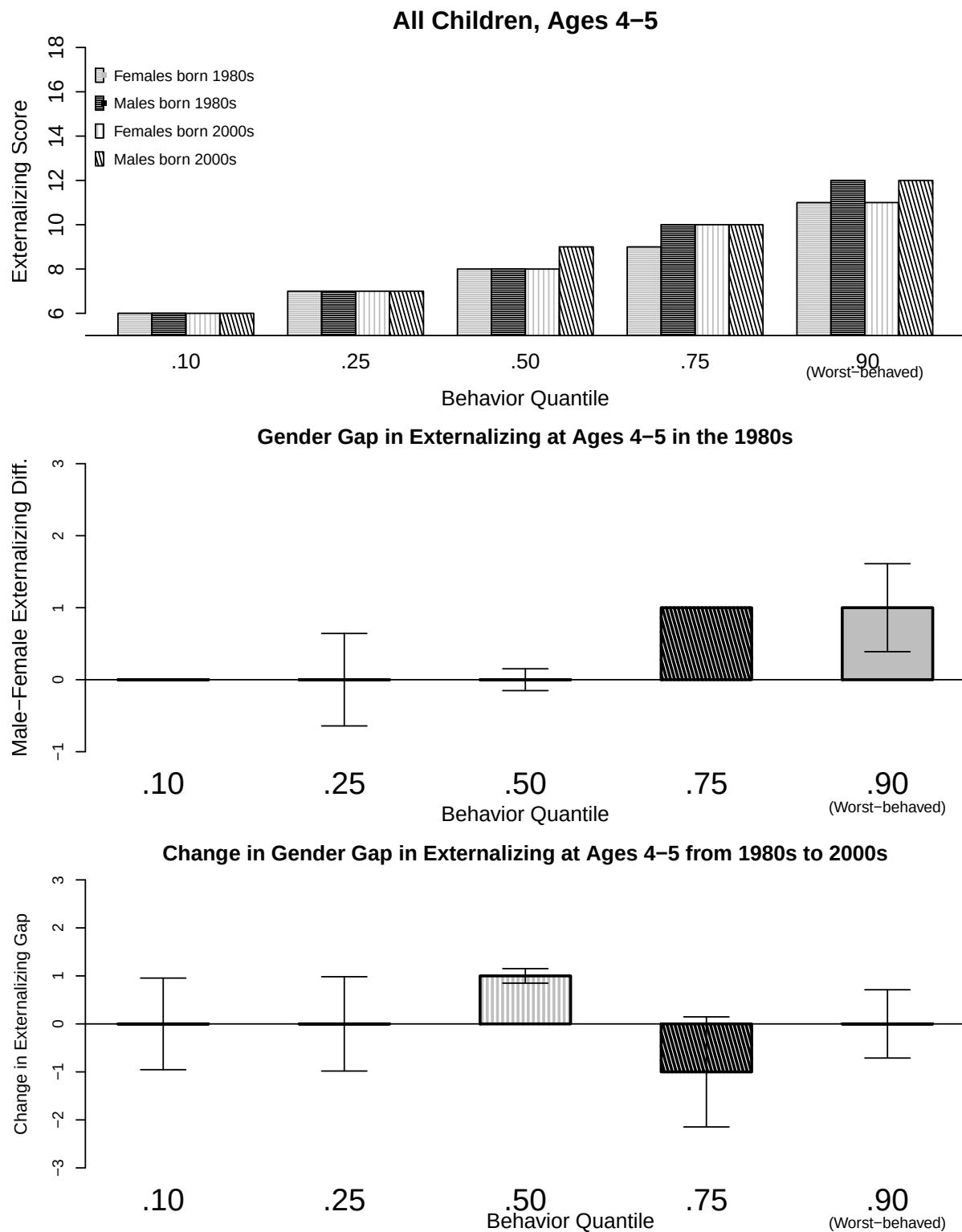


Figure B.7: Expected Values, Gender Gaps, and Changes in the Gender Gaps in Externalizing Across the Behavioral Distribution (Aggregated Across Racial/Ethnic Groups)



B.3 A Detailed Discussion of Racial/Ethnic, Gender, and Period Differences in Descriptive Statistics in the Locations of the 10th, 25th, 50th, 75th, and 90th Percentiles of Externalizing

Figure 4.5 displays means and 95% confidence intervals for the observed predictor variables modeled to help explain the growth of the gender gap in the location of the 10th percentile of externalizing problems. Figure 4.5 reveals a gender reversal in father absence at birth across these two periods, especially among black children. Fathers were more absent during the birth of daughters in the 1980s, but amid higher overall levels of father absence, they are now more absent at the birth of sons in the 2001 cohort. Unlike Hispanic and white children, where boys experienced higher or similar levels of single motherhood in both periods, black boys were less exposed to single mother households at age 4 than black girls. But, the black male advantage in terms of lower levels of single parenting diminished over this period. Many more of the most behaviorally advantaged children of all race/ethnicity groups are raised with a social (i.e., non-biological) father at age 4 in the later, compared to the earlier period. In black and white communities, females experience less exposure to social fathers than males, albeit at higher overall levels of social father households. A larger share of Hispanic females are exposed to social fathers than males in the later, compared to earlier period. There are few differences in mother's education or household income by gender or time period.

Rates of asthma diagnosis by age 4, low birth weight, and pre-term have increased across these two periods, but most markedly among black children. The gender gap in asthma also has grown substantially across the two periods with many more males than females diagnosed in the later compared to the earlier period. In line with historic trends, females in both periods exhibit higher levels of low birth weight than males, but in light of research that shows low birth weight is linked to behavior problems more for males than females, the noticeable trend here is the higher overall levels for both males and females across races, but especially among black children. Rates of pre-term also have risen across cohorts for all race/ethnic groups, but the gender gap has grown most substantially among black children.

Levels of cognitive development, in the form of receptive vocabulary tests administered by interviewers to children ages 2.5-4, indicate a mixed gender pattern by race across these two cohorts. Among black children, the female advantage in the 1980s is replaced by a male advantage in the 2000s at higher overall levels for both black boys and girls, whereas among Hispanic children there is a newly-emerged female advantage. White children have experienced a newly-emerged female advantage in cognitive development, but levels remain noticeably higher among both white females and males compared to their minority counterparts. We see few gender differences or changes across cohorts in levels of internalizing (where, interestingly, there is parity between boys and girls in both periods), mother's age at birth, or birth order. Although there are some shifts in levels of childhood experience by gender and time period, few are likely to be sufficiently large to account for a growth of the gender gap in the location of the 10th percentile of externalizing problems among black and Hispanic children.

Figures B.8-B.11 display the means and 95% confidence intervals for the observed covariates at the values of externalizing problems that locate a child at the 25th, 50th, 75th, and 90th percentiles of externalizing problems, by race/ethnicity, gender, and time period. Figure B.8 shows that gender differences across cohorts in the means of the observed covariates follow much of the same pattern among children whose behavior problem scores position them at the 25th percentile as at the 10th percentile. Patterns of father absence at birth and social father or single mother households at age 4 are relatively similar for children with externalizing problems scores that locate them at the 25th percentile as the 10th percentile, except father absence and single mother households are more prevalent among black children with externalizing problems scores at the 25th percentile compared to 10th percentile and show a larger male disadvantage in the later compared to the earlier period. As expected in light of correlations between behavioral and socioeconomic disadvantage, mean levels of mother's education and household income shift downward slightly between children with externalizing problems scores that place them at the 10th and 25th percentiles. Females with externalizing problems scores at the 25th percentile are more disadvantaged in terms of asthma, low birth weight, and

pre-term birth status than females at the 10th percentile in the later compared to the earlier period. There also is an overall shift to lower levels of within-period cognitive development across race groups between children with externalizing problems scores that locate them at the 10th and 25th percentiles, as well as a larger male disadvantage in the later period.

[FIGURE B.8 ABOUT HERE]

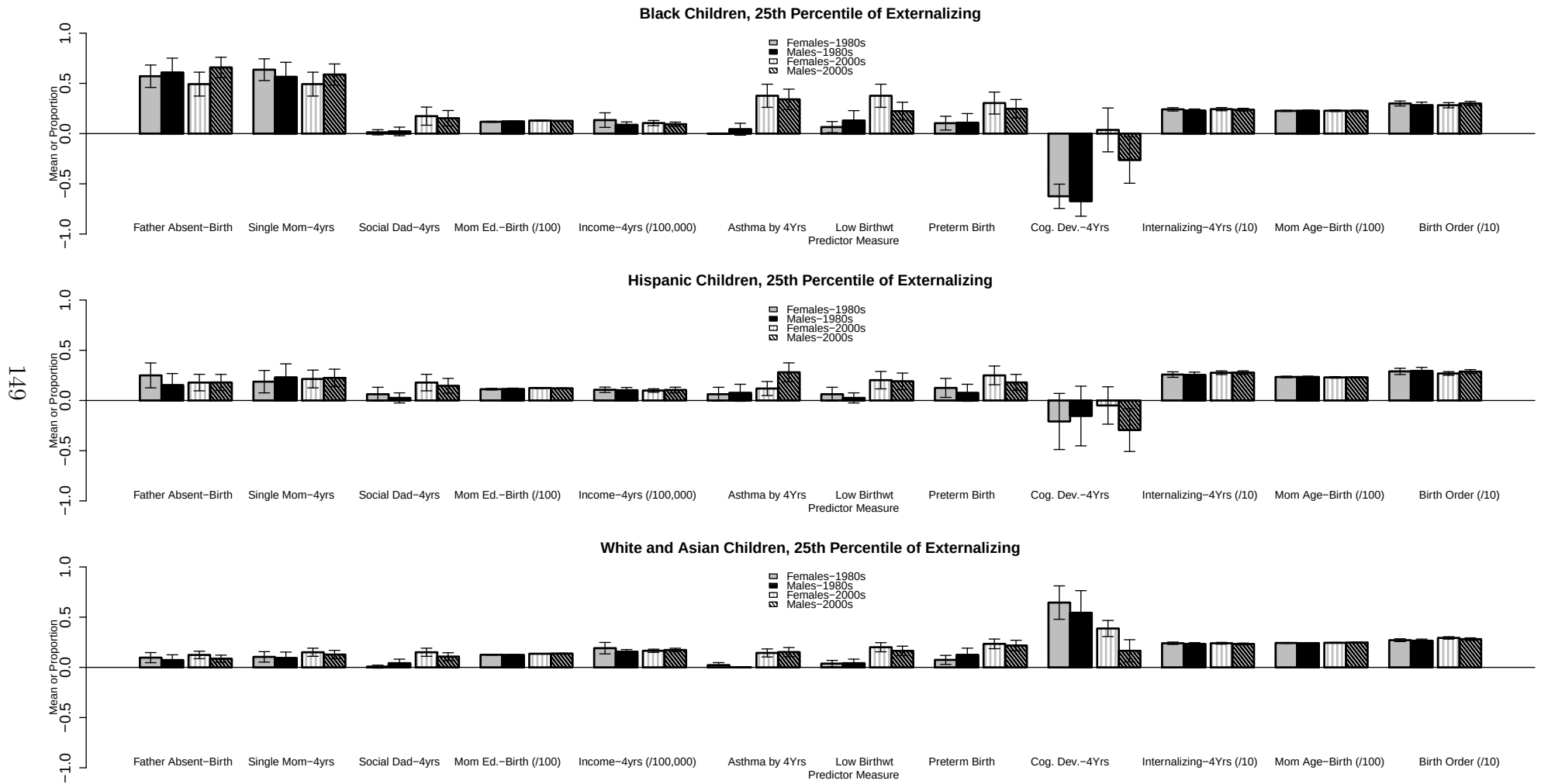
Despite some differences by gender and cohort in family structure and early childhood health across the rest of the behavioral distribution (i.e., the 50th, 75th, and 90th percentiles of externalizing problems), as shown in Figures B.9-B.11, the general pattern is toward higher prevalence of non-traditional family structures among the children with higher levels of behavior problems, as well as lower levels of cognitive development. There is some evidence of a growing gender gap amid higher overall levels of non-traditional family structures and early health problems, but the gaps evident in the later time period are rarely substantial. The most prominent case of gender difference in the covariates of interest occurs in the area of cognitive development, with girls exhibiting higher levels of receptive vocabulary across race groups, and a growing female advantage across the two time periods. The female advantage in cognitive development in the later period is largest among the most behaviorally disadvantaged children.

[FIGURE B.9 ABOUT HERE]

[FIGURE B.10 ABOUT HERE]

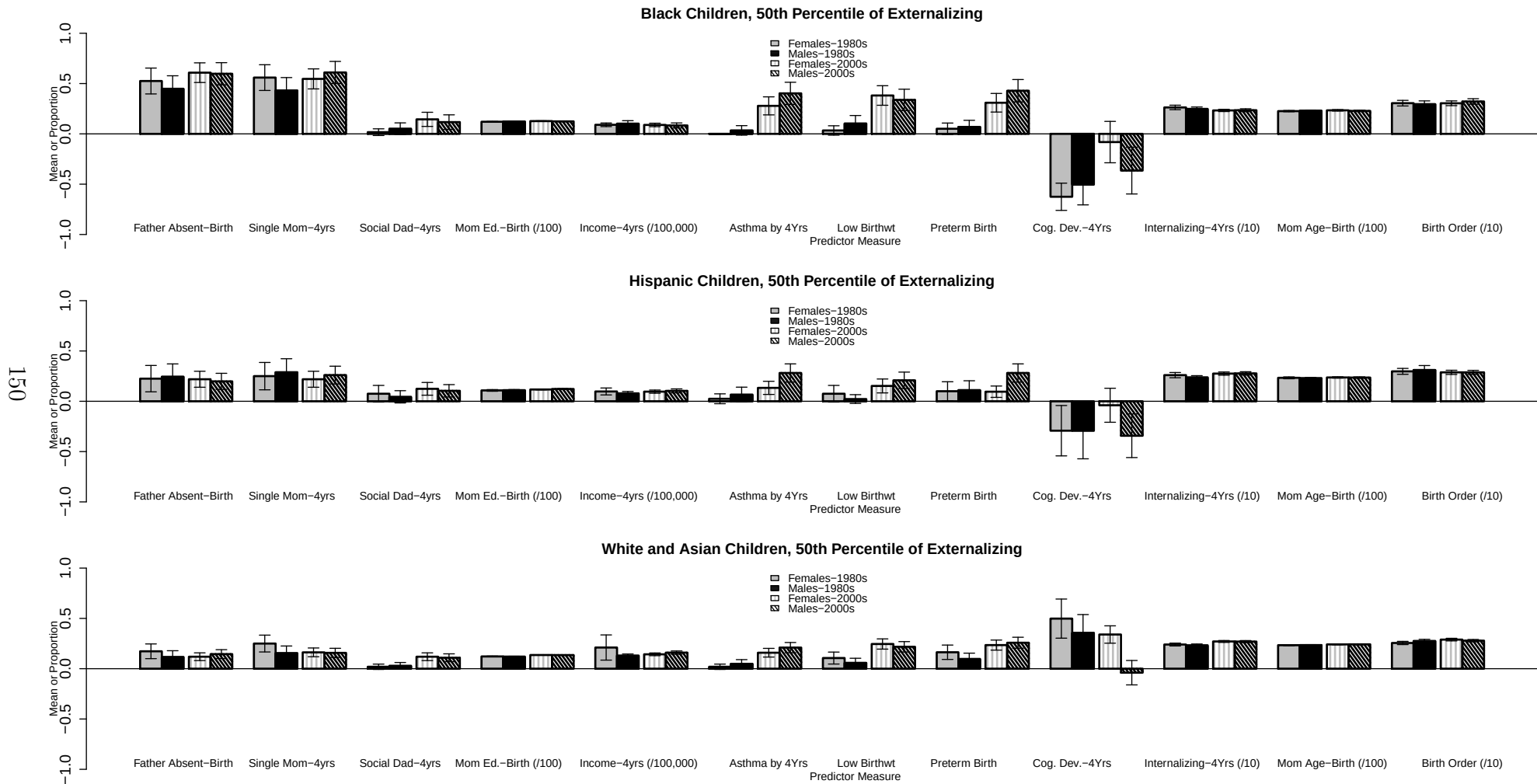
[FIGURE B.11 ABOUT HERE]

Figure B.8: Means and 95% Confidence Intervals of Predictor Variables, by Race, Gender, and Time Period, at Each Sub-Group’s Respective 25th Percentile of Externalizing Score



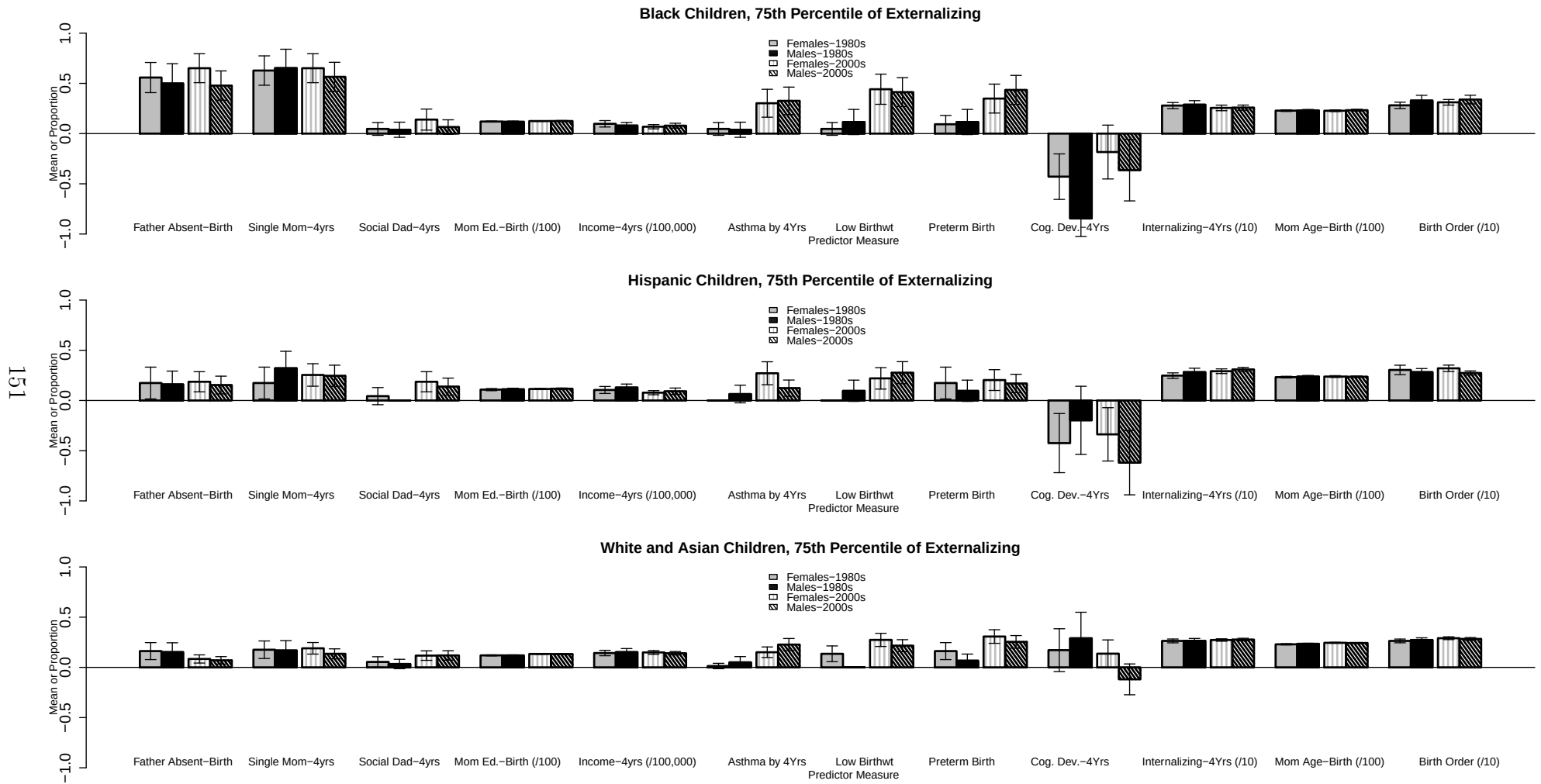
Note: Variables shown here are rescaled for display purposes only. Variables in the analyses are not rescaled in the models themselves unless noted in a given table or figure.

Figure B.9: Means and 95% Confidence Intervals of Predictor Variables, by Race, Gender, and Time Period, at Each Sub-Group's Respective 50th Percentile of Externalizing Score



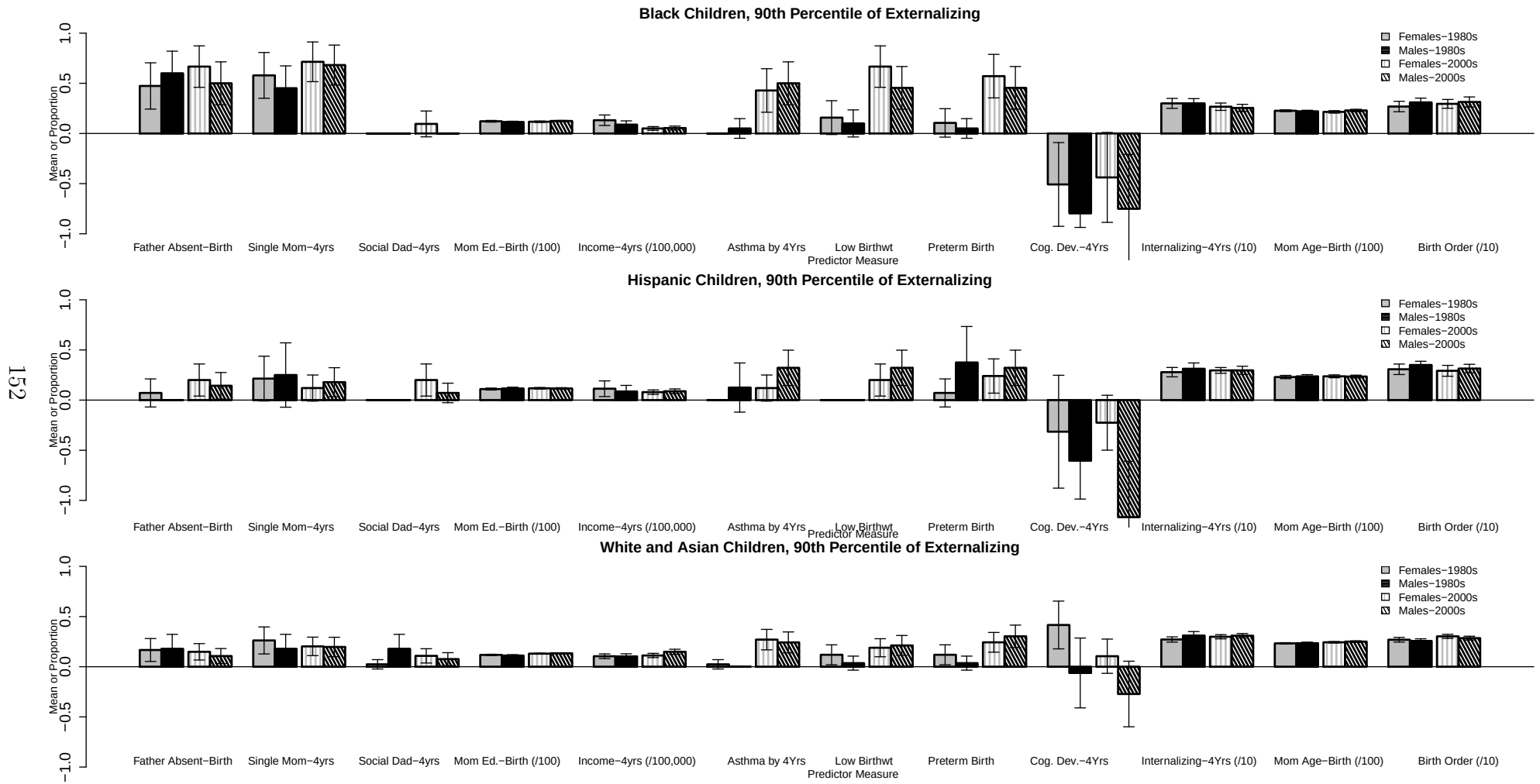
Note: Variables shown here are rescaled for display purposes only. Variables in the analyses are not rescaled in the models themselves unless noted in a given table or figure.

Figure B.10: Means and 95% Confidence Intervals of Predictor Variables, by Race, Gender, and Time Period, at Each Sub-Group's Respective 75th Percentile of Externalizing Score



Note: Variables shown here are rescaled for display purposes only. Variables in the analyses are not rescaled in the models themselves unless noted in a given table or figure.

Figure B.11: Means and 95% Confidence Intervals of Predictor Variables, by Race, Gender, and Time Period, at Each Sub-Group's Respective 90th Percentile of Externalizing Score



Note: Variables shown here are rescaled for display purposes only. Variables in the analyses are not rescaled in the models themselves unless noted in a given table or figure.

B.4 Mechanisms of the Growth in the Gender Gap in Externalizing Among Hispanics

Hispanic children whose externalizing problems score locates them at the 10th percentile of externalizing problems also experienced a one point (.45 standard deviation) growth in the gender gap in externalizing problems between the 1980s and 2000s cohorts, as shown in model (1) of Table B.5 and in the first bar of the top panel in Figure B.12. Model (2) shows that owing to the rise in Hispanic males' level of internalizing between the 1980s and 2000s, comparing Hispanic females and males with the same level of internalizing accounts for 50% of the growth of the gender gap in the location of the 10th percentile of externalizing problems.¹ Model (3) indicates that minor gender differences in socioeconomic resources account for an additional 11% of the growth in the gap in externalizing problems, but this is likely due to the correlation between resources and family structure, as shown in model (5). Model (5) reveals that accounting for gender differences in family structure at age 4 attenuates the gap by roughly 67%. This is because Hispanic females in the later period are more likely than Hispanic males to be raised in households with a social father at age four, and social fathers are associated with lower levels of externalizing problems. Model (7) indicates gender differences in exposure to early health problems do not account for any of the growth. Among Hispanics, models (4) and (8) indicate that adjusting for gender differences in response to family socioeconomic resources and early health problems account for an additional 3% and 17% of the growth of the gap in the location of the 10th percentile of externalizing problems (relative to models (3) and (7), respectively). Model (11) reveals that comparing Hispanic females and males with the same economic and cultural resources, family structure, and early health experiences accounts for roughly 73% of the growth of the gender gap in the location of the 10th percentile of externalizing problems.

[TABLE B.5 ABOUT HERE]

¹Appendix tables displaying models that include a control for cognitive development indicate that Hispanic females' higher level of receptive vocabulary in the 2000s vs. the 1980s combined with the rise in males' level of internalizing between the 1980s and 2000s accounts for almost 100% of the growth in the gender gap in externalizing problems.

[FIGURE B.12 ABOUT HERE]

Among Hispanic females and males, the entirety of the one point growth of the gap in the location of the 25th percentile of externalizing problems is accounted for by compositional differences by gender in internalizing, birth order, and year of birth. Levels of internalizing problems among Hispanic males whose externalizing problems score places them at the 25th percentile of externalizing problems rose slightly between the 1980s and 2000s, reaching parity with females and thus offsetting the male advantage in internalizing that existed in the 1980s. Models (3)-(5) of Table B.6 (shown also in the third through fifth bars of the second panel in Figure B.12) do not account for any of the additional gap in the location of the 25th percentile of externalizing problems, but models (6) and (8) again point to the importance of gender differences in the effects of family structure and early childhood health on externalizing problems. Hispanic males externalize more than Hispanic females in the later period in response to the presence of a single mother or a social father at age 4 (model 6). Pre-term birth status is also more positively associated with the location of the 25th percentile of externalizing problems among Hispanic males than among Hispanic females (model 8). When adjusting for differential response to single mother households or pre-term birth status among Hispanic females and males, the gender gap in the location of the 25th percentile of externalizing problems distributions externalizing problems actually reverses, with females exhibiting up to 0.5 points higher externalizing than males on average.

[TABLE B.6 ABOUT HERE]

Among Hispanic children, roughly 62% of the one point growth of the gender gap in the location of the 50th percentiles of externalizing problems shown in model (1) of Table B.7 (and in the third panel of Figure B.12) is accounted for by the rise in Hispanic males' level of internalizing problems between the 1980s and 2000s (model 2). Of the remaining 38% of the growth of the gap, gender differences in exposure to and the effects of socioeconomic resources and family structure account for an additional 7 to 22 percentage points of the growth (models 3-6). However, among Hispanic females and males whose externalizing

problems scores locate them at the median of their respective behavioral distributions, gender differences in exposure to and in the effects of early childhood health account for an additional 28 to 33 percentage points (for a total of up to 95%) of the growth (models 7-8). This is because more Hispanic males than females at the median level of externalizing problems are born pre-term and are diagnosed with asthma at much higher rates, as shown in Figure B.9. The joint effects of family socioeconomic resources, family structure, and health shown in models 9-12 do not account for any additional unexplained component of the growth.

[TABLE B.7 ABOUT HERE]

Table B.5: Potential Family and Health Mediators of the Gender Gap in the Location of the 10th Percentile of Externalizing Problems among Hispanic Children Ages 4-5

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
VARIABLES	NC:	C:	C + SES (I):	C + SES (II):	C + S (I):	C + S (II):	C + H (I):	C + H (II):	C + SES + S (I):	C + SES + S (II):	C + SES + S + H (I):	C + SES + S + H (II):
2001 Birth Cohort	-0.000 (0.272)	0.000 (0.240)	0.122 (0.207)	0.126 (0.197)	-0.000 (0.284)	0.000 (0.321)	0.000 (0.232)	-0.000 (0.270)	0.169 (0.219)	0.000 (0.244)	0.165 (0.204)	0.031 (0.252)
Male	-0.000 (0.100)	0.000 (0.150)	0.091 (0.131)	0.076 (0.138)	0.000 (0.149)	0.000 (0.106)	0.000 (0.148)	-0.000 (0.164)	0.054 (0.130)	0.006 (0.126)	0.069 (0.141)	0.062 (0.147)
2001 Birth Cohort * Male	1.000* (0.496)	0.500 (0.416)	0.390 (0.311)	0.359 (0.270)	0.333 (0.363)	0.500 (0.382)	0.500 (0.362)	0.333 (0.400)	0.324 (0.267)	0.399 (0.294)	0.274 (0.255)	0.339 (0.289)
<i>Socio-Economic Status (SES):</i>												
Mother's Years of Schooling at Birth ¹			-0.041 (0.028)	-0.001 (0.030)					-0.029 (0.027)	0.006 (0.034)	-0.019 (0.027)	0.002 (0.050)
Per Capita Household Income at Age 4 (in \$1,000s, 2011 dollars) ¹			-0.009+ (0.005)	-0.009 (0.007)					-0.010* (0.005)	-0.008 (0.008)	-0.010* (0.004)	-0.015+ (0.009)
Mother's School * Male				-0.021 (0.050)						-0.053 (0.053)		-0.052 (0.070)
Household Income * Male				0.006 (0.012)						-0.001 (0.013)		0.007 (0.016)
Mother's School * 2001 Cohort				-0.078 (0.063)						-0.092 (0.068)		-0.099 (0.076)
Household Income * 2001 Cohort				-0.000 (0.013)						-0.000 (0.012)		0.007 (0.014)
Mother's School * Male * 2001 Cohort				0.061 (0.107)						0.115 (0.108)		0.119 (0.112)
Household Income * Male * 2001 Cohort				-0.011 (0.019)						-0.008 (0.018)		-0.016 (0.020)
<i>Family Structure:</i>												
Father Absent at Birth					-0.000 (0.172)	-0.250 (0.361)			-0.041 (0.174)	-0.339 (0.307)	-0.015 (0.194)	-0.330 (0.310)
Single Mother at Age 4					0.000 (0.178)	0.000 (0.391)			0.110 (0.173)	0.252 (0.400)	0.154 (0.163)	0.413 (0.392)
Social Father at Age 4					-0.333 (0.300)	0.250 (0.726)			-0.216 (0.257)	0.375 (0.540)	-0.273 (0.254)	0.335 (0.614)
Two Biological Parents at Age 4 (=reference)					ref	ref			ref	ref	ref	ref
Father Absent at Birth * Male						0.250 (0.536)				0.354 (0.503)		0.851 (0.520)
Single Mother at Age 4 * Male						-0.000 (0.555)				-0.380 (0.544)		-0.424 (0.596)
Social Father at Age 4 * Male						-0.750 (1.218)				-1.047 (1.157)		-1.009 (1.229)
Father Absent at Birth * 2001 Birth Cohort						0.500 (0.546)				0.466 (0.494)		0.248 (0.499)
Single Mother at Age 4 * 2001 Birth Cohort						-0.000 (0.537)				-0.015 (0.460)		-0.322 (0.430)
Social Father at Age 4 * 2001 Birth Cohort						-0.500 (0.776)				-0.562 (0.595)		-0.515 (0.671)
Father Absent at Birth * Male * 2001 Birth Cohort						-0.250 (0.817)				-0.359 (0.752)		-0.588 (0.764)
Single Mother at Age 4 * Male * 2001 Birth Cohort						0.250 (0.836)				0.308 (0.690)		0.529 (0.690)
Social Father at Age 4 * Male * 2001 Birth Cohort						0.250 (1.362)				0.539 (1.262)		0.464 (1.409)
<i>Early Childhood Health:</i>												
Low Birth Weight (<5.5 pounds, 2,500 g)							0.000 (0.243)	-0.333 (0.553)			-0.195 (0.196)	-0.009 (0.487)
Pre-Term Birth (<37 weeks gestation)							0.000 (0.314)	-0.333 (0.509)			0.202 (0.252)	-0.812 (0.552)
Asthma Diagnosis by Age 4 or 5							0.000 (0.206)	0.333 (0.435)			-0.045 (0.203)	0.450 (0.350)
Low Birth Weight * Male								-0.333 (0.544)				-0.615+ (0.322)
Pre-Term Birth * Male								1.000+ (0.551)				0.661 (0.434)
Asthma Diagnosis * Male								-0.333 (0.473)				-0.562 (0.385)
Low Birth Weight * 2001 Cohort								0.667 (0.560)				0.389 (0.501)
Pre-Term Birth * 2001 Cohort								0.333 (0.611)				0.932 (0.610)
Asthma Diagnosis * 2001 Cohort								-0.333 (0.449)				-0.353 (0.380)
<i>Controls:</i>												
Internalizing ¹		0.250 (0.171)	0.313** (0.111)	0.268** (0.093)	0.333* (0.147)	0.250 (0.167)	0.250+ (0.145)	0.333* (0.158)	0.323*** (0.086)	0.247* (0.102)	0.323*** (0.080)	0.246** (0.084)
Mother's Age at Birth ¹		-0.000 (0.014)	0.023 (0.022)	0.021 (0.022)	-0.000 (0.018)	-0.000 (0.014)	-0.000 (0.014)	-0.000 (0.012)	0.023 (0.024)	0.024 (0.023)	0.020 (0.024)	0.024 (0.022)
Birth Order		0.000 (0.034)	-0.060 (0.059)	-0.034 (0.069)	0.000 (0.048)	0.000 (0.037)	0.000 (0.049)	0.000 (0.039)	-0.037 (0.066)	-0.038 (0.065)	-0.017 (0.066)	-0.039 (0.070)
Child Born 1983		ref	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref
Child Born 1984		-0.000 (0.291)	-0.060 (0.226)	-0.027 (0.231)	-0.000 (0.309)	-0.000 (0.290)	-0.000 (0.254)	-0.000 (0.351)	-0.013 (0.227)	-0.100 (0.251)	-0.023 (0.223)	-0.075 (0.286)
Child Born 1985		-0.000 (0.245)	0.025 (0.233)	-0.038 (0.220)	-0.000 (0.274)	-0.000 (0.275)	-0.000 (0.232)	-0.000 (0.266)	0.010 (0.232)	-0.101 (0.247)	-0.027 (0.227)	-0.124 (0.262)
Child Born 1986		0.000 (0.263)	-0.116 (0.220)	-0.108 (0.218)	-0.000 (0.285)	0.000 (0.288)	0.000 (0.242)	-0.000 (0.284)	-0.091 (0.208)	-0.245 (0.239)	-0.081 (0.208)	-0.248 (0.256)
Constant	6.000 (0.000)	6.165*** (0.245)	6.241*** (0.193)	6.211*** (0.210)	6.220*** (0.252)	6.165*** (0.270)	6.165*** (0.227)	6.220*** (0.257)	6.212*** (0.198)	6.331*** (0.227)	6.193*** (0.196)	6.281*** (0.260)
Observations	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450

¹Specified variables (including within interactions) are centered at the overall sample mean.

Sample size are rounded to the nearest 50 in compliance with ECLS-B restricted-use data terms. Standard errors in parentheses.

*** p<0.001, ** p<0.01, * p<0.05, + p<0.10. Model estimates are based on multiple imputation of 20 datasets. NC = No Controls, C = Controls, SES = Family

Socioeconomic and Cultural Resources, S = Family Structure, H = Early Childhood Health. Model (I) refers to main effects models, Model (II) refers to models with interactions by gender, time period, and gender * time period.

Table B.6: Potential Family and Health Mediators of the Gender Gap in the Location of the 25th Percentile of Externalizing Problems among Hispanic Children Ages 4-5

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
VARIABLES	NC:	C:	C + SES (I):	C + SES (II):	C + S (I):	C + S (II):	C + H (I):	C + H (II):	C + SES + S (I):	C + SES + S (II):	C + SES + S + H (I):	C + SES + S + H (II):
2001 Birth Cohort	-0.000 (0.313)	0.250 (0.293)	0.201 (0.258)	0.159 (0.285)	0.159 (0.265)	0.320 (0.313)	0.156 (0.284)	0.500+ (0.291)	0.227 (0.257)	0.088 (0.322)	0.218 (0.270)	0.069 (0.323)
Male	-0.000 (0.284)	0.375 (0.300)	0.271 (0.216)	0.475+ (0.250)	0.365 (0.250)	0.500+ (0.301)	0.422 (0.264)	0.500* (0.255)	0.285 (0.219)	0.390 (0.292)	0.330 (0.220)	0.364 (0.290)
2001 Birth Cohort * Male	1.000** (0.344)	-0.000 (0.467)	0.215 (0.283)	0.040 (0.311)	0.127 (0.386)	-0.180 (0.432)	-0.062 (0.380)	-0.500 (0.363)	0.096 (0.273)	0.060 (0.368)	0.103 (0.270)	-0.006 (0.329)
<i>Socio-Economic Status (SES):</i>												
Mother's Years of Schooling at Birth ¹			-0.077* (0.031)	-0.074 (0.059)					-0.084** (0.032)	-0.061 (0.057)	-0.090** (0.029)	-0.075 (0.055)
Per Capita Household Income at Age 4 (in \$1,000s, 2011 dollars) ²			-0.023*** (0.007)	-0.021+ (0.012)					-0.022*** (0.006)	-0.014 (0.010)	-0.022** (0.007)	-0.015 (0.011)
Mother's School * Male				0.058 (0.093)						0.014 (0.095)		0.044 (0.092)
Household Income * Male				0.011 (0.027)						0.009 (0.025)		0.003 (0.025)
Mother's School * 2001 Cohort				-0.046 (0.074)						-0.044 (0.074)		-0.038 (0.072)
Household Income * 2001 Cohort				0.002 (0.018)						-0.006 (0.017)		-0.010 (0.018)
Mother's School * Male * 2001 Cohort				-0.034 (0.121)						-0.004 (0.125)		-0.007 (0.125)
Household Income * Male * 2001 Cohort				-0.023 (0.030)						-0.017 (0.032)		-0.005 (0.033)
<i>Family Structure:</i>												
Father Absent at Birth					0.111 (0.193)	-0.200 (0.363)			-0.019 (0.176)	-0.540 (0.365)	0.081 (0.187)	-0.548 (0.336)
Single Mother at Age 4					0.206 (0.192)	0.360 (0.374)			0.384* (0.157)	0.597+ (0.347)	0.271 (0.190)	0.539 (0.328)
Social Father at Age 4					-0.238 (0.263)	1.020 (0.657)			-0.048 (0.199)	1.034 (0.750)	-0.113 (0.229)	0.952 (0.774)
Two Biological Parents at Age 4 (=reference)					ref	ref			ref	ref	ref	ref
Father Absent at Birth * Male						0.600 (0.604)				0.798 (0.585)		0.817 (0.553)
Single Mother at Age 4 * Male						-0.420 (0.644)				-0.269 (0.546)		-0.222 (0.552)
Social Father at Age 4 * Male						-1.460 (1.383)				-0.998 (1.482)		-1.033 (1.469)
Father Absent at Birth * 2001 Birth Cohort						0.440 (0.490)				0.643 (0.475)		0.633 (0.454)
Single Mother at Age 4 * 2001 Birth Cohort						-0.400 (0.494)				-0.364 (0.459)		-0.400 (0.476)
Social Father at Age 4 * 2001 Birth Cohort						-1.460* (0.738)				-1.351+ (0.801)		-1.264 (0.844)
Father Absent at Birth * Male * 2001 Birth Cohort						-0.720 (0.781)				-1.095 (0.741)		-0.845 (0.767)
Single Mother at Age 4 * Male * 2001 Birth Cohort						0.740 (0.849)				0.461 (0.688)		0.389 (0.737)
Social Father at Age 4 * Male * 2001 Birth Cohort						1.960 (1.527)				1.401 (1.549)		1.293 (1.570)
<i>Early Childhood Health:</i>												
Low Birth Weight (<5.5 pounds, 2,500 g)							0.063 (0.223)	-0.000 (0.615)			-0.134 (0.237)	-0.365 (0.641)
Pre-Term Birth (<37 weeks gestation)							0.281 (0.253)	-0.500 (0.563)			0.161 (0.220)	-0.251 (0.604)
Asthma Diagnosis by Age 4 or 5							0.063 (0.178)	-0.000 (0.356)			0.154 (0.164)	-0.221 (0.324)
Low Birth Weight * Male								-0.500 (0.480)				-0.454 (0.487)
Pre-Term Birth * Male								1.000* (0.423)				0.366 (0.522)
Asthma Diagnosis * Male								-0.000 (0.369)				0.388 (0.422)
Low Birth Weight * 2001 Cohort								0.500 (0.572)				0.710 (0.650)
Pre-Term Birth * 2001 Cohort								0.500 (0.602)				0.379 (0.643)
Asthma Diagnosis * 2001 Cohort								0.000 (0.412)				0.081 (0.416)
<i>Controls:</i>												
Internalizing ³		0.375* (0.165)	0.363*** (0.083)	0.340*** (0.085)	0.349** (0.134)	0.420** (0.128)	0.406** (0.127)	0.500*** (0.109)	0.352*** (0.086)	0.389*** (0.086)	0.359*** (0.082)	0.419*** (0.085)
Mother's Age at Birth ¹		-0.000 (0.020)	0.047* (0.022)	0.043* (0.022)	0.016 (0.023)	0.020 (0.023)	0.016 (0.021)	0.000 (0.019)	0.056* (0.023)	0.040+ (0.024)	0.057* (0.023)	0.042 (0.026)
Birth Order		0.125 (0.080)	-0.017 (0.071)	-0.006 (0.070)	0.127+ (0.070)	0.120 (0.078)	0.125 (0.077)	0.000 (0.076)	-0.014 (0.068)	0.004 (0.076)	-0.031 (0.070)	0.004 (0.074)
Child Born 1983		ref	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref
Child Born 1984		-0.125 (0.353)	-0.262 (0.353)	-0.200 (0.325)	-0.159 (0.315)	-0.120 (0.337)	-0.125 (0.325)	-0.000 (0.303)	-0.289 (0.330)	-0.238 (0.333)	-0.276 (0.336)	-0.135 (0.316)
Child Born 1985		-0.375 (0.360)	-0.276 (0.295)	-0.332 (0.307)	-0.460 (0.290)	-0.560+ (0.301)	-0.453 (0.320)	-0.000 (0.277)	-0.238 (0.277)	-0.443 (0.291)	-0.241 (0.280)	-0.371 (0.282)
Child Born 1986		-0.625+ (0.369)	-0.519 (0.316)	-0.562+ (0.301)	-0.698* (0.307)	-0.540 (0.338)	-0.625+ (0.323)	-0.500 (0.326)	-0.502+ (0.300)	-0.693+ (0.355)	-0.475 (0.298)	-0.558 (0.340)
Constant		7.000*** (0.272)	6.748*** (0.312)	6.968*** (0.267)	6.815*** (0.300)	6.753*** (0.259)	6.796*** (0.304)	6.831*** (0.271)	6.899*** (0.261)	6.961*** (0.317)	6.870*** (0.268)	6.962*** (0.330)
Observations		1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450

¹Specified variables (including within interactions) are centered at the overall sample mean.

Sample size are rounded to the nearest 50 in compliance with ECLS-B restricted-use data terms. Standard errors in parentheses.

*** p<0.001, ** p<0.01, * p<0.05, + p<0.10. Model estimates are based on multiple imputation of 20 datasets. NC = No Controls, C = Controls, SES = Family Socioeconomic and Cultural Resources, S = Family Structure, H = Early Childhood Health. Model (I) refers to main effects models, Model (II) refers to models with interactions by gender, time period, and gender * time period.

Table B.7: Potential Family and Health Mediators of the Gender Gap in the Location of the 50th Percentile of Externalizing Problems among Hispanic Children Ages 4-5

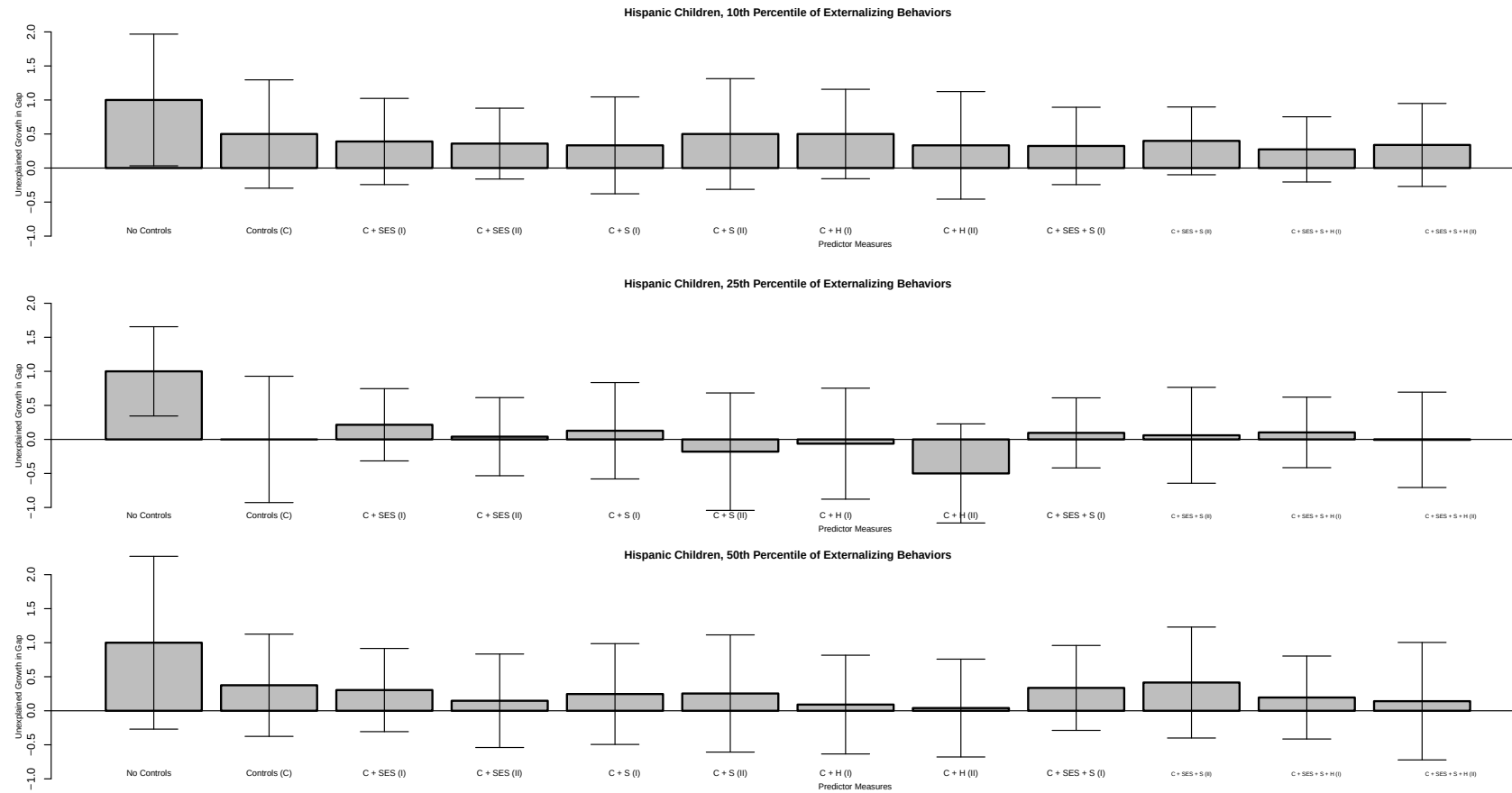
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
VARIABLES	NC:	C:	C + SES (I):	C + SES (II):	C + S (I):	C + S (II):	C + H (I):	C + H (II):	C + SES + S (I):	C + SES + S (II):	C + SES + S + H (I):	C + SES + S + H (II):
2001 Birth Cohort	0.000 (0.538)	0.375 (0.324)	0.207 (0.289)	0.275 (0.322)	0.246 (0.307)	0.162 (0.348)	0.424 (0.311)	0.160 (0.362)	0.263 (0.318)	0.009 (0.421)	0.340 (0.297)	-0.075 (0.411)
Male	0.000 (0.390)	0.375 (0.315)	0.526+ (0.276)	0.643* (0.296)	0.426 (0.301)	0.423 (0.335)	0.545+ (0.280)	0.600* (0.295)	0.496+ (0.261)	0.446 (0.427)	0.561* (0.276)	0.568 (0.395)
2001 Birth Cohort * Male	1.000 (0.662)	0.375 (0.414)	0.306 (0.314)	0.147 (0.342)	0.246 (0.375)	0.238 (0.407)	0.091 (0.347)	0.040 (0.341)	0.336 (0.305)	0.415 (0.490)	0.195 (0.329)	0.141 (0.469)
<i>Socio-Economic Status (SES):</i>												
Mother's Years of Schooling at Birth ¹			-0.084* (0.038)	-0.049 (0.206)					-0.089* (0.038)	-0.034 (0.078)	-0.090* (0.039)	-0.057 (0.084)
Per Capita Household Income at Age 4 (in \$1,000s, 2011 dollars) ¹			-0.020* (0.009)	-0.019 (0.015)					-0.024** (0.009)	-0.023 (0.017)	-0.022* (0.009)	-0.025 (0.017)
Mother's School * Male				0.028 (0.138)						0.007 (0.124)		0.041 (0.125)
Household Income * Male				0.040 (0.295)						0.043 (0.032)		0.033 (0.034)
Mother's School * 2001 Cohort				-0.028 (0.168)						-0.040 (0.102)		-0.029 (0.108)
Household Income * 2001 Cohort				-0.010 (0.276)						-0.011 (0.026)		-0.004 (0.025)
Mother's School * Male * 2001 Cohort				-0.063 (0.145)						-0.036 (0.155)		-0.137 (0.158)
Household Income * Male * 2001 Cohort				-0.039 (0.038)						-0.035 (0.042)		-0.028 (0.043)
<i>Family Structure:</i>												
Father Absent at Birth					-0.049 (0.178)	-0.585 (0.395)			-0.171 (0.195)	-0.770+ (0.429)	-0.064 (0.202)	-0.776+ (0.450)
Single Mother at Age 4					0.131 (0.201)	0.208 (0.430)			0.328+ (0.194)	0.290 (0.511)	0.226 (0.212)	0.361 (0.423)
Social Father at Age 4					-0.049 (0.255)	0.785 (0.703)			-0.008 (0.254)	0.920 (0.823)	-0.060 (0.270)	0.892 (0.722)
Two Biological Parents at Age 4 (=reference)					ref	ref			ref	ref	ref	ref
Father Absent at Birth * Male						0.377 (0.646)				0.777 (0.592)		0.780 (0.642)
Single Mother at Age 4 * Male						-0.215 (0.608)				-0.129 (0.666)		-0.328 (0.630)
Social Father at Age 4 * Male						-1.500 (1.260)				-1.283 (1.381)		-1.495 (1.330)
Father Absent at Birth * 2001 Birth Cohort						0.608 (0.531)				0.743 (0.571)		0.793 (0.577)
Single Mother at Age 4 * 2001 Birth Cohort						-0.169 (0.533)				0.072 (0.686)		-0.160 (0.524)
Social Father at Age 4 * 2001 Birth Cohort						-0.900 (0.790)				-0.985 (0.956)		-0.958 (0.840)
Father Absent at Birth * Male * 2001 Birth Cohort						-0.277 (0.840)				-0.807 (0.827)		-0.569 (0.848)
Single Mother at Age 4 * Male * 2001 Birth Cohort						0.315 (0.762)				0.025 (0.880)		0.270 (0.833)
Social Father at Age 4 * Male * 2001 Birth Cohort						1.500 (1.407)				1.135 (1.479)		1.205 (1.483)
<i>Early Childhood Health:</i>												
Low Birth Weight (<5.5 pounds, 2,500 g)							-0.061 (0.180)	-0.020 (0.674)			-0.034 (0.175)	0.186 (0.691)
Pre-Term Birth (<37 weeks gestation)							0.318 (0.277)	0.540 (0.680)			0.284 (0.246)	0.523 (0.767)
Asthma Diagnosis by Age 4 or 5							0.227 (0.200)	-0.220 (0.399)			0.263 (0.209)	-0.395 (0.472)
Low Birth Weight * Male								-0.340 (0.417)				-0.466 (0.430)
Pre-Term Birth * Male								0.220 (0.519)				0.244 (0.495)
Asthma Diagnosis * Male								0.140 (0.367)				0.202 (0.374)
Low Birth Weight * 2001 Cohort								0.140 (0.620)				0.096 (0.642)
Pre-Term Birth * 2001 Cohort								-0.380 (0.682)				-0.316 (0.736)
Asthma Diagnosis * 2001 Cohort								0.520 (0.445)				0.660 (0.488)
<i>Controls:</i>												
Internalizing ¹		0.500*** (0.080)	0.470*** (0.075)	0.494** (0.158)	0.508*** (0.082)	0.508*** (0.086)	0.500*** (0.077)	0.500*** (0.089)	0.486*** (0.084)	0.488*** (0.096)	0.472*** (0.079)	0.477*** (0.084)
Mother's Age at Birth ¹		0.000 (0.023)	0.040 (0.025)	0.036 (0.044)	0.016 (0.026)	0.008 (0.026)	0.015 (0.024)	0.020 (0.027)	0.045+ (0.026)	0.042 (0.032)	0.045+ (0.027)	0.042 (0.026)
Birth Order		0.125 (0.099)	0.030 (0.081)	0.063 (0.081)	0.131 (0.092)	0.115 (0.094)	0.121 (0.083)	0.120 (0.080)	0.019 (0.074)	0.050 (0.080)	0.029 (0.079)	0.029 (0.075)
Child Born 1983		ref	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref
Child Born 1984		-0.000 (0.358)	-0.341 (0.346)	-0.139 (0.336)	-0.230 (0.379)	-0.215 (0.355)	-0.061 (0.350)	-0.320 (0.376)	-0.342 (0.363)	-0.149 (0.330)	-0.303 (0.339)	-0.268 (0.358)
Child Born 1985		-0.250 (0.386)	-0.406 (0.345)	-0.262 (0.332)	-0.443 (0.373)	-0.477 (0.384)	-0.273 (0.367)	-0.500 (0.389)	-0.335 (0.378)	-0.388 (0.384)	-0.294 (0.360)	-0.407 (0.373)
Child Born 1986		-0.625 (0.447)	-0.517 (0.405)	-0.325 (0.421)	-0.689 (0.426)	-0.762+ (0.426)	-0.576 (0.440)	-0.680+ (0.407)	-0.551 (0.427)	-0.506 (0.462)	-0.527 (0.412)	-0.479 (0.457)
Constant	8.000*** (0.201)	7.831*** (0.355)	7.951*** (0.282)	7.829*** (0.323)	7.922*** (0.337)	8.042*** (0.341)	7.721*** (0.318)	7.966*** (0.360)	7.869*** (0.313)	8.025*** (0.361)	7.745*** (0.297)	8.077*** (0.377)
Observations	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450

¹Specified variables (including within interactions) are centered at the overall sample mean.

Sample size are rounded to the nearest 50 in compliance with ECLS-B restricted-use data terms. Standard errors in parentheses.

*** p<0.001, ** p<0.01, * p<0.05, + p<0.10. Model estimates are based on multiple imputation of 20 datasets. NC = No Controls, C = Controls, SES = Family Socioeconomic and Cultural Resources, S = Family Structure, H = Early Childhood Health. Model (I) refers to main effects models, Model (II) refers to models with interactions by gender, time period, and gender * time period.

Figure B.12: Potential Family and Health Mediators of the Growth of the Gender Gap in the Location of the 10th, 25th, and 50th Percentiles of Externalizing Behavior Problems at Ages 4-5 among Hispanics



Notes: See the Appendix for the full table of results. Model labels refer to: Controls (C): Internalizing problems (centered), mother's age at birth (centered), birth order, dummies for year of birth (1984-1986); SES (I): mother's years of schooling at birth (centered) and per capita household income at child age 4, in \$1,000s, adjusted to 2011 dollars (centered); SES (II): mother's years of schooling and per capita household income separately interacted with each of the following: male, time period (2001 cohort indicator variable), and male*time period; Family Structure (S) (I): father absent at birth dummy and dummies for single mother at age 4 or social father at age 4 (two biological parents at age 4 is the reference); S (II): interactions between each of the S (I) variables and male, time period, and male*time period; Early Childhood Health (H) (I): a dummy for low birth weight, a dummy for pre-term, and a dummy for asthma diagnosis by age 4 or 5; H (II): interactions between each H (I) variable and male, time period, and male*time period.

B.5 Potential Mechanisms of the Growth in the Gender Gap in Externalizing, Controlling for Gender Differences in Cognitive Development

Because of the need for a measure of cognitive development assessed prior to the measurement of children's behavior at ages 4 or 5, the Peabody Picture Vocabulary Test-Revised Edition (PPVT-R) at ages 2.5-4 years and the receptive vocabulary mental scale from the Bayley Short Form-Revised Edition (BSF-R) at ages 3-4 years are used. The PPVT-R and the Mental Subscale for Receptive Vocabulary from the BSF-R are comparable measures of cognitive development (Pan et al., 2004). Both tap into receptive vocabulary, measuring cognitive development prior to the reading and schooling ages by measuring children's verbal responsiveness to pictures of common objects (Pan et al., 2004). Because cognitive development occurs rapidly at such young ages, the present measure is age-standardized.²

Models controlling for receptive vocabulary are displayed in Appendix Tables B.8-B.11. These models show that anywhere between 50% and 100% of the growth in the gender gap in externalizing problems, where it appears, is accounted for by gender differences in receptive vocabulary. These results indicate that there is high correlation between receptive vocabulary and externalizing behavior problems in these samples.

²For example, PPVT-R is standardized within-age so that the slight upward trend in scores by age is adjusted relative to the scores of other children of the same age at test administration.

Table B.8: Potential Family and Health Mediators of the Gender Gap in the Location of the 10th Percentile of Externalizing Problems among Black Children Ages 4-5, Controlling for Cognitive Development

VARIABLES	(1) NC:	(2) C:	(3) C + SES (I):	(4) C + SES (II):	(5) C + S (I):	(6) C + S (II):	(7) C + H (I):	(8) C + H (II):	(9) C + SES + S (I):	(10) C + SES + S (II):	(11) C + SES + S + H (I):	(12) C + SES + S + H (II):
2001 Birth Cohort	0.000 (0.000)	-0.000 (0.233)	-0.000 (0.225)	-0.000 (0.168)	-0.000 (0.221)	-0.000 (0.247)	-0.000 (0.282)	-0.000 (0.266)	-0.000 (0.201)	-0.010 (26,109.052)	-0.000 (0.212)	-0.199 (0.197)
Male	-0.000 (0.153)	-0.000 (0.098)	-0.000 (0.148)	-0.000 (0.161)	0.000 (0.135)	0.000 (0.085)	0.000 (0.082)	0.000 (0.164)	0.000 (0.091)	-0.002 (27,325.589)	0.000 (0.119)	0.082 (0.178)
2001 Birth Cohort * Male	1.000*** (0.176)	1.000*** (0.169)	1.000*** (0.218)	0.890*** (0.222)	1.000*** (0.203)	1.000*** (0.379)	1.000*** (0.208)	1.000*** (0.298)	1.000*** (0.207)	0.856 (52,577.099)	1.000*** (0.269)	0.824* (0.323)
<u>Socio-Economic Status (SES):</u>												
Mother's Years of Schooling at Birth of Child ¹			-0.000 (0.022)	0.000 (0.019)					-0.000 (0.020)	-0.007 (370.966)	-0.000 (0.030)	-0.004 (0.039)
Per Capita Household Income at Age 4 (in \$1,000s, adjusted to 2011 dollars) ¹				0.000 (0.002)					0.000 (0.002)	0.004 (252.827)	0.000 (0.003)	0.004 (0.005)
Mother's School * Male				-0.000 (0.087)						0.138 (234.782)		0.090 (0.093)
Household Income * Male				0.000 (0.013)						-0.004 (496.160)		0.004 (0.015)
Mother's School * 2001 Cohort				-0.000 (0.026)						-0.006 (2,663.438)		-0.019 (0.060)
Household Income * 2001 Cohort				0.000 (0.004)						-0.003 (313.546)		-0.001 (0.011)
Mother's School * Male * 2001 Cohort				-0.121 (0.150)						-0.393 (4,478.346)		-0.352** (0.135)
Household Income * Male * 2001 Cohort				0.007 (0.018)						0.020 (430.970)		0.013 (0.021)
<u>Family Structure:</u>												
Father Absent at Birth				-0.000 (0.022)	0.000 (0.068)				-0.000 (0.042)	0.005 (7.995e+16)	-0.000 (0.063)	0.043 (0.166)
Single Mother at Age 4				0.000 (0.051)	-0.000 (0.131)				0.000 (0.056)	0.047 (7.995e+16)	0.000 (0.093)	-0.036 (0.170)
Social Father at Age 4				0.000 (0.061)	-0.000 (0.464)				0.000 (0.068)	-0.035 (7.995e+16)	0.000 (0.086)	-0.069 (0.436)
Two Biological Parents at Age 4 (=reference)				ref	ref				ref	ref	ref	ref
Father Absent at Birth * Male					-0.000 (0.380)					0.100 (7.995e+16)		0.064 (0.336)
Single Mother at Age 4 * Male					1.000* (0.478)					0.545 (7.995e+16)		0.613+ (0.325)
Social Father at Age 4 * Male					1.000 (0.682)					1.171 (7.995e+16)		1.116 (0.738)
Father Absent at Birth * 2001 Birth Cohort					-0.000 (0.098)					0.053 (7.995e+16)		0.119 (0.273)
Single Mother at Age 4 * 2001 Birth Cohort					0.000 (0.150)					-0.089 (7.995e+16)		-0.061 (0.271)
Social Father at Age 4 * 2001 Birth Cohort					0.000 (0.510)					0.033 (7.995e+16)		0.016 (0.510)
Father Absent at Birth * Male * 2001 Birth Cohort					0.000 (0.601)					-0.942 (7.995e+16)		-1.044* (0.474)
Single Mother at Age 4 * Male * 2001 Birth Cohort					-1.000 (0.682)					0.166 (7.995e+16)		0.226 (0.549)
Social Father at Age 4 * Male * 2001 Birth Cohort					-1.000 (0.915)					-0.675 (7.995e+16)		-0.572 (0.864)
<u>Early Childhood Health:</u>												
Low Birth Weight							-0.000 (0.086)	-0.000 (0.562)			-0.000 (0.118)	-0.248 (0.426)
Pre-Term Birth							0.000 (0.033)	0.000 (0.458)			0.000 (0.127)	0.270 (0.327)
Asthma Diagnosis by Age 4 or 5							-0.000 (0.030)	-0.000 (0.180)			-0.000 (0.086)	-0.055 (0.201)
Low Birth Weight * Male								0.000 (0.343)				-0.056 (0.304)
Pre-Term Birth * Male								-0.000 (0.381)				0.029 (0.313)
Asthma Diagnosis * Male								0.000 (0.241)				-0.168 (0.250)
Low Birth Weight * 2001 Cohort								0.000 (0.550)				0.401 (0.434)
Pre-Term Birth * 2001 Cohort								0.000 (0.464)				-0.224 (0.357)
Asthma Diagnosis * 2001 Cohort								-0.000 (0.193)				0.102 (0.230)
<u>Controls:</u>												
Cognitive Development (Receptive Vocabulary) ¹		-0.000 (0.015)	-0.000 (0.024)	0.000 (0.035)	-0.000 (0.028)	0.000 (0.035)	-0.000 (0.019)	-0.000 (0.041)	-0.000 (0.039)	-0.022 (54.695)	-0.000 (0.038)	-0.043 (0.056)
Internalizing ¹		-0.000 (0.109)	-0.000 (0.109)	0.000 (0.164)	-0.000 (0.124)	0.000 (0.122)	-0.000 (0.117)	-0.000 (0.145)	-0.000 (0.120)	0.113 (491.493)	-0.000 (0.134)	0.143 (0.097)
Mother's Age at Birth ¹		0.000 (0.002)	0.000 (0.006)	-0.000 (0.008)	0.000 (0.006)	0.000 (0.007)	0.000 (0.003)	0.000 (0.006)	0.000 (0.010)	0.006 (26.588)	0.000 (0.017)	0.014 (0.019)
Birth Order		-0.000 (0.006)	-0.000 (0.018)	0.000 (0.023)	-0.000 (0.013)	0.000 (0.018)	-0.000 (0.013)	-0.000 (0.028)	-0.000 (0.026)	-0.013 (577.858)	-0.000 (0.050)	-0.042 (0.049)
Child Born 1983		ref	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref
Child Born 1984		-0.000 (0.248)	-0.000 (0.253)	0.000 (0.183)	-0.000 (0.228)	-0.000 (0.258)	-0.000 (0.293)	-0.000 (0.277)	-0.000 (0.230)	-0.037 (6,548.304)	-0.000 (0.239)	-0.125 (0.152)
Child Born 1985		-0.000 (0.261)	-0.000 (0.248)	-0.000 (0.181)	-0.000 (0.234)	-0.000 (0.252)	-0.000 (0.300)	-0.000 (0.276)	-0.000 (0.220)	-0.033 (1,520.471)	-0.000 (0.229)	-0.179 (0.187)
Child Born 1986		-0.000 (0.234)	-0.000 (0.232)	-0.000 (0.182)	-0.000 (0.224)	-0.000 (0.259)	-0.000 (0.284)	-0.000 (0.272)	-0.000 (0.210)	-0.089 (6,796.725)	-0.000 (0.231)	-0.257 (0.188)
Constant	6.000 (0.000)	6.000*** (0.244)	6.000*** (0.247)	6.000*** (0.214)	6.000*** (0.233)	6.000*** (0.257)	6.000*** (0.292)	6.000*** (0.288)	6.000*** (0.219)	6.110 (12,978.666)	6.000*** (0.248)	6.303*** (0.192)
Observations	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450

¹Specified variables (including within interactions) are centered at the overall sample mean.
Standard errors in parentheses. *** p<0.001, ** p<0.01, * p<0.05, + p<0.10. Model estimates are based on multiple imputation of 20 datasets. NC – No Controls, C – Controls, SES – Family Socioeconomic and Cultural Resources, S – Family Structure, H – Early Childhood Health. Model (I) refers to main effects models, Model (II) refers to models with interactions by gender, time period, and gender * time period.

Table B.9: Potential Family and Health Mediators of the Gender Gap in the Location of the 10th Percentile of Externalizing Problems among Hispanic Children Ages 4-5, Controlling for Cognitive Development

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
VARIABLES	NC:	C:	C + SES (I):	C + SES (II):	C + S (I):	C + S (II):	C + H (I):	C + H (II):	C + SES + S (I):	C + SES + S (II):	C + SES + S + H (I):	C + SES + S + H (II):
2001 Birth Cohort	-0.000 (0.268)	0.198 (0.228)	0.304 (0.241)	0.166 (0.208)	0.255 (0.215)	0.072 (0.272)	0.176 (0.215)	0.093 (0.245)	0.266 (0.218)	0.139 (0.254)	0.343 (0.220)	0.156 (0.275)
Male	-0.000 (0.109)	0.187 (0.172)	0.111 (0.172)	0.154 (0.185)	0.157 (0.173)	0.137 (0.171)	0.162 (0.171)	0.182 (0.173)	0.066 (0.177)	0.135 (0.173)	0.172 (0.170)	0.179 (0.181)
2001 Birth Cohort * Male	1.000* (0.503)	0.002 (0.343)	0.147 (0.288)	0.120 (0.275)	-0.009 (0.270)	0.064 (0.317)	0.059 (0.287)	0.264 (0.329)	0.102 (0.257)	0.122 (0.281)	-0.042 (0.235)	0.179 (0.290)
<i>Socio-Economic Status (SES):</i>												
Mother's Years of Schooling at Birth of Child ¹			-0.049+ (0.028)	0.000 (0.038)					-0.037 (0.026)	-0.000 (0.038)	-0.039 (0.028)	0.012 (0.050)
Per Capita Household Income at Age 4 (in \$1,000s, adjusted to 2011 dollars) ¹			-0.008+ (0.005)	-0.000 (0.008)					-0.006 (0.005)	0.000 (0.008)	-0.007 (0.004)	-0.003 (0.009)
Mother's School * Male				-0.056 (0.064)						-0.060 (0.065)		-0.072 (0.075)
Household Income * Male				-0.009 (0.018)						-0.008 (0.018)		-0.004 (0.019)
Mother's School * 2001 Cohort				-0.086 (0.068)						-0.090 (0.063)		-0.102 (0.072)
Household Income * 2001 Cohort				-0.009 (0.012)						-0.008 (0.012)		-0.008 (0.013)
Mother's School * Male * 2001 Cohort				0.070 (0.114)						0.106 (0.108)		0.138 (0.115)
Household Income * Male * 2001 Cohort				0.004 (0.022)						0.001 (0.022)		-0.000 (0.024)
<i>Family Structure:</i>												
Father Absent at Birth					0.095 (0.174)	-0.371 (0.375)			0.073 (0.185)	-0.304 (0.358)	0.076 (0.187)	-0.284 (0.330)
Single Mother at Age 4					0.055 (0.172)	0.326 (0.460)			0.131 (0.154)	0.278 (0.460)	0.129 (0.147)	0.668 (0.471)
Social Father at Age 4					-0.238 (0.193)	0.269 (0.696)			-0.319 (0.211)	0.263 (0.616)	-0.322 (0.237)	0.489 (0.634)
Two Biological Parents at Age 4 (=reference)					ref	ref			ref	ref	ref	ref
Father Absent at Birth * Male						0.795 (0.511)				0.621 (0.527)		0.956+ (0.540)
Single Mother at Age 4 * Male						-0.400 (0.619)				-0.469 (0.614)		-0.774 (0.618)
Social Father at Age 4 * Male						-0.777 (1.073)				-0.884 (1.179)		-0.987 (1.161)
Father Absent at Birth * 2001 Birth Cohort						0.453 (0.490)				0.298 (0.505)		0.105 (0.492)
Single Mother at Age 4 * 2001 Birth Cohort						-0.241 (0.527)				-0.078 (0.500)		-0.542 (0.516)
Social Father at Age 4 * 2001 Birth Cohort						-0.479 (0.731)				-0.437 (0.671)		-0.545 (0.706)
Father Absent at Birth * Male * 2001 Birth Cohort						-0.291 (0.738)				-0.445 (0.752)		-0.588 (0.735)
Single Mother at Age 4 * Male * 2001 Birth Cohort						0.353 (0.751)				0.418 (0.695)		0.849 (0.701)
Social Father at Age 4 * Male * 2001 Birth Cohort						0.213 (1.211)				0.415 (1.269)		0.392 (1.297)
<i>Early Childhood Health:</i>												
Low Birth Weight							0.119 (0.192)	-0.152 (0.500)			-0.004 (0.179)	0.125 (0.537)
Pre-Term Birth							0.229 (0.273)	-0.336 (0.478)			0.118 (0.254)	-1.077+ (0.591)
Asthma Diagnosis by Age 4 or 5							-0.171 (0.206)	0.181 (0.353)			-0.197 (0.198)	0.349 (0.329)
Low Birth Weight * Male								-0.635 (0.420)				-0.522 (0.326)
Pre-Term Birth * Male								0.848 (0.527)				0.924* (0.452)
Asthma Diagnosis * Male								-0.521 (0.397)				-0.625+ (0.367)
Low Birth Weight * 2001 Cohort								0.622 (0.509)				0.159 (0.538)
Pre-Term Birth * 2001 Cohort								0.205 (0.575)				0.908 (0.662)
Asthma Diagnosis * 2001 Cohort								-0.052 (0.386)				-0.298 (0.362)
<i>Controls:</i>												
Cognitive Development (Receptive Vocabulary) ¹		-0.176+ (0.100)	-0.167* (0.078)	-0.173* (0.074)	-0.180* (0.077)	-0.174* (0.081)	-0.171+ (0.091)	-0.180+ (0.097)	-0.155* (0.071)	-0.163* (0.075)	-0.187* (0.073)	-0.193** (0.072)
Internalizing ¹		0.277* (0.112)	0.289*** (0.087)	0.281** (0.086)	0.276** (0.088)	0.276** (0.097)	0.266** (0.099)	0.251* (0.111)	0.312*** (0.079)	0.271** (0.084)	0.338*** (0.075)	0.220** (0.081)
Mother's Age at Birth ¹		0.018 (0.022)	0.036+ (0.021)	0.035 (0.022)	0.019 (0.021)	0.015 (0.021)	0.015 (0.022)	0.012 (0.020)	0.030 (0.022)	0.030 (0.022)	0.032 (0.023)	0.036 (0.022)
Birth Order		0.005 (0.063)	-0.053 (0.069)	-0.069 (0.067)	0.016 (0.063)	0.005 (0.057)	0.009 (0.064)	0.011 (0.058)	-0.018 (0.071)	-0.063 (0.066)	-0.023 (0.070)	-0.059 (0.066)
Child Born 1983		ref	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref
Child Born 1984		0.062 (0.250)	-0.072 (0.260)	-0.069 (0.259)	0.112 (0.261)	-0.038 (0.278)	0.031 (0.268)	-0.006 (0.308)	-0.026 (0.244)	-0.046 (0.269)	-0.020 (0.235)	-0.066 (0.276)
Child Born 1985		-0.139 (0.246)	0.040 (0.265)	-0.151 (0.247)	-0.124 (0.241)	-0.141 (0.263)	-0.114 (0.255)	-0.211 (0.266)	0.005 (0.259)	-0.182 (0.282)	-0.063 (0.254)	-0.203 (0.281)
Child Born 1986		-0.152 (0.263)	-0.088 (0.251)	-0.277 (0.238)	-0.117 (0.245)	-0.268 (0.285)	-0.120 (0.253)	-0.208 (0.279)	-0.085 (0.231)	-0.320 (0.260)	-0.157 (0.233)	-0.365 (0.268)
Constant	6.000 (0.000)	6.097*** (0.231)	6.134*** (0.247)	6.299*** (0.222)	6.040*** (0.216)	6.222*** (0.258)	6.081*** (0.227)	6.145*** (0.240)	6.128*** (0.216)	6.326*** (0.242)	6.121*** (0.216)	6.278*** (0.275)
Observations	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450

¹Specified variables (including within interactions) are centered at the overall sample mean. Sample size are rounded to the nearest 50 in compliance with ECLS B restricted-use data terms. Standard errors in parentheses.

*** p<0.001, ** p<0.01, * p<0.05, + p<0.10. Model estimates are based on multiple imputation of 20 datasets. NC = No Controls, C = Controls, SES = Family Socioeconomic and Cultural Resources, S = Family Structure, H = Early Childhood Health. Model (I) refers to main effects models, Model (II) refers to models with interactions by gender, time period, and gender * time period.

Table B.10: Potential Family and Health Mediators of the Gender Gap in the Location of the 25th Percentile of Externalizing Problems among Black Children Ages 4-5, Controlling for Cognitive Development

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
VARIABLES	NC:	C:	C + SES (I):	C + SES (II):	C + S (I):	C + S (II):	C + H (I):	C + H (II):	C + SES + S (I):	C + SES + S (II):	C + SES + S + H (I):	C + SES + S + H (II):
2001 Birth Cohort	0.000 (0.077)	0.165 (0.245)	0.166 (0.228)	0.080 (0.246)	0.234 (0.224)	0.104 (0.412)	-0.050 (0.256)	-0.138 (0.332)	0.257 (0.219)	0.260 (0.401)	0.060 (0.247)	0.180 (1.237)
Male	-0.000 (0.109)	0.388 (0.242)	0.410+ (0.210)	0.412* (0.200)	0.389* (0.190)	0.462 (0.360)	0.450* (0.208)	0.465* (0.234)	0.413* (0.186)	0.455 (0.346)	0.438* (0.191)	0.398 (1.711)
2001 Birth Cohort * Male	1.000*** (0.226)	0.259 (0.366)	0.308 (0.297)	0.423 (0.278)	0.333 (0.284)	0.288 (0.518)	0.389 (0.288)	0.505 (0.410)	0.335 (0.256)	0.399 (0.496)	0.302 (0.263)	0.498 (2.232)
<u>Socio-Economic Status (SES):</u>												
Mother's Years of Schooling at Birth of Child ^d			-0.116* (0.052)	0.012 (0.071)					-0.103* (0.042)	0.055 (0.397)	-0.088+ (0.051)	0.048 (0.081)
Per Capita Household Income at Age 4 (in \$1,000s, adjusted to 2011 dollars) ^j			0.001 (0.006)	0.001 (0.009)					0.002 (0.005)	0.002 (0.452)	0.003 (0.005)	0.002 (0.009)
Mother's School * Male				0.023 (0.097)						-0.012 (0.442)		0.012 (0.137)
Household Income * Male				-0.012 (0.019)						-0.001 (0.452)		0.002 (0.042)
Mother's School * 2001 Cohort				-0.129 (0.105)						-0.143 (0.404)		-0.175 (0.155)
Household Income * 2001 Cohort				-0.005 (0.020)						0.010 (0.450)		0.009 (0.022)
Mother's School * Male * 2001 Cohort				-0.256+ (0.144)						-0.217 (0.450)		-0.200 (0.145)
Household Income * Male * 2001 Cohort				0.019 (0.028)						-0.008 (0.452)		0.001 (0.050)
<u>Family Structure:</u>												
Father Absent at Birth					0.203 (0.157)	0.027 (0.253)			0.097 (0.149)	0.095 (8.813e+08)	0.118 (0.157)	-0.170 (1.523)
Single Mother at Age 4					0.279 (0.186)	0.294 (0.321)			0.226 (0.169)	0.445 (8.813e+08)	0.179 (0.176)	0.488 (0.424)
Social Father at Age 4					-0.089 (0.241)	-0.110 (0.675)			-0.187 (0.218)	-0.147 (5.139e+09)	-0.169 (0.234)	-0.185 (3.089)
Two Biological Parents at Age 4 (=reference)					ref	ref			ref	ref	ref	ref
Father Absent at Birth * Male						-0.347 (0.485)				-0.350 (8.813e+08)		0.028 (5.262e+12)
Single Mother at Age 4 * Male						0.136 (0.534)				0.126 (8.813e+08)		0.048 (5.262e+12)
Social Father at Age 4 * Male						1.167 (0.927)				1.420 (5.139e+09)		1.195 (5.262e+12)
Father Absent at Birth * 2001 Birth Cohort						0.903* (0.382)				0.854 (8.972e+08)		1.077 (2.241)
Single Mother at Age 4 * 2001 Birth Cohort						-0.581 (0.513)				-0.840 (8.972e+08)		-0.965+ (0.549)
Social Father at Age 4 * 2001 Birth Cohort						-0.222 (0.756)				-0.206 (5.142e+09)		-0.291 (3.758)
Father Absent at Birth * Male * 2001 Birth Cohort						-0.764 (0.670)				-0.929 (8.972e+08)		-1.349 (5.262e+12)
Single Mother at Age 4 * Male * 2001 Birth Cohort						0.876 (0.739)				0.734 (8.972e+08)		0.949 (5.262e+12)
Social Father at Age 4 * Male * 2001 Birth Cohort						-0.924 (1.065)				-1.210 (5.142e+09)		-0.905 (5.262e+12)
<u>Early Childhood Health:</u>												
Low Birth Weight							0.289 (0.200)	-0.779 (0.857)			0.128 (0.176)	-0.466 (0.990)
Pre-Term Birth							0.564* (0.221)	0.305 (0.352)			0.433* (0.205)	0.364 (0.967)
Asthma Diagnosis by Age 4 or 5							-0.170 (0.203)	0.031 (0.279)			-0.084 (0.202)	0.027 (0.798)
Low Birth Weight * Male								-0.083 (0.456)				0.008 (0.436)
Pre-Term Birth * Male								-0.194 (0.415)				-0.140 (0.703)
Asthma Diagnosis * Male								-0.143 (0.411)				0.075 (0.873)
Low Birth Weight * 2001 Cohort								1.149 (0.800)				0.520 (0.902)
Pre-Term Birth * 2001 Cohort								0.304 (0.419)				0.309 (0.712)
Asthma Diagnosis * 2001 Cohort								-0.151 (0.401)				-0.299 (0.464)
<u>Controls:</u>												
Cognitive Development (Receptive Vocabulary) ⁱ		-0.241* (0.118)	-0.212* (0.098)	-0.157+ (0.084)	-0.267** (0.097)	-0.256* (0.100)	-0.232* (0.093)	-0.234* (0.099)	-0.224* (0.093)	-0.150* (0.076)	-0.167* (0.084)	-0.128+ (0.076)
Internalizing ^g		0.390** (0.150)	0.409*** (0.120)	0.444*** (0.088)	0.365*** (0.101)	0.394*** (0.112)	0.461*** (0.120)	0.442*** (0.119)	0.374*** (0.096)	0.406*** (0.090)	0.453*** (0.097)	0.465*** (0.093)
Mother's Age at Birth ^h		-0.002 (0.026)	0.030 (0.029)	0.029 (0.028)	0.006 (0.026)	0.006 (0.022)	0.004 (0.023)	0.001 (0.023)	0.038 (0.027)	0.036 (0.024)	0.022 (0.025)	0.019 (0.026)
Birth Order		0.008 (0.062)	-0.047 (0.076)	-0.023 (0.076)	0.043 (0.077)	0.021 (0.074)	0.040 (0.068)	0.048 (0.066)	-0.015 (0.081)	0.017 (0.083)	-0.007 (0.075)	0.049 (0.080)
Child Born 1983		ref	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref
Child Born 1984		-0.270 (0.253)	-0.286 (0.222)	-0.287 (0.263)	-0.176 (0.248)	-0.054 (0.257)	-0.143 (0.229)	-0.174 (0.233)	-0.164 (0.246)	-0.172 (0.270)	-0.178 (0.234)	-0.096 (0.252)
Child Born 1985		-0.238 (0.276)	-0.222 (0.265)	-0.165 (0.294)	-0.045 (0.260)	-0.078 (0.253)	-0.107 (0.255)	-0.135 (0.265)	-0.133 (0.244)	-0.161 (0.265)	-0.194 (0.258)	-0.146 (0.303)
Child Born 1986		-0.277 (0.321)	-0.314 (0.301)	-0.258 (0.317)	-0.066 (0.280)	-0.209 (0.301)	-0.285 (0.278)	-0.256 (0.289)	-0.159 (0.289)	-0.385 (0.296)	-0.270 (0.263)	-0.294 (0.313)
Constant		7.000*** (0.077)	6.885*** (0.247)	7.001*** (0.248)	7.013*** (0.256)	6.451*** (0.285)	6.571*** (0.347)	6.682*** (0.227)	6.696*** (0.253)	6.691*** (0.276)	6.694*** (0.268)	6.585*** (1.008)
Observations		1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450

^aSpecified variables (including within interactions) are centered at the overall sample mean.
Standard errors in parentheses. *** p<0.001, ** p<0.01, * p<0.05, + p<0.10. Model estimates are based on multiple imputation of 20 datasets. NC = No Controls, C= Controls, SES = Family Socioeconomic and Cultural Resources, S = Family Structure, H = Early Childhood Health. Model (I) refers to main effects models, Model (II) refers to models with interactions by gender, time period, and gender * time period.

Table B.11: Potential Family and Health Mediators of the Gender Gap in the Location of the 25th Percentile of Externalizing Problems among Hispanic Children Ages 4-5, Controlling for Cognitive Development

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
VARIABLES	NC:	C:	C + SES (I):	C + SES (II):	C + S (I):	C + S (II):	C + H (I):	C + H (II):	C + SES + S (I):	C + SES + S (II):	C + SES + S + H (I):	C + SES + S + H (II):
2001 Birth Cohort	-0.000 (0.272)	0.150 (0.246)	0.296 (0.247)	0.028 (0.285)	0.148 (0.237)	0.199 (0.316)	0.126 (0.249)	0.115 (0.276)	0.249 (0.252)	0.019 (0.310)	0.251 (0.275)	-0.040 (45.898)
Male	-0.000 (0.249)	0.363+ (0.214)	0.433+ (0.232)	0.370 (0.250)	0.420+ (0.216)	0.536* (0.265)	0.435+ (0.225)	0.413+ (0.229)	0.455* (0.228)	0.453 (0.306)	0.398+ (0.224)	0.395 (30.701)
2001 Birth Cohort * Male	1.000** (0.308)	0.040 (0.286)	-0.006 (0.268)	0.141 (0.300)	-0.027 (0.290)	-0.213 (0.359)	-0.027 (0.288)	-0.045 (0.301)	-0.030 (0.271)	0.090 (0.354)	0.034 (0.285)	0.061 (20.794)
<u>Socio-Economic Status (SES):</u>												
Mother's Years of Schooling at Birth of Child ¹			-0.062+ (0.035)	-0.029 (0.068)					-0.067* (0.034)	-0.043 (0.061)	-0.072* (0.033)	-0.033 (0.629)
Per Capita Household Income at Age 4 (in \$1,000s, adjusted to 2011 dollars) ¹			-0.023** (0.007)	-0.006 (0.012)					-0.020** (0.007)	-0.009 (0.010)	-0.019** (0.006)	-0.011 (0.092)
Mother's School * Male				0.029 (0.093)						0.057 (0.093)		0.026 (3.284)
Household Income * Male				-0.008 (0.026)						-0.000 (0.027)		0.011 (0.360)
Mother's School * 2001 Cohort				-0.118 (0.083)						-0.083 (0.078)		-0.092 (0.642)
Household Income * 2001 Cohort				-0.014 (0.018)						-0.010 (0.017)		-0.002 (0.117)
Mother's School * Male * 2001 Cohort				0.044 (0.127)						0.011 (0.124)		0.028 (5.338)
Household Income * Male * 2001 Cohort				0.002 (0.031)						-0.010 (0.032)		-0.025 (0.406)
<u>Family Structure:</u>												
Father Absent at Birth					0.099 (0.170)	-0.294 (0.365)			-0.002 (0.162)	-0.551 (0.349)	0.023 (0.176)	-0.561 (18.613)
Single Mother at Age 4					0.171 (0.165)	0.411 (0.387)			0.339+ (0.180)	0.547 (0.359)	0.306+ (0.182)	0.630 (44.739)
Social Father at Age 4					-0.041 (0.223)	1.068 (0.723)			0.066 (0.218)	1.097 (0.721)	1.018 (0.225)	1.029 (146.559)
Two Biological Parents at Age 4 (=reference)					ref	ref			ref	ref	ref	ref
Father Absent at Birth * Male						0.320 (0.548)				0.883 (0.590)		1.060 (14.538)
Single Mother at Age 4 * Male						-0.427 (0.589)				-0.533 (0.582)		-0.493 (57.834)
Social Father at Age 4 * Male						-1.193 (1.241)				-1.543 (1.328)		-1.782 (158.518)
Father Absent at Birth * 2001 Birth Cohort						0.519 (0.421)				0.602 (0.475)		0.700 (10.910)
Single Mother at Age 4 * 2001 Birth Cohort						-0.205 (0.487)				-0.109 (0.460)		-0.337 (62.237)
Social Father at Age 4 * 2001 Birth Cohort						-1.378+ (0.799)				-1.304+ (0.778)		-1.101 (164.350)
Father Absent at Birth * Male * 2001 Birth Cohort						-0.435 (0.703)				-0.815 (0.768)		-1.009 (18.697)
Single Mother at Age 4 * Male * 2001 Birth Cohort						0.401 (0.727)				0.188 (0.697)		0.259 (78.962)
Social Father at Age 4 * Male * 2001 Birth Cohort						1.643 (1.376)				1.652 (1.413)		1.796 (183.187)
<u>Early Childhood Health:</u>												
Low Birth Weight							-0.020 (0.200)	-0.043 (0.547)			-0.097 (0.227)	-0.257 (18.773)
Pre-Term Birth							0.213 (0.210)	0.098 (0.594)			0.111 (0.222)	-0.363 (6.688e+14)
Asthma Diagnosis by Age 4 or 5							0.026 (0.196)	-0.043 (0.317)			0.152 (0.182)	-0.221 (6.688e+14)
Low Birth Weight * Male								-0.359 (0.431)				-0.419 (18.605)
Pre-Term Birth * Male								0.425 (0.430)				0.442 (6.688e+14)
Asthma Diagnosis * Male								0.001 (0.383)				0.163 (6.688e+14)
Low Birth Weight * 2001 Cohort								0.421 (0.536)				0.605 (2.726)
Pre-Term Birth * 2001 Cohort								-0.089 (0.625)				0.403 (6.688e+14)
Asthma Diagnosis * 2001 Cohort								-0.007 (0.410)				0.201 (6.688e+14)
<u>Controls:</u>												
Cognitive Development (Receptive Vocabulary) ¹	-0.296*** (0.071)	-0.251*** (0.070)	-0.266*** (0.069)	-0.299*** (0.069)	-0.310*** (0.075)	-0.271*** (0.067)	-0.274*** (0.073)	-0.228** (0.071)	-0.261*** (0.068)	-0.222*** (0.065)	-0.227 (0.065)	-0.227 (2.507)
Internalizing ¹	0.330*** (0.078)	0.335*** (0.077)	0.314*** (0.074)	0.340*** (0.078)	0.343*** (0.078)	0.340*** (0.081)	0.353*** (0.073)	0.340*** (0.082)	0.350*** (0.078)	0.365*** (0.078)	0.385 (1.587)	0.385 (1.587)
Mother's Age at Birth ¹	0.020 (0.023)	0.049* (0.020)	0.050* (0.023)	0.030 (0.026)	0.031 (0.026)	0.021 (0.023)	0.026 (0.023)	0.062** (0.024)	0.052* (0.024)	0.064** (0.024)	0.061 (0.639)	0.061 (0.639)
Birth Order	0.083 (0.060)	-0.021 (0.078)	0.012 (0.078)	0.089 (0.060)	0.108 (0.069)	0.076 (0.066)	0.086 (0.064)	-0.024 (0.072)	0.002 (0.073)	-0.037 (0.069)	-0.023 (2.030)	-0.023 (2.030)
Child Born 1983	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref
Child Born 1984	-0.187 (0.325)	-0.273 (0.323)	-0.260 (0.325)	-0.201 (0.346)	-0.203 (0.340)	-0.262 (0.313)	-0.175 (0.301)	-0.229 (0.324)	-0.239 (0.322)	-0.123 (0.332)	-0.083 (14.770)	-0.083 (14.770)
Child Born 1985	-0.443 (0.293)	-0.401 (0.305)	-0.443 (0.313)	-0.479+ (0.275)	-0.572+ (0.295)	-0.493+ (0.282)	-0.441 (0.296)	-0.378 (0.275)	-0.418 (0.295)	-0.281 (0.275)	-0.400 (21.304)	-0.400 (21.304)
Child Born 1986	-0.657* (0.288)	-0.607* (0.298)	-0.696* (0.311)	-0.632* (0.276)	-0.606+ (0.311)	-0.710* (0.291)	-0.674* (0.319)	-0.537+ (0.304)	-0.522 (0.340)	-0.484 (0.302)	-0.561 (12.453)	-0.561 (12.453)
Constant	7.000*** (0.241)	6.903*** (0.253)	6.908*** (0.258)	7.019*** (0.289)	6.836*** (0.234)	6.794*** (0.293)	6.917*** (0.253)	6.920*** (0.253)	6.871*** (0.253)	6.954*** (0.295)	6.830*** (0.261)	7.062 (47.463)
Observations	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450	1,450

¹Specified variables (including within interactions) are centered at the overall sample mean.
Sample size are rounded to the nearest 50 in compliance with ECLS-B restricted-use data terms. Standard errors in parentheses.
*** p<0.001, ** p<0.01, * p<0.05, + p<0.10. Model estimates are based on multiple imputation of 20 datasets. NC = No Controls, C = Controls, SES = Family Socioeconomic and Cultural Resources, S = Family Structure, H = Early Childhood Health. Model (I) refers to main effects models, Model (II) refers to models with interactions by gender, time period, and gender * time period.

Appendix C

Chapter 5 Appendix

C.1 General Supplemental Results

Table C.1: Potential Family and Health Mediators of the Gender Gap in the Location of the 10th Percentile of Externalizing Problems among Per Capita Household Income Quartile 1 Children Ages 4-5

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
VARIABLES	NC:	C:	C + SES (I):	C + SES (II):	C + S (I):	C + S (II):	C + H (I):	C + H (II):	C + SES + S (I):	C + SES + S (II):	C + SES + S + H (I):	C + SES + S + H (II):
2001 Birth Cohort	0.000 (0.100)	-0.000 (0.302)	-0.000 (0.295)	-0.000 (0.298)	-0.000 (0.271)	0.000 (0.316)	-0.029 (0.284)	0.000 (0.248)	-0.000 (0.247)	-0.210 (0.304)	-0.037 (0.205)	-0.173 (0.342)
Male	0.000 (0.401)	0.500* (0.246)	0.500* (0.242)	0.500* (0.250)	0.500* (0.227)	0.000 (0.257)	0.450* (0.222)	0.167 (0.234)	0.500* (0.210)	-0.048 (0.254)	0.439* (0.188)	-0.152 (0.319)
2001 Birth Cohort * Male	1.000* (0.481)	0.000 (0.386)	0.000 (0.356)	0.000 (0.379)	0.000 (0.352)	0.333 (0.398)	0.071 (0.348)	0.167 (0.323)	0.000 (0.327)	0.600 (0.372)	0.082 (0.254)	0.246 (0.408)
<u>Socio-Economic Status (SES):</u>												
Mother's Years of Schooling at Birth of Child [†]			-0.000 (0.023)	0.000 (0.047)					-0.000 (0.027)	-0.002 (0.040)	-0.024 (0.029)	0.005 (0.055)
Mother's School * Male				-0.000 (0.064)						-0.034 (0.073)		-0.042 (0.079)
Mother's School * 2001 Cohort				-0.000 (0.073)						-0.034 (0.073)		-0.018 (0.084)
Mother's School * Male * 2001 Cohort				0.000 (0.111)						-0.006 (0.120)		-0.045 (0.125)
<u>Family Structure:</u>												
Father Absent at Birth					0.000 (0.110)	-0.333 (0.295)			0.000 (0.113)	-0.422 (0.287)	-0.060 (0.124)	-0.413 (0.300)
Single Mother at Age 4					-0.000 (0.132)	0.333 (0.277)			-0.000 (0.137)	0.153 (0.282)	0.138 (0.139)	0.271 (0.293)
Social Father at Age 4					-0.000 (0.232)	0.667 (0.544)			-0.000 (0.222)	0.495 (0.529)	0.287 (0.194)	0.633 (0.550)
Two Biological Parents at Age 4 (=reference)					ref	ref			ref	ref	ref	ref
Father Absent at Birth * Male					0.667+ (0.385)					0.566 (0.382)		0.521 (0.393)
Single Mother at Age 4 * Male					-0.000 (0.401)					0.136 (0.404)		0.221 (0.395)
Social Father at Age 4 * Male					-0.333 (0.834)					-0.369 (0.873)		-0.344 (0.915)
Father Absent at Birth * 2001 Birth Cohort					0.333 (0.360)					0.413 (0.328)		0.411 (0.348)
Single Mother at Age 4 * 2001 Birth Cohort					-0.333 (0.342)					-0.216 (0.329)		-0.308 (0.350)
Social Father at Age 4 * 2001 Birth Cohort					-0.333 (0.654)					-0.043 (0.615)		-0.297 (0.601)
Father Absent at Birth * Male * 2001 Birth Cohort					-0.667 (0.558)					-0.621 (0.521)		-0.786 (0.539)
Single Mother at Age 4 * Male * 2001 Birth Cohort					0.333 (0.543)					-0.033 (0.548)		-0.042 (0.547)
Social Father at Age 4 * Male * 2001 Birth Cohort					0.333 (1.050)					0.039 (1.022)		0.433 (1.044)
<u>Early Childhood Health:</u>												
Low Birth Weight (<5.5 pounds, 2,500 g)							0.150 (0.193)	0.167 (0.429)			0.245 (0.163)	0.076 (0.432)
Pre-Term Birth (<37 weeks gestation)							0.043 (0.110)	-0.167 (0.291)			0.014 (0.123)	-0.090 (0.343)
Asthma Diagnosis by Age 4 or 5							0.100 (0.147)	0.000 (0.479)			0.137 (0.138)	-0.576 (0.511)
Low Birth Weight * Male							0.333 (0.385)					0.260 (0.332)
Pre-Term Birth * Male							0.333 (0.324)					0.279 (0.296)
Asthma Diagnosis * Male							0.000 (0.341)					0.221 (0.338)
Low Birth Weight * 2001 Cohort							-0.167 (0.489)					-0.011 (0.471)
Pre-Term Birth * 2001 Cohort							0.167 (0.326)					0.095 (0.373)
Asthma Diagnosis * 2001 Cohort							-0.000 (0.472)					0.639 (0.496)
<u>Controls:</u>												
Black		0.000 (0.064)	0.000 (0.069)	0.000 (0.097)	-0.000 (0.140)	0.000 (0.151)	0.014 (0.087)	0.000 (0.084)	-0.000 (0.146)	0.118 (0.140)	0.014 (0.163)	0.055 (0.156)
Hispanic		0.000 (0.198)	0.000 (0.173)	0.000 (0.174)	0.000 (0.190)	0.333+ (0.194)	0.171 (0.181)	0.333 (0.218)	0.000 (0.181)	0.271 (0.178)	0.168 (0.167)	0.337+ (0.180)
Internalizing [†]		0.500** (0.168)	0.500** (0.157)	0.500** (0.153)	0.500*** (0.134)	0.333* (0.141)	0.350* (0.139)	0.333* (0.136)	0.500*** (0.119)	0.279* (0.127)	0.319** (0.097)	0.301** (0.102)
Mother's Age at Birth [†]		-0.000 (0.010)	-0.000 (0.014)	-0.000 (0.015)	-0.000 (0.017)	0.000 (0.014)	0.007 (0.015)	0.000 (0.016)	-0.000 (0.019)	0.009 (0.018)	0.022 (0.021)	0.007 (0.019)
Birth Order		0.000 (0.035)	0.000 (0.042)	0.000 (0.053)	0.000 (0.042)	-0.000 (0.039)	-0.043 (0.047)	-0.000 (0.049)	0.000 (0.049)	-0.045 (0.046)	-0.071 (0.047)	-0.043 (0.047)
Child Born 1983		ref	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref
Child Born 1984		0.000 (0.361)	0.000 (0.328)	0.000 (0.344)	0.000 (0.298)	-0.000 (0.213)	0.064 (0.324)	0.167 (0.286)	0.000 (0.289)	-0.018 (0.228)	0.014 (0.256)	-0.013 (0.244)
Child Born 1985		-0.500 (0.311)	-0.500+ (0.301)	-0.500+ (0.293)	-0.500+ (0.282)	-0.333 (0.257)	-0.393 (0.274)	-0.167 (0.264)	-0.500+ (0.257)	-0.324 (0.246)	-0.371 (0.230)	-0.363 (0.280)
Child Born 1986		-0.500+ (0.275)	-0.500+ (0.271)	-0.500+ (0.282)	-0.500+ (0.261)	-0.333 (0.295)	-0.636* (0.280)	-0.500+ (0.297)	-0.500+ (0.256)	-0.496+ (0.278)	-0.592* (0.245)	-0.552+ (0.301)
Constant	6.000*** (0.063)	6.331*** (0.272)	6.331*** (0.263)	6.331*** (0.286)	6.331*** (0.263)	6.220*** (0.320)	6.337*** (0.264)	6.220*** (0.259)	6.331*** (0.252)	6.459*** (0.315)	6.297*** (0.227)	6.439*** (0.332)
Observations	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650

[†]Specified variables (including within interactions) are centered at their overall sample mean.

Sample sizes are rounded to the nearest 50 in compliance with the terms of the ECLS-B restricted-use data license.

Standard errors in parentheses. *** p<0.001, ** p<0.01, * p<0.05, + p<0.10. Model estimates are based on multiple imputation of 20 datasets. NC = No Controls, C = Controls, SES = Family Socioeconomic and Cultural Resources, S = Family Structure, H = Early Childhood Health. Model (I) refers to main effects models, Model (II) refers to models with interactions by gender, time period, and gender * time period.

Table C.2: Potential Family and Health Mediators of the Gender Gap in the Location of the 25th Percentile of Externalizing Problems among Per Capita Household Income Quartile 1 Children Ages 4-5

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
VARIABLES	NC:	C:	C + SES (I):	C + SES (II):	C + S (I):	C + S (II):	C + H (I):	C + H (II):	C + SES + S (I):	C + SES + S (II):	C + SES + S + H (I):	C + SES + S + H (II):
2001 Birth Cohort	0.000 (0.000)	-0.170 (0.239)	-0.107 (0.237)	-0.186 (0.234)	0.000 (0.255)	-0.000 (0.344)	-0.356 (0.255)	-0.289 (0.267)	-0.031 (0.271)	-0.345 (0.324)	-0.259 (0.247)	-0.560 (0.357)
Male	0.000 (0.332)	0.252 (0.269)	0.239 (0.238)	0.041 (0.274)	0.200 (0.210)	0.000 (0.293)	0.186 (0.225)	0.156 (0.226)	0.277 (0.208)	-0.157 (0.339)	0.272 (0.191)	-0.162 (0.351)
2001 Birth Cohort * Male	1.000** (0.332)	0.533 (0.334)	0.529+ (0.316)	0.777* (0.374)	0.400 (0.278)	0.500 (0.408)	0.568* (0.281)	0.444 (0.309)	0.408 (0.273)	0.847+ (0.434)	0.497+ (0.254)	0.646 (0.414)
<u>Socio-Economic Status (SES):</u>												
Mother's Years of Schooling at Birth of Child ¹			-0.043 (0.036)	0.005 (0.066)					-0.046 (0.036)	-0.027 (0.072)	-0.028 (0.038)	-0.043 (0.078)
Mother's School * Male				-0.089 (0.094)						-0.016 (0.100)		0.032 (0.101)
Mother's School * 2001 Cohort				-0.098 (0.083)						-0.022 (0.091)		-0.008 (0.098)
Mother's School * Male * 2001 Cohort				0.175 (0.134)						0.004 (0.137)		-0.027 (0.139)
<u>Family Structure:</u>												
Father Absent at Birth					-0.000 (0.152)	0.000 (0.323)			0.054 (0.142)	-0.301 (0.336)	0.131 (0.152)	-0.448 (0.344)
Single Mother at Age 4					0.400* (0.187)	-0.000 (0.332)			0.362* (0.182)	0.163 (0.350)	0.248 (0.169)	0.015 (0.323)
Social Father at Age 4					0.400* (0.193)	-0.000 (0.492)			0.354+ (0.209)	0.131 (0.496)	0.279 (0.198)	0.302 (0.545)
Two Biological Parents at Age 4 (=reference)					ref	ref			ref	ref	ref	ref
Father Absent at Birth * Male						-0.000 (0.445)				0.424 (0.454)		0.443 (0.455)
Single Mother at Age 4 * Male						0.500 (0.446)				0.344 (0.463)		0.459 (0.468)
Social Father at Age 4 * Male						1.000 (0.788)				0.447 (0.774)		0.098 (0.847)
Father Absent at Birth * 2001 Birth Cohort						0.500 (0.431)				0.655 (0.442)		0.805+ (0.426)
Single Mother at Age 4 * 2001 Birth Cohort						0.000 (0.466)				0.007 (0.462)		0.174 (0.457)
Social Father at Age 4 * 2001 Birth Cohort						0.000 (0.605)				-0.088 (0.595)		-0.301 (0.634)
Father Absent at Birth * Male * 2001 Birth Cohort						-0.500 (0.622)				-0.785 (0.628)		-0.898 (0.577)
Single Mother at Age 4 * Male * 2001 Birth Cohort						-0.000 (0.656)				-0.010 (0.660)		-0.085 (0.634)
Social Father at Age 4 * Male * 2001 Birth Cohort						-0.500 (0.924)				-0.042 (0.909)		0.592 (0.949)
<u>Early Childhood Health:</u>												
Low Birth Weight (<5.5 pounds, 2,500 g)							0.686** (0.233)	0.622 (0.485)			0.519* (0.216)	0.756+ (0.445)
Pre-Term Birth (<37 weeks gestation)							-0.136 (0.195)	-0.178 (0.290)			-0.094 (0.188)	-0.358 (0.287)
Asthma Diagnosis by Age 4 or 5							0.178 (0.188)	-0.244 (0.533)			0.125 (0.191)	-0.447 (0.560)
Low Birth Weight * Male								0.444 (0.449)				0.161 (0.459)
Pre-Term Birth * Male								0.089 (0.401)				0.232 (0.397)
Asthma Diagnosis * Male								0.022 (0.366)				0.092 (0.370)
Low Birth Weight * 2001 Cohort								-0.222 (0.522)				-0.491 (0.505)
Pre-Term Birth * 2001 Cohort								0.022 (0.378)				0.343 (0.388)
Asthma Diagnosis * 2001 Cohort								0.511 (0.515)				0.526 (0.540)
<u>Controls:</u>												
Black		0.170 (0.173)	0.118 (0.173)	0.097 (0.168)	-0.000 (0.164)	0.000 (0.174)	0.068 (0.168)	0.089 (0.187)	-0.023 (0.162)	-0.095 (0.176)	-0.040 (0.180)	-0.052 (0.178)
Hispanic		0.437+ (0.235)	0.350 (0.222)	0.370+ (0.209)	0.400* (0.179)	0.500** (0.183)	0.458* (0.191)	0.489* (0.221)	0.315+ (0.180)	0.286 (0.193)	0.284 (0.182)	0.358* (0.181)
Internalizing ¹		0.370* (0.167)	0.357* (0.141)	0.364** (0.134)	0.400*** (0.106)	0.500*** (0.109)	0.424*** (0.099)	0.422*** (0.100)	0.423*** (0.111)	0.408*** (0.091)	0.451*** (0.081)	0.446*** (0.082)
Mother's Age at Birth ¹		0.015 (0.018)	0.011 (0.020)	0.010 (0.020)	-0.000 (0.020)	0.000 (0.023)	0.017 (0.022)	0.022 (0.022)	0.015 (0.022)	0.020 (0.020)	0.034 (0.023)	0.041 (0.025)
Birth Order		-0.067 (0.060)	-0.071 (0.056)	-0.043 (0.060)	-0.000 (0.056)	-0.000 (0.057)	-0.076 (0.059)	-0.067 (0.056)	-0.062 (0.054)	-0.054 (0.054)	-0.091+ (0.052)	-0.068 (0.057)
Child Born 1983		ref	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref
Child Born 1984		-0.067 (0.286)	-0.025 (0.260)	-0.030 (0.250)	0.200 (0.259)	0.500+ (0.256)	0.042 (0.237)	0.067 (0.222)	0.069 (0.266)	0.221 (0.254)	0.089 (0.238)	0.225 (0.231)
Child Born 1985		-0.652* (0.328)	-0.618+ (0.318)	-0.482 (0.305)	-0.400 (0.301)	0.000 (0.319)	-0.568+ (0.294)	-0.511+ (0.294)	-0.431 (0.284)	-0.376 (0.313)	-0.527+ (0.270)	-0.383 (0.278)
Child Born 1986		-0.844* (0.384)	-0.846* (0.365)	-0.771* (0.363)	-0.600+ (0.355)	-0.500 (0.329)	-0.839** (0.317)	-0.822* (0.319)	-0.708+ (0.363)	-0.690* (0.318)	-0.783* (0.330)	-0.713* (0.297)
Constant	7.000 (0.000)	7.308*** (0.277)	7.277*** (0.277)	7.285*** (0.261)	6.865*** (0.316)	6.831*** (0.328)	7.353*** (0.278)	7.296*** (0.287)	7.008*** (0.327)	7.302*** (0.319)	7.192*** (0.283)	7.488*** (0.327)
Observations	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650

¹Specified variables (including within interactions) are centered at their overall sample mean.

Sample sizes are rounded to the nearest 50 in compliance with the terms of the ECLS-B restricted-use data license.

Standard errors in parentheses. *** p<0.001, ** p<0.01, * p<0.05, + p<0.10. Model estimates are based on multiple imputation of 20 datasets. NC = No Controls, C = Controls, SES = Family Socioeconomic and Cultural Resources, S = Family Structure, H = Early Childhood Health. Model (I) refers to main effects models, Model (II) refers to models with interactions by gender, time period, and gender * time period.

Table C.3: Potential Family and Health Mediators of the Gender Gap in the Location of the 50th Percentile of Externalizing Problems among Per Capita Household Income Quartile 1 Children Ages 4-5

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
VARIABLES	NC:	C:	C + SES (I):	C + SES (II):	C + S (I):	C + S (II):	C + H (I):	C + H (II):	C + SES + S (I):	C + SES + S (II):	C + SES + S + H (I):	C + SES + S + H (II):
2001 Birth Cohort	-0.000 (0.494)	-0.000 (0.233)	0.085 (0.228)	-0.037 (0.264)	-0.000 (0.241)	0.500 (0.413)	-0.073 (0.253)	-0.228 (0.278)	0.096 (0.239)	-0.067 (0.426)	-0.170 (0.250)	-0.105 (0.4013)
Male	-0.000 (0.506)	-0.000 (0.282)	0.161 (0.267)	0.112 (0.326)	0.500+ (0.264)	0.500 (0.444)	0.309 (0.242)	0.198 (0.257)	0.416+ (0.250)	-0.023 (0.493)	0.361 (0.225)	0.192 (187.217)
2001 Birth Cohort * Male	1.000 (0.706)	1.000** (0.355)	0.732* (0.320)	0.717* (0.365)	0.500 (0.318)	-0.000 (0.510)	0.442 (0.304)	0.418 (0.344)	0.448 (0.299)	0.669 (0.573)	0.507+ (0.273)	0.348 (75.933)
<u>Socio-Economic Status (SES):</u>												
Mother's Years of Schooling at Birth of Child ¹			-0.037 (0.040)	0.025 (0.085)					-0.045 (0.038)	0.038 (0.095)	-0.057 (0.038)	0.013 (21.971)
Mother's School * Male				-0.091 (0.124)						-0.083 (0.141)		-0.044 (55.008)
Mother's School * 2001 Cohort				-0.047 (0.096)						-0.055 (0.113)		-0.033 (32.817)
Mother's School * Male * 2001 Cohort				0.006 (0.152)						-0.015 (0.175)		-0.016 (67.151)
<u>Family Structure:</u>												
Father Absent at Birth					-0.000 (0.171)	-0.000 (0.349)			-0.013 (0.165)	-0.093 (0.338)	-0.090 (0.159)	-0.045 (150.467)
Single Mother at Age 4					0.500** (0.194)	0.500 (0.371)			0.331+ (0.187)	0.135 (0.363)	0.353* (0.172)	0.344 (31.173)
Social Father at Age 4					0.500* (0.235)	0.500 (0.617)			0.266 (0.256)	0.156 (0.618)	0.262 (0.226)	0.110 (851.918)
Two Biological Parents at Age 4 (=reference)					ref	ref			ref	ref	ref	ref
Father Absent at Birth * Male					0.000 (0.496)					0.010 (0.496)		-0.054 (223.296)
Single Mother at Age 4 * Male					-0.000 (0.557)					0.377 (0.567)		0.172 (24.373)
Social Father at Age 4 * Male					-0.500 (0.908)					0.052 (0.915)		0.212 (2,432.734)
Father Absent at Birth * 2001 Birth Cohort					0.000 (0.446)					0.301 (0.432)		0.338 (192.847)
Single Mother at Age 4 * 2001 Birth Cohort					-0.500 (0.463)					-0.204 (0.457)		-0.459 (65.020)
Social Father at Age 4 * 2001 Birth Cohort					-0.500 (0.738)					-0.225 (0.731)		-0.058 (1,058.321)
Father Absent at Birth * Male * 2001 Birth Cohort					-0.500 (0.629)					-0.781 (0.628)		-0.793 (269.578)
Single Mother at Age 4 * Male * 2001 Birth Cohort					1.000 (0.708)					0.483 (0.709)		0.544 (56.301)
Social Father at Age 4 * Male * 2001 Birth Cohort					1.000 (1.059)					0.522 (1.061)		0.171 (2,739.621)
<u>Early Childhood Health:</u>												
Low Birth Weight (<5.5 pounds, 2,500 g)							0.558* (0.226)	0.983 (0.615)			0.485* (0.237)	1.037 (6.573e+15)
Pre-Term Birth (<37 weeks gestation)							0.333+ (0.182)	-0.162 (0.390)			0.369+ (0.200)	-0.221 (6.573e+15)
Asthma Diagnosis by Age 4 or 5							0.194 (0.188)	-0.401 (0.613)			0.196 (0.180)	-0.268 (656.294)
Low Birth Weight * Male							0.150 (0.471)					-0.045 (528.327)
Pre-Term Birth * Male							0.435 (0.397)					0.370 (454.842)
Asthma Diagnosis * Male							-0.128 (0.349)					-0.067 (397.557)
Low Birth Weight * 2001 Cohort							-0.624 (0.644)					-0.690 (6.573e+15)
Pre-Term Birth * 2001 Cohort							0.370 (0.457)					0.455 (6.573e+15)
Asthma Diagnosis * 2001 Cohort							0.724 (0.582)					0.667 (345.420)
<u>Controls:</u>												
Black	-0.000 (0.139)	0.014 (0.127)	0.003 (0.146)	0.000 (0.165)	0.000 (0.168)	-0.030 (0.162)	-0.058 (0.155)	0.018 (0.154)	-0.031 (0.182)	-0.143 (0.180)	-0.123 (0.180)	-0.123 (16.101)
Hispanic	0.000 (0.219)	0.128 (0.202)	0.188 (0.205)	0.500* (0.199)	0.500* (0.206)	0.376* (0.188)	0.409* (0.196)	0.368+ (0.197)	0.291 (0.195)	0.351+ (0.189)	0.404 (0.189)	0.404 (33.723)
Internalizing ¹	0.500*** (0.083)	0.528*** (0.079)	0.533*** (0.072)	0.500*** (0.084)	0.500*** (0.086)	0.545*** (0.092)	0.591*** (0.094)	0.550*** (0.079)	0.561*** (0.080)	0.577*** (0.090)	0.550 (0.090)	0.550 (0.461)
Mother's Age at Birth ¹	0.000 (0.020)	0.008 (0.020)	0.004 (0.021)	-0.000 (0.023)	-0.000 (0.023)	0.024 (0.023)	0.025 (0.022)	0.010 (0.025)	0.021 (0.025)	0.029 (0.024)	0.037 (0.024)	0.037 (4.833)
Birth Order	-0.000 (0.061)	0.033 (0.054)	0.038 (0.056)	0.000 (0.055)	0.000 (0.060)	0.067 (0.051)	0.064 (0.044)	0.048 (0.059)	0.052 (0.055)	0.062 (0.054)	0.071 (0.054)	0.071 (10.144)
Child Born 1983	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref
Child Born 1984	-0.000 (0.293)	-0.014 (0.264)	-0.024 (0.250)	-0.000 (0.258)	0.000 (0.295)	0.042 (0.264)	-0.003 (0.262)	-0.064 (0.260)	-0.000 (0.275)	-0.068 (0.270)	-0.026 (0.270)	-0.026 (27.155)
Child Born 1985	0.000 (0.423)	-0.383 (0.418)	-0.496 (0.431)	-0.500 (0.400)	-0.500 (0.419)	-0.455 (0.424)	-0.479 (0.378)	-0.515 (0.394)	-0.415 (0.410)	-0.464 (0.389)	-0.445 (0.389)	-0.445 (29.610)
Child Born 1986	-0.000 (0.452)	-0.184 (0.397)	-0.339 (0.420)	-0.500 (0.418)	-0.500 (0.399)	-0.388 (0.422)	-0.588 (0.417)	-0.490 (0.398)	-0.509 (0.392)	-0.707+ (0.381)	-0.730 (0.381)	-0.730 (33.456)
Constant	8.000*** (0.100)	8.331*** (0.270)	8.174*** (0.254)	8.287*** (0.252)	7.831*** (0.281)	7.831*** (0.364)	8.016*** (0.264)	8.226*** (0.253)	7.856*** (0.269)	8.266*** (0.372)	7.920*** (0.281)	8.047 (85.877)
Observations	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650

¹Specified variables (including within interactions) are centered at their overall sample mean.

Sample sizes are rounded to the nearest 50 in compliance with the terms of the ECLS-B restricted-use data license.

Standard errors in parentheses. *** p<0.001, ** p<0.01, * p<0.05, + p<0.10. Model estimates are based on multiple imputation of 20 datasets. NC = No Controls, C = Controls, SES = Family Socioeconomic and Cultural Resources, S = Family Structure, H = Early Childhood Health. Model (I) refers to main effects models, Model (II) refers to models with interactions by gender, time period, and gender * time period.

Table C.4: Potential Family and Health Mediators of the Gender Gap in the Location of the 10th Percentile of Externalizing Problems among Per Capita Income Quartile 1 Children Ages 4-5, Controlling for Cognitive Development

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
VARIABLES	NC:	C:	C + SES (I):	C + SES (II):	C + S (I):	C + S (II):	C + H (I):	C + H (II):	C + SES + S (I):	C + SES + S (II):	C + SES + S + H (I):	C + SES + S + H (II):
2001 Birth Cohort	0.000 (0.118)	-0.000 (0.285)	-0.000 (0.309)	-0.000 (0.263)	0.059 (0.235)	-0.169 (0.282)	-0.043 (0.225)	-0.075 (0.221)	0.063 (0.217)	-0.252 (0.312)	-0.023 (0.218)	-0.170 (6.845e+10)
Male	0.000 (0.412)	0.500* (0.231)	0.500* (0.218)	0.500* (0.227)	0.499* (0.205)	-0.045 (0.259)	0.463* (0.206)	0.291 (0.230)	0.461* (0.201)	-0.045 (0.280)	0.485* (0.191)	-0.166 (0.342)
2001 Birth Cohort * Male	1.000* (0.482)	0.000 (0.373)	0.000 (0.377)	0.000 (0.337)	-0.013 (0.296)	0.551 (0.381)	0.081 (0.290)	-0.017 (0.310)	0.012 (0.289)	0.554 (0.376)	0.035 (0.255)	0.289 (6.845e+10)
<u>Socio-Economic Status (SES):</u>												
Mother's Years of Schooling at Birth ¹			-0.000 (0.025)	0.000 (0.046)					-0.014 (0.027)	0.013 (0.049)	-0.026 (0.027)	0.008 (0.114)
Mother's School * Male				-0.000 (0.065)						-0.027 (0.071)		-0.064 (0.123)
Mother's School * 2001 Cohort				-0.000 (0.076)						-0.054 (0.166.773)		-0.039 (0.126)
Mother's School * Male * 2001 Cohort				0.000 (0.114)						-0.015 (0.166.762)		-0.017 (0.141)
<u>Family Structure:</u>												
Father Absent at Birth					-0.031 (0.113)	-0.419 (0.267)			-0.036 (0.118)	-0.440+ (0.261)	-0.090 (0.128)	-0.410 (0.362)
Single Mother at Age 4					0.099 (0.147)	0.167 (0.248)			0.078 (0.131)	0.105 (0.252)	0.086 (0.137)	0.279 (0.436)
Social Father at Age 4					0.246 (0.213)	0.586 (0.480)			0.222 (0.207)	0.546 (107.948)	0.305 (0.189)	0.685 (0.543)
Two Biological Parents at Age 4 (=reference)					ref	ref			ref	ref	ref	ref
Father Absent at Birth * Male						0.555 (0.391)				0.468 (0.383)		0.580 (0.481)
Single Mother at Age 4 * Male						0.197 (0.385)				0.240 (0.406)		0.168 (0.463)
Social Father at Age 4 * Male						-0.259 (0.776)				-0.272 (0.787)		-0.310 (0.940)
Father Absent at Birth * 2001 Birth Cohort						0.432 (0.340)				0.446 (0.324)		0.356 (0.415)
Single Mother at Age 4 * 2001 Birth Cohort						-0.148 (0.323)				-0.131 (0.274.767)		-0.246 (6.845e+10)
Social Father at Age 4 * 2001 Birth Cohort						-0.146 (0.577)				-0.108 (0.561)		-0.365 (6.845e+10)
Father Absent at Birth * Male * 2001 Birth Cohort						-0.592 (0.560)				-0.529 (0.553)		-0.766 (0.613)
Single Mother at Age 4 * Male * 2001 Birth Cohort						-0.007 (0.574)				-0.098 (0.274.744)		-0.072 (6.845e+10)
Social Father at Age 4 * Male * 2001 Birth Cohort						0.076 (0.986)				0.023 (107.959)		0.280 (6.845e+10)
<u>Early Childhood Health:</u>												
Low Birth Weight (<5.5 pounds, 2,500 g)							0.146 (0.179)	0.049 (0.416)			0.169 (0.162)	0.310 (0.406)
Pre-Term Birth (<37 weeks gestation)							0.074 (0.116)	-0.167 (0.287)			0.023 (0.130)	-0.270 (0.469)
Asthma Diagnosis by Age 4 or 5							0.108 (0.122)	-0.038 (0.451)			0.150 (0.146)	-0.420 (0.503)
Low Birth Weight * Male								0.100 (0.383)				0.152 (0.342)
Pre-Term Birth * Male								0.264 (0.318)				0.397 (0.317)
Asthma Diagnosis * Male								0.097 (0.328)				0.162 (0.332)
Low Birth Weight * 2001 Cohort								0.082 (0.446)				-0.205 (0.427)
Pre-Term Birth * 2001 Cohort								0.202 (0.315)				0.258 (0.487)
Asthma Diagnosis * 2001 Cohort								0.123 (0.440)				0.546 (0.472)
<u>Controls:</u>												
Receptive Vocabulary (Cognitive Dev.) ¹	0.000 (0.070)	0.000 (0.065)	0.000 (0.065)	-0.057 (0.071)	-0.071 (0.075)	-0.051 (0.056)	-0.085 (0.061)	-0.055 (0.070)	-0.080 (0.079)	-0.079 (0.059)	-0.060 (0.069)	
Black	0.000 (0.087)	0.000 (0.092)	0.000 (0.101)	-0.000 (0.167)	0.040 (0.153)	-0.001 (0.101)	-0.029 (0.103)	0.000 (0.154)	0.094 (0.160)	0.018 (0.152)	0.013 (0.156)	
Hispanic	0.000 (0.193)	0.000 (0.176)	0.000 (0.156)	0.153 (0.167)	0.263 (0.176)	0.209 (0.161)	0.189 (0.189)	0.148 (0.170)	0.243 (0.179)	0.194 (0.164)	0.312 (0.196)	
Internalizing ¹	0.500*** (0.150)	0.500** (0.152)	0.500*** (0.126)	0.384*** (0.110)	0.292* (0.120)	0.326** (0.118)	0.354** (0.123)	0.386*** (0.106)	0.288* (0.112)	0.306*** (0.092)	0.308** (0.098)	
Mother's Age at Birth ¹	-0.000 (0.016)	-0.000 (0.017)	-0.000 (0.018)	0.005 (0.020)	0.009 (0.018)	0.004 (0.021)	0.000 (0.019)	0.008 (0.020)	0.014 (0.024)	0.024 (0.021)	0.010 (0.022)	
Birth Order	0.000 (0.043)	0.000 (0.050)	0.000 (0.050)	-0.032 (0.045)	-0.035 (0.045)	-0.047 (0.048)	-0.055 (0.049)	-0.042 (0.048)	-0.060 (0.050)	-0.080 (0.049)	-0.065 (0.048)	
Child Born 1983	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref	
Child Born 1984	0.000 (0.301)	0.000 (0.313)	0.000 (0.274)	0.123 (0.281)	0.034 (0.240)	0.055 (0.249)	0.092 (0.258)	0.002 (0.256)	0.046 (0.213)	-0.001 (0.246)	0.033 (0.227)	
Child Born 1985	-0.500+ (0.294)	-0.500+ (0.298)	-0.500* (0.254)	-0.365 (0.263)	-0.275 (0.264)	-0.423+ (0.242)	-0.305 (0.251)	-0.326 (0.245)	-0.268 (0.244)	-0.271 (0.245)	-0.317 (0.251)	
Child Born 1986	-0.500+ (0.259)	-0.500+ (0.267)	-0.500* (0.232)	-0.465* (0.236)	-0.451+ (0.268)	-0.602* (0.248)	-0.455 (0.297)	-0.418+ (0.231)	-0.492+ (0.260)	-0.571* (0.232)	-0.464 (0.296)	
Constant	6.000 (0.000)	6.331*** (0.257)	6.331*** (0.265)	6.331*** (0.260)	6.240*** (0.245)	6.429*** (0.301)	6.331*** (0.241)	6.433*** (0.243)	6.279*** (0.224)	6.522*** (0.334)	6.322*** (0.251)	6.450*** (0.385)
Observations	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650

¹Specified variables (including within interactions) are centered at their overall sample mean.

Sample sizes are rounded to the nearest 50 in compliance with the terms of the ECLS-B restricted-use data license.

Standard errors in parentheses. *** p<0.001, ** p<0.01, * p<0.05, + p<0.10. Model estimates are based on multiple imputation of 20 datasets. NC = No Controls, C = Controls, SES = Family Socioeconomic and Cultural Resources, S = Family Structure, H = Early Childhood Health. Model (I) refers to main effects models, Model (II) refers to models with interactions by gender, time period, and gender * time period.

Table C.5: Potential Family and Health Mediators of the Gender Gap in the Location of the 25th Percentile of Externalizing Problems among Per Capita Income Quartile 1 Children Ages 4-5, Controlling for Cognitive Development

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
VARIABLES	NC:	C:	C + SES (I):	C + SES (II):	C + S (I):	C + S (II):	C + H (I):	C + H (II):	C + SES + S (I):	C + SES + S (II):	C + SES + S + H (I):	C + SES + S + H (II):
2001 Birth Cohort	0.000 (0.000)	0.088 (0.236)	0.089 (0.241)	-0.026 (0.279)	0.019 (0.231)	-0.434 (0.346)	-0.192 (0.261)	-0.172 (0.291)	0.038 (0.247)	-0.559 (0.351)	-0.138 (0.257)	-0.656 (3.975e+14)
Male	0.000 (0.371)	0.303 (0.213)	0.304 (0.218)	0.248 (0.247)	0.264 (0.175)	-0.185 (0.282)	0.260 (0.199)	0.195 (0.196)	0.238 (0.179)	-0.196 (0.323)	0.280 (0.194)	-0.354 (57.190)
2001 Birth Cohort * Male	1.000** (0.372)	0.372 (0.279)	0.373 (0.286)	0.485 (0.320)	0.448+ (0.240)	0.841* (0.371)	0.358 (0.270)	0.352 (0.273)	0.479+ (0.246)	0.913* (0.415)	0.425+ (0.251)	0.758 (3.975e+14)
<u>Socio-Economic Status (SES):</u>												
Mother's Years of Schooling at Birth ¹			-0.007 (0.039)	0.020 (0.070)					-0.009 (0.039)	0.023 (0.074)	0.011 (0.037)	0.018 (7.463)
Mother's School * Male				-0.032 (0.097)						-0.013 (0.093)		-0.013 (7.982)
Mother's School * 2001 Cohort				-0.082 (0.095)						-0.069 (0.095)		-0.019 (13.080)
Mother's School * Male * 2001 Cohort				0.100 (0.139)						0.039 (0.145)		-0.031 (17.065)
<u>Family Structure:</u>												
Father Absent at Birth					0.084 (0.138)	-0.313 (0.318)			0.093 (0.142)	-0.244 (0.337)	0.103 (0.152)	-0.379 (12.407)
Single Mother at Age 4					0.355* (0.159)	-0.105 (0.335)			0.325+ (0.168)	-0.131 (0.342)	0.316* (0.160)	-0.134 (11.588)
Social Father at Age 4					0.217 (0.186)	0.174 (0.444)			0.225 (0.177)	0.128 (0.473)	0.279 (0.180)	0.186 (255.811)
Two Biological Parents at Age 4 (=reference)					ref	ref			ref	ref	ref	ref
Father Absent at Birth * Male						0.329 (0.455)				0.243 (0.427)		0.341 (9.870)
Single Mother at Age 4 * Male						0.600 (0.456)				0.643 (0.433)		0.684 (15.039)
Father Absent at Birth * 2001 Birth Cohort						0.226 (0.701)				0.252 (0.744)		0.283 (184.196)
Single Mother at Age 4 * 2001 Birth Cohort						0.683+ (0.409)				0.588 (0.411)		0.756 (31.617)
Father Absent at Birth * Male * 2001 Birth Cohort						0.418 (0.450)				0.520 (0.461)		0.357 (3.975e+14)
Single Mother at Age 4 * Male * 2001 Birth Cohort						-0.021 (0.545)				0.043 (0.565)		-0.186 (3.975e+14)
Father Absent at Birth * Male * 2001 Birth Cohort						-0.664 (0.593)				-0.551 (0.587)		-0.626 (57.510)
Single Mother at Age 4 * Male * 2001 Birth Cohort						-0.350 (0.625)				-0.490 (0.620)		-0.421 (3.975e+14)
Social Father at Age 4 * Male * 2001 Birth Cohort						0.098 (0.832)				0.046 (0.868)		0.347 (3.975e+14)
<u>Early Childhood Health:</u>												
Low Birth Weight (<5.5 pounds, 2,500 g)							0.557* (0.226)	0.608 (0.487)			0.475* (0.224)	0.926 (22.526)
Pre-Term Birth (<37 weeks gestation)							-0.093 (0.195)	-0.099 (0.258)			-0.089 (0.189)	-0.489 (1.499)
Asthma Diagnosis by Age 4 or 5							0.196 (0.177)	-0.282 (0.489)			0.106 (0.171)	-0.565 (68.425)
Low Birth Weight * Male							0.297 (0.426)					-0.067 (15.524)
Pre-Term Birth * Male							0.043 (0.379)					0.402 (13.943)
Asthma Diagnosis * Male							0.005 (0.354)					0.057 (11.494)
Low Birth Weight * 2001 Cohort							-0.386 (0.530)					-0.670 (40.864)
Pre-Term Birth * 2001 Cohort							0.083 (0.380)					0.448 (14.989)
Asthma Diagnosis * 2001 Cohort							0.535 (0.445)					0.725 (58.133)
<u>Controls:</u>												
Receptive Vocabulary (Cognitive Dev.) ¹		-0.240** (0.090)	-0.238** (0.088)	-0.232** (0.083)	-0.196** (0.069)	-0.225** (0.074)	-0.207** (0.074)	-0.233** (0.071)	-0.201** (0.076)	-0.238** (0.076)	-0.213** (0.069)	-0.224 (1.386)
Black		0.059 (0.161)	0.067 (0.156)	0.089 (0.159)	-0.056 (0.155)	-0.064 (0.166)	0.001 (0.173)	-0.042 (0.166)	-0.044 (0.172)	-0.120 (0.174)	-0.078 (0.181)	-0.101 (0.779)
Hispanic		0.344+ (0.179)	0.336+ (0.177)	0.371* (0.175)	0.423* (0.166)	0.377* (0.165)	0.377* (0.181)	0.333+ (0.184)	0.365* (0.175)	0.321+ (0.176)	0.407* (0.170)	0.358 (7.101)
Internalizing ¹		0.417*** (0.112)	0.419*** (0.109)	0.412*** (0.095)	0.428*** (0.087)	0.444*** (0.086)	0.388*** (0.082)	0.400*** (0.086)	0.435*** (0.088)	0.463*** (0.087)	0.442*** (0.080)	0.450 (1.382)
Mother's Age at Birth ¹		0.006 (0.020)	0.007 (0.021)	0.009 (0.022)	0.033 (0.023)	0.045* (0.022)	0.019 (0.021)	0.023 (0.022)	0.034 (0.023)	0.036 (0.025)	0.036 (0.022)	0.058 (0.772)
Birth Order		-0.064 (0.057)	-0.069 (0.059)	-0.072 (0.053)	-0.083 (0.052)	-0.082 (0.057)	-0.068 (0.056)	-0.080 (0.056)	-0.084 (0.053)	-0.065 (0.054)	-0.084 (0.055)	-0.091 (0.387)
Child Born 1983		ref	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref
Child Born 1984			0.048 (0.249)	0.030 (0.243)	-0.010 (0.248)	0.079 (0.242)	0.132 (0.242)	-0.021 (0.234)	0.036 (0.233)	0.114 (0.241)	0.135 (0.247)	0.068 (0.235)
Child Born 1985			-0.356 (0.277)	-0.366 (0.260)	-0.390 (0.283)	-0.420+ (0.245)	-0.453+ (0.266)	-0.374 (0.267)	-0.353 (0.257)	-0.349 (0.252)	-0.436 (0.299)	-0.409 (0.258)
Child Born 1986			-0.557+ (0.319)	-0.535+ (0.314)	-0.553+ (0.331)	-0.621* (0.315)	-0.705* (0.291)	-0.696* (0.322)	-0.659* (0.307)	-0.526+ (0.315)	-0.668+ (0.343)	-0.771** (0.293)
Constant	7.000 (0.000)	7.107*** (0.274)	7.111*** (0.277)	7.176*** (0.286)	7.022*** (0.284)	7.445*** (0.340)	7.237*** (0.278)	7.286*** (0.311)	6.997*** (0.293)	7.488*** (0.324)	7.060*** (0.303)	7.646 (71.712)
Observations	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650

¹Specified variables (including within interactions) are centered at their overall sample mean.

Sample sizes are rounded to the nearest 50 in compliance with the terms of the ECLS-B restricted-use data license.

Standard errors in parentheses. *** p<0.001, ** p<0.01, * p<0.05, + p<0.10. Model estimates are based on multiple imputation of 20 datasets. NC = No Controls, C = Controls, SES = Family Socioeconomic and Cultural Resources, S = Family Structure, H = Early Childhood Health. Model (I) refers to main effects models, Model (II) refers to models with interactions by gender, time period, and gender * time period.

Table C.6: Potential Family and Health Mediators of the Gender Gap in the Location of the 50th Percentile of Externalizing Problems among Per Capita Income Quartile 1 Children Ages 4-5, Controlling for Cognitive Development

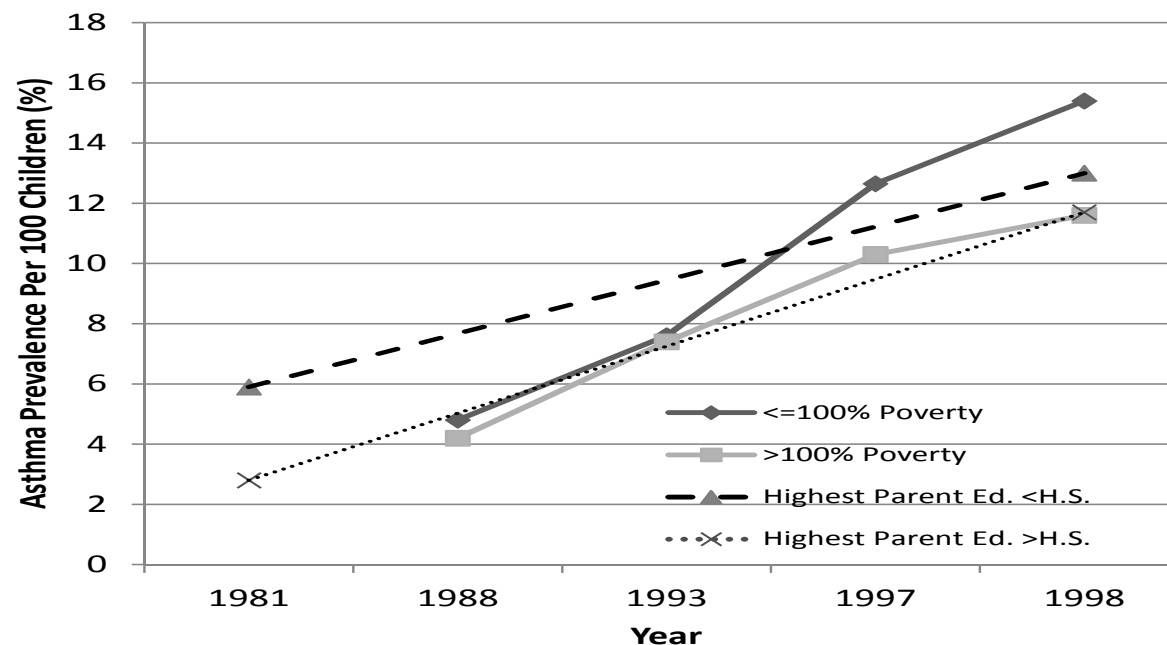
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
VARIABLES	NC:	C:	C + SES (I):	C + SES (II):	C + S (I):	C + S (II):	C + H (I):	C + H (II):	C + SES + S (I):	C + SES + S (II):	C + SES + S + H (I):	C + SES + S + H (II):
2001 Birth Cohort	-0.000 (0.499)	0.323 (0.217)	0.356+ (0.214)	0.276 (0.492)	0.195 (0.195)	0.181 (0.381)	-0.004 (0.256)	-0.016 (0.257)	0.294 (0.204)	0.039 (1.159)	0.122 (0.238)	-0.171 (0.506)
Male	-0.000 (0.505)	0.360 (0.238)	0.388+ (0.227)	0.257 (0.521)	0.415+ (0.221)	0.173 (0.435)	0.294 (0.239)	0.315 (0.237)	0.393 (0.240)	-0.000 (1.961)	0.416+ (0.216)	0.098 (0.523)
2001 Birth Cohort * Male	1.000 (0.723)	0.286 (0.297)	0.254 (0.279)	0.352 (0.541)	0.268 (0.260)	0.385 (0.500)	0.416 (0.285)	0.320 (0.281)	0.307 (0.277)	0.604 (0.557)	0.287 (0.270)	0.484 (0.606)
<i>Socio-Economic Status (SES):</i>												
Mother's Years of Schooling at Birth ¹			-0.031 (0.036)	-0.013 (0.090)					-0.042 (0.035)	0.028 (0.133)	-0.056 (0.039)	-0.003 (0.094)
Mother's School * Male				-0.064 (0.116)						-0.067 (0.120)		-0.019 (0.143)
Mother's School * 2001 Cohort				-0.016 (0.099)						-0.047 (0.216)		-0.019 (0.107)
Mother's School * Male * 2001 Cohort				0.014 (0.152)						0.024 (0.651)		-0.008 (0.189)
<i>Family Structure:</i>												
Father Absent at Birth				-0.033 (0.150)	-0.175 (0.307)				-0.026 (0.150)	-0.293 (0.560)	-0.107 (0.154)	-0.149 (0.573)
Single Mother at Age 4				0.283+ (0.158)	0.196 (0.360)				0.283+ (0.159)	0.251 (1.585)	0.335* (0.171)	0.197 (0.995)
Social Father at Age 4				0.141 (0.228)	0.089 (0.580)				0.181 (0.208)	0.304 (2.974)	0.226 (0.212)	-0.061 (1.328)
Two Biological Parents at Age 4 (=reference)				ref	ref				ref	ref	ref	ref
Father Absent at Birth * Male					0.294 (0.470)					0.339 (0.515)		0.133 (1.050)
Single Mother at Age 4 * Male					0.478 (0.524)					0.346 (1.821)		0.349 (1.488)
Male					-0.234 (0.948)					-0.314 (0.951)		0.112 (1.873)
Social Father at Age 4 * Male					0.381 (0.385)					0.494 (5.459)		0.461 (0.897)
Father Absent at Birth * 2001 Birth Cohort					-0.143 (0.470)					-0.125 (4.395)		-0.228 (1.281)
Single Mother at Age 4 * 2001 Birth Cohort					-0.116 (0.711)					-0.266 (3.133)		-0.018 (1.638)
Father Absent at Birth * Male * 2001 Birth Cohort					-0.946 (0.577)					-1.001 (5.290)		-0.914 (1.557)
Single Mother at Age 4 * Male * 2001 Birth Cohort					0.205 (0.660)					0.227 (4.889)		0.412 (2.025)
Social Father at Age 4 * Male * 2001 Birth Cohort					0.738 (1.052)					0.688 (6.824)		0.503 (2.221)
<i>Early Childhood Health:</i>												
Low Birth Weight (<5.5 pounds, 2,500 g)							0.297 (0.223)	0.962+ (0.546)			0.286 (0.222)	1.143 (3.284e+12)
Pre-Term Birth (<37 weeks gestation)							0.305+ (0.168)	-0.187 (0.361)			0.400* (0.185)	-0.311 (3.284e+12)
Asthma Diagnosis by Age 4 or 5							0.239 (0.162)	-0.500 (0.556)			0.170 (0.156)	-0.441 (3.284e+12)
Low Birth Weight * Male							0.125 (0.419)	0.281 (0.341)			0.294 (0.455)	-0.068 (0.681)
Pre-Term Birth * Male							-0.268 (0.321)	-0.252 (0.495)			-0.252 (0.495)	-0.068 (0.681)
Asthma Diagnosis * Male							-0.884 (0.568)	-0.884 (0.568)			-1.045 (3.284e+12)	-0.068 (0.681)
Low Birth Weight * 2001 Cohort							0.424 (0.420)	0.424 (0.420)			0.616 (3.284e+12)	-0.068 (0.681)
Pre-Term Birth * 2001 Cohort							0.935+ (0.539)	0.935+ (0.539)			0.868 (3.284e+12)	-0.068 (0.681)
<i>Controls:</i>												
Receptive Vocabulary (Cognitive Dev.) ¹	-0.302*** (0.082)	-0.299*** (0.071)	-0.298*** (0.070)	-0.268*** (0.062)	-0.281*** (0.063)	-0.261*** (0.064)	-0.274*** (0.067)	-0.266*** (0.062)	-0.281*** (0.073)	-0.253*** (0.065)	-0.294*** (0.071)	-0.294*** (0.071)
Black	-0.070 (0.143)	-0.045 (0.145)	-0.052 (0.153)	-0.081 (0.172)	-0.074 (0.169)	-0.066 (0.142)	-0.025 (0.134)	-0.088 (0.160)	-0.096 (0.218)	-0.156 (0.170)	-0.147 (0.212)	-0.147 (0.212)
Hispanic	0.254 (0.178)	0.246 (0.179)	0.248 (0.206)	0.332+ (0.172)	0.378* (0.177)	0.343* (0.173)	0.433** (0.168)	0.240 (0.174)	0.317 (1.233)	0.290 (0.193)	0.390+ (0.201)	0.390+ (0.201)
Internalizing ¹	0.606*** (0.078)	0.598*** (0.078)	0.589*** (0.114)	0.601*** (0.081)	0.580*** (0.079)	0.633*** (0.080)	0.624*** (0.080)	0.609*** (0.077)	0.586*** (0.085)	0.621*** (0.080)	0.605*** (0.090)	0.605*** (0.090)
Mother's Age at Birth ¹	0.018 (0.024)	0.022 (0.025)	0.029 (0.040)	0.024 (0.023)	0.027 (0.023)	0.023 (0.021)	0.028 (0.023)	0.030 (0.024)	0.028 (0.029)	0.034 (0.024)	0.030 (0.025)	0.030 (0.025)
Birth Order	0.051 (0.048)	0.038 (0.047)	0.022 (0.066)	0.055 (0.048)	0.045 (0.048)	0.049 (0.045)	0.038 (0.048)	0.051 (0.052)	0.070 (0.070)	0.022 (0.054)	0.020 (0.060)	0.020 (0.060)
Child Born 1983	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref
Child Born 1984	0.083 (0.258)	0.004 (0.258)	0.016 (0.259)	-0.055 (0.239)	-0.023 (0.263)	0.056 (0.267)	0.002 (0.232)	-0.024 (0.228)	0.035 (0.377)	-0.023 (0.226)	-0.091 (0.360)	-0.091 (0.360)
Child Born 1985	-0.362 (0.360)	-0.340 (0.361)	-0.472 (0.366)	-0.475 (0.342)	-0.456 (0.390)	-0.413 (0.366)	-0.518 (0.325)	-0.371 (0.346)	-0.541 (0.396)	-0.312 (0.345)	-0.420 (0.421)	-0.420 (0.421)
Child Born 1986	-0.361 (0.402)	-0.385 (0.425)	-0.437 (0.399)	-0.526 (0.383)	-0.716+ (0.390)	-0.250 (0.434)	-0.374 (0.415)	-0.418 (0.380)	-0.700+ (0.401)	-0.523 (0.412)	-0.639 (0.391)	-0.639 (0.391)
Constant	8.000*** (0.100)	8.014*** (0.215)	8.000*** (0.206)	8.123*** (0.504)	7.968*** (0.211)	8.064*** (0.315)	8.034*** (0.256)	8.093*** (0.243)	7.857*** (0.222)	8.076*** (1.221)	7.858*** (0.252)	8.174*** (0.530)
Observations	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650

¹Specified variables (including within interactions) are centered at their overall sample mean.

Sample sizes are rounded to the nearest 50 in compliance with the terms of the ECLS-B restricted-use data license.

Standard errors in parentheses. *** p<0.001, ** p<0.01, * p<0.05, + p<0.10. Model estimates are based on multiple imputation of 20 datasets. NC = No Controls, C = Controls, SES = Family Socioeconomic and Cultural Resources, S = Family Structure, H = Early Childhood Health. Model (I) refers to main effects models, Model (II) refers to models with interactions by gender, time period, and gender * time period.

Figure C.1: Asthma Prevalence among Children 3-17 Years, by Parental Education and Poverty Status for Selected NHIS Survey Years 1981-1998



Sources: ¹Wetizman, M., Gortmaker, S., and Sobol A. 1990. Racial, social, and environmental risks for childhood asthma. *Am J Dis Child* 144(11): 1189-1194.

²Halfon, N. and Newacheck, P. 1993. Childhood asthma and poverty: differential impacts and utilization of health services. *Pediatrics* 91(1): 56-61.

³Akinbami, L.J., LaFleur, B.J., Schoendorf, K.C. 2002. Racial and income disparities in childhood asthma in the United States. *Ambulatory Pediatrics* 2(5): 382-387.

⁴Smith, L. A., Hatcher-Ross, J. L., Wertheimer, R., & Kahn, R. S. 2005. Rethinking race/ethnicity, income, and childhood asthma: racial/ethnic disparities concentrated among the very poor. *Public health reports* 120(2), 109.

⁵Blackwell, DL and Tonthat, L. 2002. Summary health statistics for U.S. children: National Health Interview Survey, 1998. *Vital Health Stat* 10 208: 1-46.

Figure C.2: Counts (N's) at Each Percentile of Externalizing, by Gender, SES, and Time Period

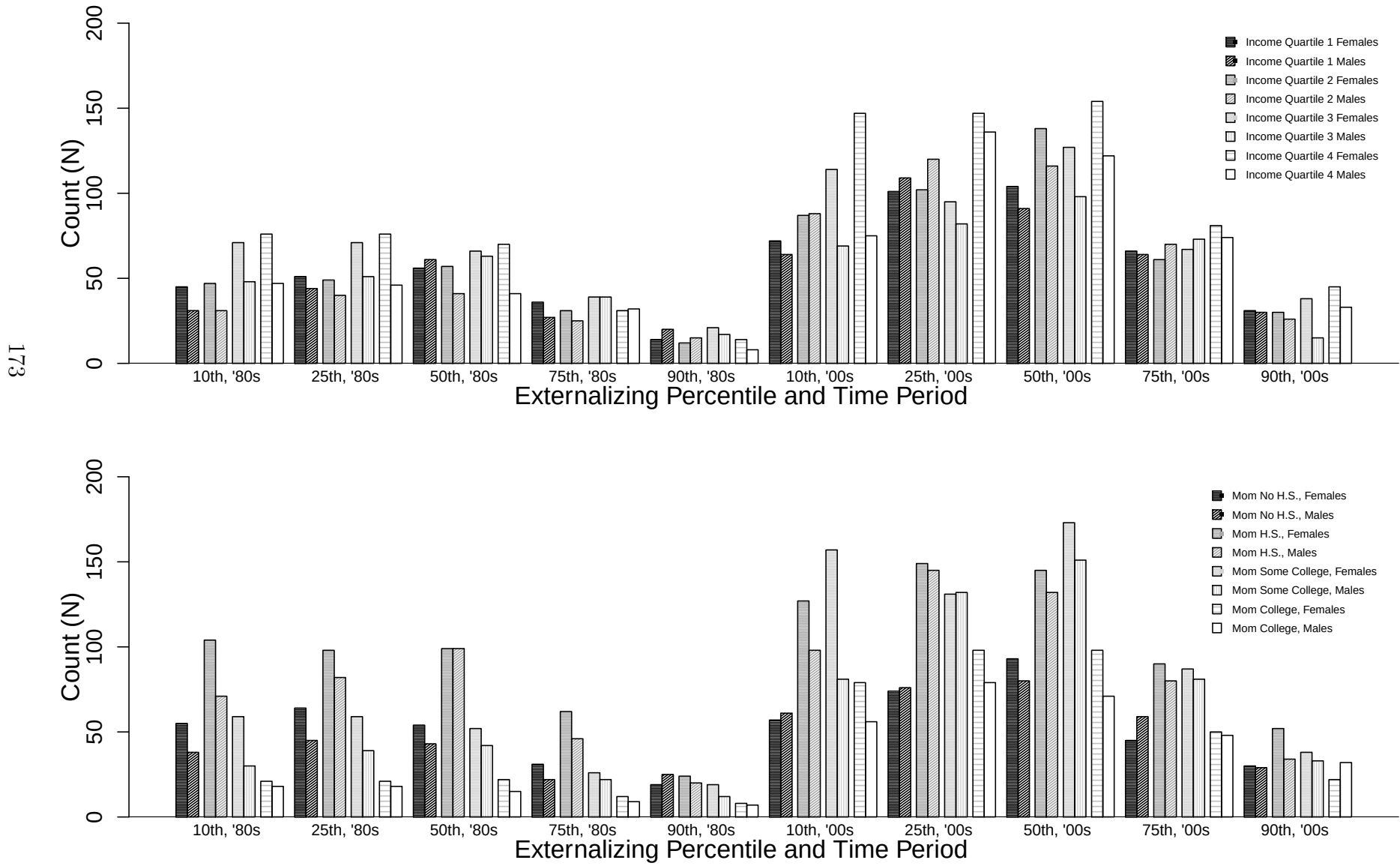


Figure C.3: Means and 95% Confidence Intervals of Predictor Variables, by Per Capita Household Income Quartile, Gender, and Time Period, at Each Sub-Group's Respective 10th Percentile of Externalizing Score

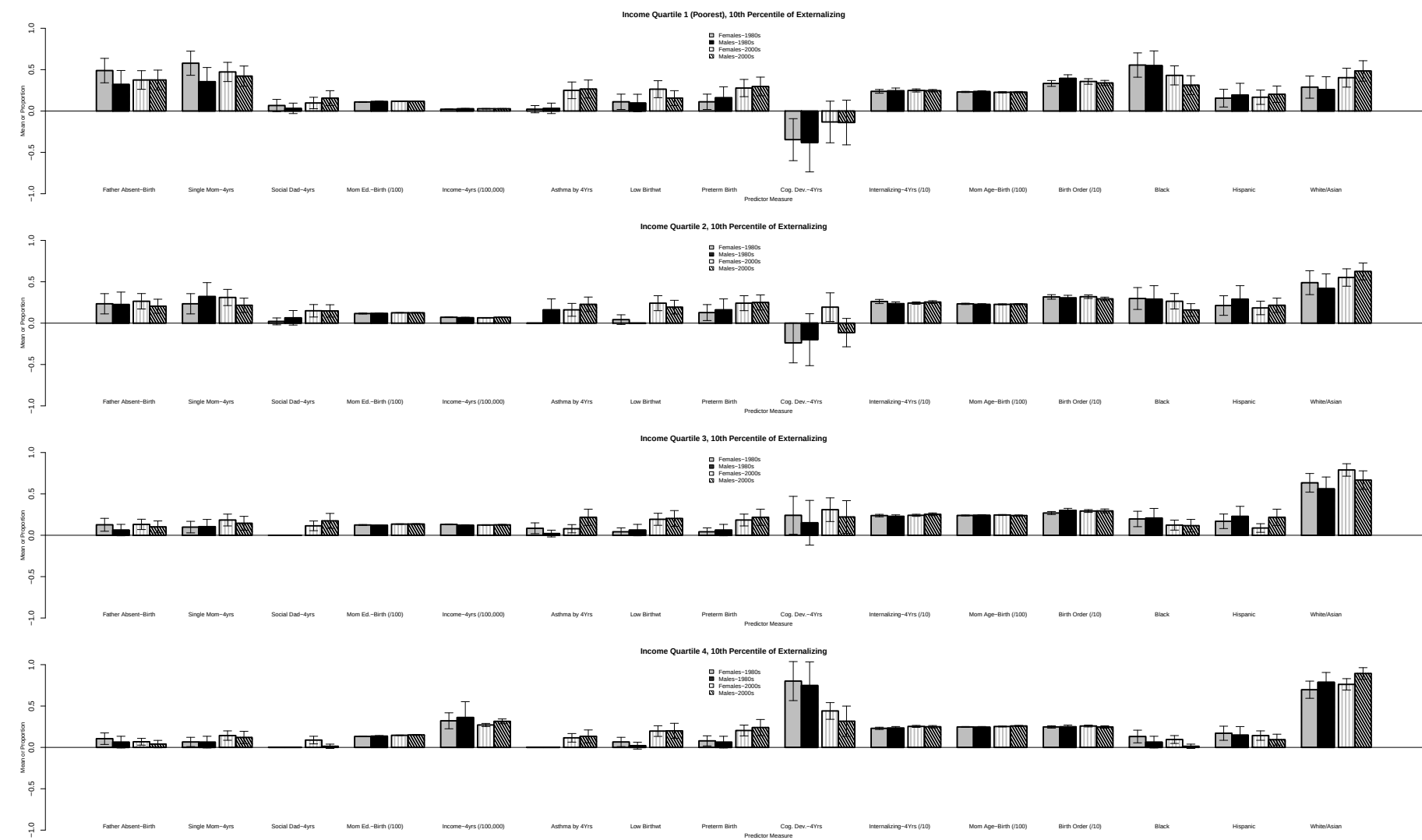


Figure C.4: Means and 95% Confidence Intervals of Predictor Variables, by Per Capita Household Income Quartile, Gender, and Time Period, at Each Sub-Group's Respective 25th Percentile of Externalizing Score

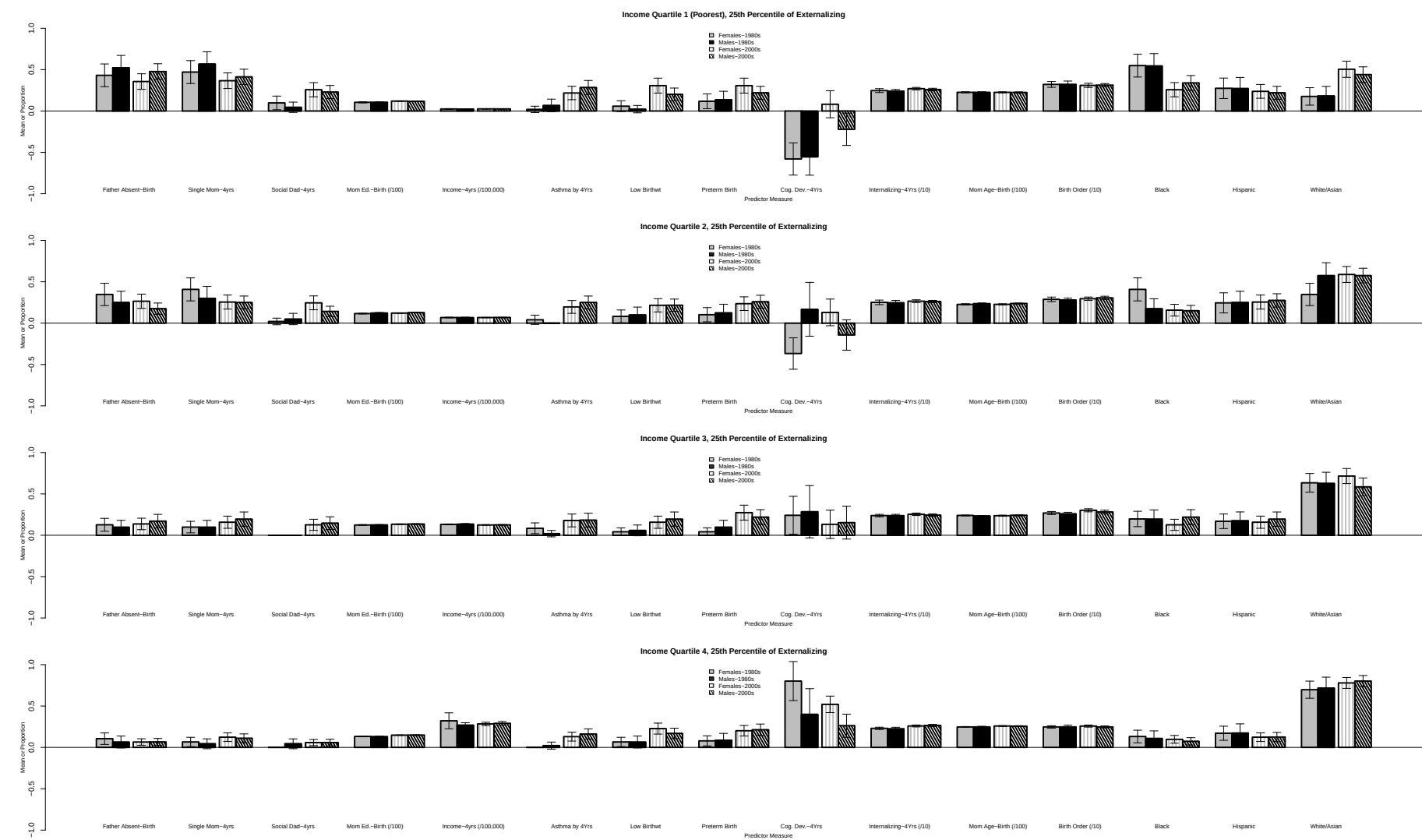
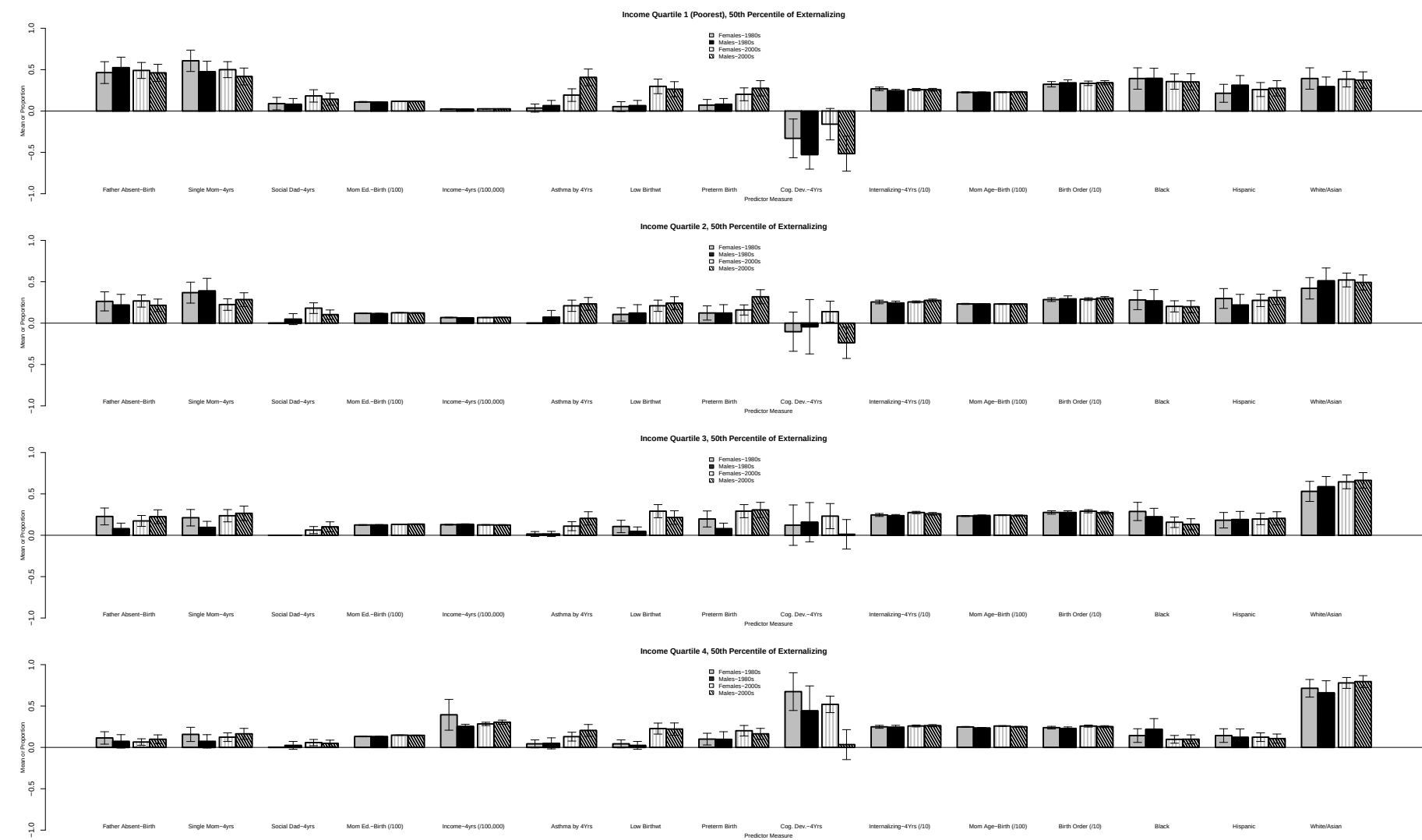


Figure C.5: Means and 95% Confidence Intervals of Predictor Variables, by Per Capita Household Income Quartile, Gender, and Time Period, at Each Sub-Group's Respective 50th Percentile of Externalizing Score



C.2 Supplemental Results for Per Capita Household Income Quartile 2

Table C.7: Potential Family and Health Mediators of the Gender Gap in the Location of the 10th Percentile of Externalizing Problems among Per Capita Income Quartile 2 Children Ages 4-5

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
VARIABLES	NC:	C:	C + SES (I):	C + SES (II):	C + S (I):	C + S (II):	C + H (I):	C + H (II):	C + SES + S (I):	C + SES + S (II):	C + SES + S + H (I):	C + SES + S + H (II):
2001 Birth Cohort	-0.000 (0.000)	0.000 (0.156)	0.000 (0.159)	0.092 (0.131)	0.000 (0.140)	0.000 (0.154)	0.000 (0.136)	0.067 (0.123)	0.000 (0.143)	0.084 (2,186.526)	0.120 (0.151)	0.085 (0.158)
Male	0.000 (0.159)	0.000 (0.167)	0.000 (0.159)	-0.028 (0.301)	0.000 (0.127)	0.000 (0.255)	0.000 (0.158)	0.133 (0.259)	0.000 (0.175)	0.092 (2,922.206)	0.080 (0.173)	0.077 (0.267)
2001 Birth Cohort * Male	1.000*** (0.246)	1.000* (0.434)	1.000* (0.401)	0.543 (0.338)	1.000* (0.419)	1.000* (0.465)	1.000* (0.432)	0.567 (0.370)	1.000* (0.395)	0.373 (3,158.897)	0.586 (0.361)	0.454 (0.324)
<i>Socio-Economic Status (SES):</i>												
Mother's Years of Schooling at Birth of Child ¹			-0.000 (0.045)	0.024 (0.366)					-0.000 (0.044)	0.028 (359.636)	-0.051 (0.046)	0.025 (0.065)
Mother's School * Male				-0.108 (0.159)						-0.129 (399.786)		-0.149 (0.110)
Mother's School * 2001 Cohort				-0.069 (0.421)						-0.058 (364.166)		-0.084 (0.075)
Mother's School * Male * 2001 Cohort										0.009 (390.173)		0.042 (0.131)
<i>Family Structure:</i>												
Father Absent at Birth					0.000 (0.088)	0.000 (0.225)			0.000 (0.101)	-0.034 (6,822.976)	-0.047 (0.121)	-0.094 (0.223)
Single Mother at Age 4					-0.000 (0.123)	0.000 (0.348)			-0.000 (0.113)	0.324 (777.219)	0.082 (0.119)	0.363 (0.251)
Social Father at Age 4					-0.000 (0.141)	0.000 (1.576)			-0.000 (0.155)	-0.117 (10,546.50)	-0.027 (0.170)	-0.169 (1.741)
Two Biological Parents at Age 4 (=reference)					ref	ref			ref	ref	ref	ref
Father Absent at Birth * Male						-0.000 (0.402)				0.155 (11,307.193)		0.214 (0.353)
Single Mother at Age 4 * Male						-0.000 (0.475)				-0.440 (2,458.137)		-0.465 (0.385)
Social Father at Age 4 * Male						-0.000 (1.710)				-0.028 (15,780.720)		-0.014 (1.918)
Father Absent at Birth * 2001 Birth Cohort						-0.000 (0.261)				0.096 (1.129e+16)		0.187 (0.280)
Single Mother at Age 4 * 2001 Birth Cohort						-0.000 (0.398)				-0.347 (1.129e+16)		-0.416 (0.321)
Social Father at Age 4 * 2001 Birth Cohort						-0.000 (1.567)				0.124 (1.129e+16)		0.082 (1.761)
Father Absent at Birth * Male * 2001 Birth Cohort						0.000 (0.596)				-0.630 (1.129e+16)		-0.608 (0.575)
Single Mother at Age 4 * Male * 2001 Birth Cohort						0.000 (0.630)				0.728 (1.129e+16)		0.694 (0.532)
Social Father at Age 4 * Male * 2001 Birth Cohort						-1.000 (1.771)				-0.053 (1.129e+16)		-0.168 (1.984)
<i>Early Childhood Health:</i>												
Low Birth Weight (<5.5 pounds, 2,500 g)							0.000 (0.177)	0.450 (0.422)			0.120 (0.162)	0.279 (0.382)
Pre-Term Birth (<37 weeks gestation)							-0.000 (0.087)	-0.133 (0.228)			-0.062 (0.110)	-0.145 (0.224)
Asthma Diagnosis by Age 4 or 5							0.000 (0.096)	0.183 (0.569)			-0.058 (0.127)	-0.015 (0.422)
Low Birth Weight * Male								0.167 (0.382)				0.333 (0.307)
Pre-Term Birth * Male								0.067 (0.328)				0.063 (0.256)
Asthma Diagnosis * Male								-0.617 (0.406)				-0.480 (0.298)
Low Birth Weight * 2001 Cohort								-0.417 (0.432)				-0.205 (0.385)
Pre-Term Birth * 2001 Cohort								0.133 (0.249)				0.103 (0.254)
Asthma Diagnosis * 2001 Cohort								-0.183 (0.527)				0.099 (0.395)
<i>Controls:</i>												
Black		0.000 (0.064)	0.000 (0.075)	0.007 (1.620)	0.000 (0.077)	0.000 (0.077)	0.000 (0.068)	-0.017 (0.067)	0.000 (0.082)	-0.027 (383.884)	0.018 (0.093)	-0.019 (0.098)
Hispanic		0.000 (0.157)	0.000 (0.145)	0.120 (0.299)	0.000 (0.166)	0.000 (0.165)	0.000 (0.165)	0.100 (0.150)	0.000 (0.150)	0.153 (2,705)	0.109 (0.149)	0.253+ (0.142)
Internalizing ¹		-0.000 (0.131)	-0.000 (0.117)	0.196 (0.146)	-0.000 (0.132)	-0.000 (0.129)	-0.000 (0.127)	0.217+ (0.116)	-0.000 (0.120)	0.224 (80.035)	0.183+ (0.104)	0.219** (0.075)
Mother's Age at Birth ¹		-0.000 (0.024)	0.000 (0.029)	0.030 (0.066)	-0.000 (0.026)	-0.000 (0.025)	-0.000 (0.026)	0.017 (0.024)	-0.000 (0.028)	0.032 (5.028)	0.031 (0.027)	0.042* (0.021)
Birth Order		0.000 (0.060)	0.000 (0.074)	-0.082 (0.077)	0.000 (0.064)	-0.000 (0.060)	0.000 (0.061)	-0.033 (0.058)	0.000 (0.073)	-0.066 (7.499)	-0.085 (0.071)	-0.105+ (0.060)
Child Born 1983		ref	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref
Child Born 1984		0.000 (0.374)	0.000 (0.376)	0.061 (0.362)	0.000 (0.383)	0.000 (0.304)	0.000 (0.352)	0.067 (0.271)	0.000 (0.351)	0.026 (121.146)	0.007 (0.330)	0.074 (0.261)
Child Born 1985		0.000 (0.169)	0.000 (0.180)	0.009 (0.189)	0.000 (0.148)	0.000 (0.249)	0.000 (0.172)	-0.050 (0.185)	0.000 (0.180)	-0.134 (45.897)	0.004 (0.187)	-0.106 (0.222)
Child Born 1986		0.000 (0.180)	0.000 (0.175)	-0.117 (2.203)	0.000 (0.164)	0.000 (0.206)	0.000 (0.181)	-0.200 (0.184)	0.000 (0.196)	-0.078 (131.219)	-0.078 (0.188)	-0.205 (0.185)
Constant	6.000 (0.000)	6.000*** (0.188)	6.000*** (0.184)	6.256*** (0.345)	6.000*** (0.179)	6.000*** (0.171)	6.000*** (0.188)	6.156*** (0.175)	6.000*** (0.180)	6.227 (2,009.408)	6.187*** (0.181)	6.309*** (0.173)
Observations	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650

¹Specified variables (including within interactions) are centered at their overall sample mean.

Sample sizes are rounded to the nearest 50 in compliance with the terms of the ECLS-B restricted-use data license.

Standard errors in parentheses. *** p<0.001, ** p<0.01, * p<0.05, + p<0.10. Model estimates are based on multiple imputation of 20 datasets. NC = No Controls, C = Controls, SES = Family Socioeconomic and Cultural Resources, S = Family Structure, H = Early Childhood Health. Model (I) refers to main effects models, Model (II) refers to models with interactions by gender, time period, and gender * time period.

Table C.8: Potential Family and Health Mediators of the Gender Gap in the Location of the 25th Percentile of Externalizing Problems among Per Capita Income Quartile 2 Children Ages 4-5

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
VARIABLES	NC:	C:	C + SES (I):	C + SES (II):	C + S (I):	C + S (II):	C + H (I):	C + H (II):	C + SES + S (I):	C + SES + S (II):	C + SES + S + H (I):	C + SES + S + H (II):
2001 Birth Cohort	-0.000 (0.238)	0.235 (0.254)	0.267 (0.262)	0.111 (0.263)	0.265 (0.241)	0.585+ (0.316)	0.224 (0.258)	0.176 (0.259)	0.465+ (0.248)	0.484 (0.418)	0.275 (0.255)	0.269 (0.368)
Male	0.000 (0.238)	0.471+ (0.266)	0.467+ (0.238)	0.299 (0.240)	0.439+ (0.238)	0.683* (0.289)	0.429+ (0.226)	0.451+ (0.230)	0.528* (0.227)	0.535 (0.355)	0.424+ (0.244)	0.585+ (0.341)
2001 Birth Cohort * Male	1.000*** (0.272)	0.000 (0.401)	0.067 (0.292)	0.227 (0.276)	0.000 (0.336)	-0.350 (0.375)	0.081 (0.309)	0.099 (0.287)	-0.035 (0.291)	0.003 (0.445)	0.157 (0.276)	0.091 (0.390)
<i>Socio-Economic Status (SES):</i>												
Mother's Years of Schooling at Birth of Child ¹			-0.133** (0.042)	0.042 (0.079)					-0.132*** (0.039)	-0.029 (0.083)	-0.132*** (0.037)	-0.034 (0.082)
Mother's School * Male				-0.180+ (0.107)						-0.139 (0.120)		-0.115 (0.114)
Mother's School * 2001 Cohort				-0.150 (0.105)						-0.101 (0.122)		-0.076 (0.112)
Mother's School * Male * 2001 Cohort				0.119 (0.138)						0.108 (0.162)		0.070 (0.151)
<i>Family Structure:</i>												
Father Absent at Birth					-0.133 (0.154)	-0.106 (0.278)			-0.069 (0.196)	-0.127 (0.281)	-0.083 (0.152)	-0.180 (0.298)
Single Mother at Age 4					0.224 (0.159)	0.553+ (0.286)			0.257 (0.185)	0.567 (0.350)	0.236 (0.150)	0.436 (0.314)
Social Father at Age 4					-0.082 (0.163)	-0.756 (2.031)			-0.021 (0.177)	-0.697 (2.211)	-0.029 (0.161)	-0.690 (2.130)
Two Biological Parents at Age 4 (=reference)					ref	ref			ref	ref	ref	ref
Father Absent at Birth * Male					0.008 (0.515)					0.322 (0.574)		0.335 (0.546)
Single Mother at Age 4 * Male					-0.593 (0.456)					-0.557 (0.499)		-0.697 (0.463)
Social Father at Age 4 * Male					0.797 (2.230)					0.776 (2.459)		0.721 (2.313)
Father Absent at Birth * 2001 Birth Cohort					0.252 (0.369)					0.250 (0.352)		0.279 (0.362)
Single Mother at Age 4 * 2001 Birth Cohort					-0.634+ (0.378)					-0.543 (0.419)		-0.421 (0.410)
Social Father at Age 4 * 2001 Birth Cohort					0.577 (2.062)					0.611 (2.234)		0.633 (2.142)
Father Absent at Birth * Male * 2001 Birth Cohort					-0.642 (0.666)					-0.979 (0.697)		-1.013 (0.677)
Single Mother at Age 4 * Male * 2001 Birth Cohort					1.358* (0.599)					1.074 (0.667)		1.232* (0.601)
Social Father at Age 4 * Male * 2001 Birth Cohort					-0.496 (2.257)					-0.656 (2.489)		-0.631 (2.318)
<i>Early Childhood Health:</i>												
Low Birth Weight (<5.5 pounds, 2,500 g)							0.371+ (0.199)	0.346 (0.412)			0.264 (0.184)	0.217 (0.428)
Pre-Term Birth (<37 weeks gestation)							-0.171 (0.161)	-0.231 (0.342)			-0.105 (0.165)	-0.240 (0.338)
Asthma Diagnosis by Age 4 or 5							0.019 (0.193)	-0.626 (0.587)			0.079 (0.190)	-0.862 (0.681)
Low Birth Weight * Male								0.148 (0.411)				0.108 (0.365)
Pre-Term Birth * Male								-0.005 (0.347)				-0.100 (0.308)
Asthma Diagnosis * Male								-0.357 (0.356)				-0.192 (0.369)
Low Birth Weight * 2001 Cohort								0.082 (0.348)				0.163 (0.364)
Pre-Term Birth * 2001 Cohort								0.863 (0.577)				0.999 (0.644)
Asthma Diagnosis * 2001 Cohort								-0.038 (0.427)				0.040 (0.449)
<i>Controls:</i>												
Black	0.235 (0.189)	0.200 (0.177)	0.215 (0.178)	0.214 (0.189)	0.195 (0.185)	0.248 (0.170)	0.176 (0.172)	0.167 (0.174)	0.182 (0.178)	0.155 (0.171)	0.209 (0.171)	0.209 (0.178)
Hispanic	0.353+ (0.184)	0.200 (0.125)	0.245* (0.114)	0.327* (0.162)	0.293+ (0.166)	0.367* (0.149)	0.363* (0.160)	0.222+ (0.134)	0.216 (0.137)	0.320* (0.138)	0.282+ (0.154)	0.282+ (0.154)
Internalizing ¹	0.353* (0.158)	0.400*** (0.090)	0.387*** (0.083)	0.378** (0.119)	0.374*** (0.104)	0.357** (0.115)	0.368*** (0.106)	0.410*** (0.089)	0.384*** (0.081)	0.347*** (0.072)	0.345*** (0.076)	0.345*** (0.076)
Mother's Age at Birth ¹	0.059* (0.030)	0.067** (0.023)	0.066** (0.022)	0.051+ (0.027)	0.041 (0.027)	0.052* (0.025)	0.044+ (0.026)	0.062** (0.023)	0.055* (0.025)	0.072** (0.023)	0.053* (0.026)	0.053* (0.026)
Birth Order	-0.118 (0.080)	-0.133* (0.062)	-0.142* (0.062)	-0.112 (0.073)	-0.106 (0.075)	-0.086 (0.071)	-0.060 (0.075)	-0.125+ (0.064)	-0.134+ (0.077)	-0.112+ (0.064)	-0.098 (0.067)	-0.098 (0.067)
Child Born 1983	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref
Child Born 1984	-0.059 (0.264)	-0.067 (0.283)	-0.079 (0.267)	-0.051 (0.260)	-0.033 (0.232)	-0.038 (0.253)	0.044 (0.239)	0.028 (0.281)	-0.068 (0.269)	0.020 (0.296)	0.072 (0.260)	0.072 (0.260)
Child Born 1985	-0.471 (0.306)	-0.467 (0.299)	-0.447 (0.299)	-0.388 (0.299)	-0.350 (0.287)	-0.300 (0.301)	-0.214 (0.292)	-0.257 (0.283)	-0.346 (0.312)	-0.281 (0.303)	-0.209 (0.305)	-0.209 (0.305)
Child Born 1986	-0.529 (0.405)	-0.333 (0.366)	-0.626 (0.414)	-0.531 (0.381)	-0.228 (0.379)	-0.486 (0.363)	-0.208 (0.357)	-0.208 (0.349)	-0.233 (0.449)	-0.285 (0.360)	-0.297 (0.413)	-0.297 (0.413)
Constant	7.000*** (0.238)	7.043*** (0.287)	7.029*** (0.272)	7.200*** (0.270)	7.013*** (0.267)	6.742*** (0.323)	6.933*** (0.278)	6.887*** (0.272)	6.789*** (0.250)	6.806*** (0.363)	6.839*** (0.250)	6.798*** (0.360)
Observations	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650

¹Specified variables (including within interactions) are centered at their overall sample mean.

Sample sizes are rounded to the nearest 50 in compliance with the terms of the ECLS-B restricted-use data license.

Standard errors in parentheses. *** p<0.001, ** p<0.01, * p<0.05, + p<0.10. Model estimates are based on multiple imputation of 20 datasets. NC = No Controls, C =

Controls, SES = Family Socioeconomic and Cultural Resources, S = Family Structure, H = Early Childhood Health. Model (I) refers to main effects models, Model (II) refers to models with interactions by gender, time period, and gender * time period.

Table C.9: Potential Family and Health Mediators of the Gender Gap in the Location of the 50th Percentile of Externalizing Problems among Per Capita Income Quartile 2 Children Ages 4-5

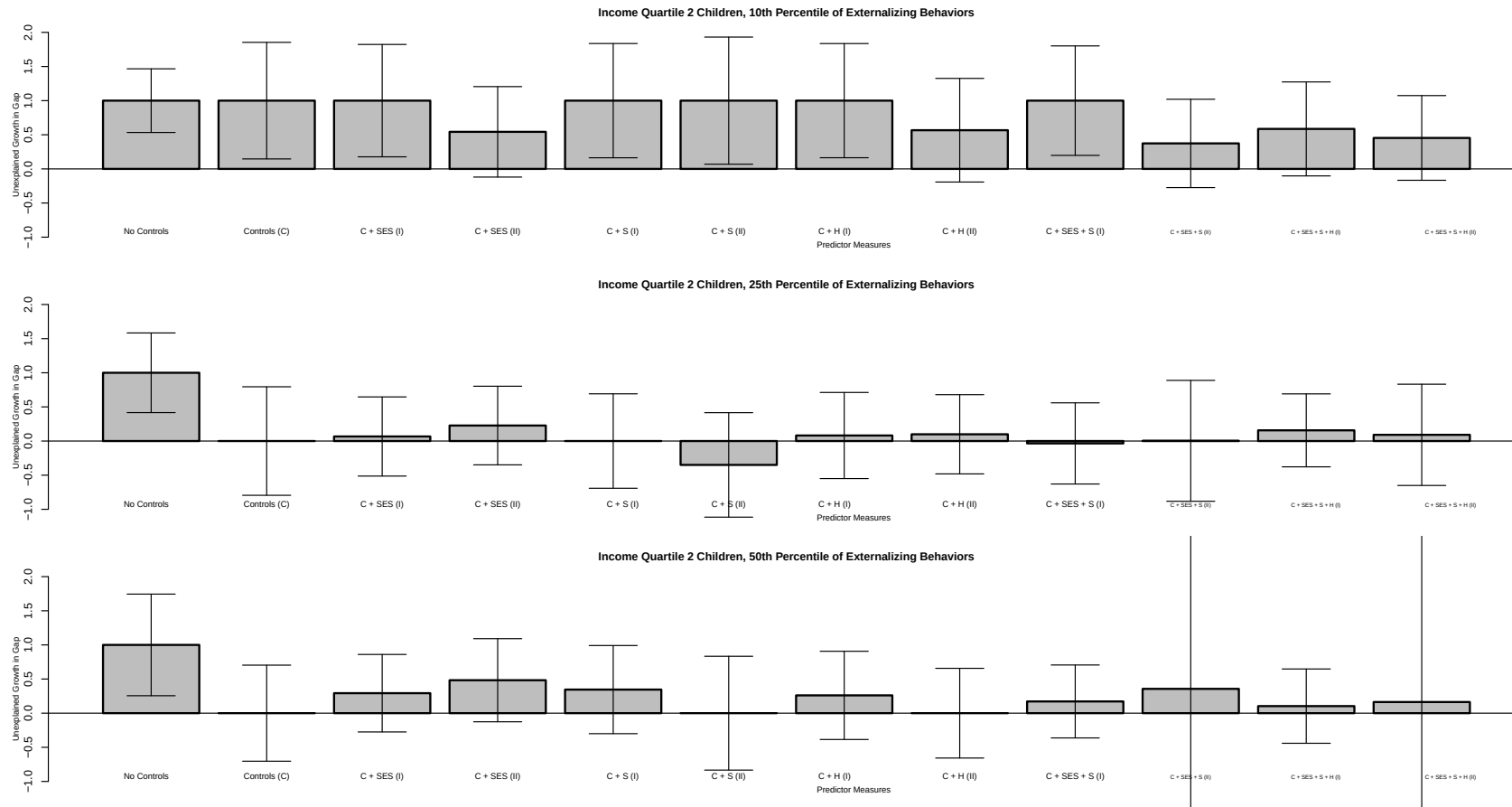
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
VARIABLES	NC:	C:	C + SES (I):	C + SES (II):	C + S (I):	C + S (II):	C + H (I):	C + H (II):	C + SES + S (I):	C + SES + S (II):	C + SES + S + H (I):	C + SES + S + H (II):
2001 Birth Cohort	0.000 (0.045)	0.500 (0.318)	0.439+ (0.240)	0.373 (0.272)	0.424 (0.273)	0.500 (0.326)	0.304 (0.284)	0.500+ (0.291)	0.580* (0.263)	0.407 (0.330)	0.601* (0.257)	0.423 (4.786)
Male	0.000 (0.378)	0.500+ (0.297)	0.463* (0.232)	0.237 (0.269)	0.394 (0.264)	0.500 (0.323)	0.435 (0.265)	0.500+ (0.287)	0.538* (0.248)	0.257 (0.341)	0.592* (0.254)	0.353 (0.868)
2001 Birth Cohort * Male	1.000** (0.378)	-0.000 (0.375)	0.293 (0.270)	0.483 (0.303)	0.345 (0.313)	-0.000 (0.412)	0.261 (0.319)	-0.000 (0.338)	0.172 (0.303)	0.356 (0.389)	0.103 (0.303)	0.163 (1.477)
<u>Socio-Economic Status (SES):</u>												
Mother's Years of Schooling at Birth of Child ¹			-0.122** (0.045)	-0.011 (0.100)					-0.134** (0.046)	-0.025 (0.108)	-0.139** (0.043)	-0.024 (1.162)
Mother's School * Male				-0.242 (0.149)						-0.244 (0.155)		-0.237 (0.714)
Mother's School * 2001 Cohort				-0.032 (0.106)						-0.013 (0.110)		-0.062 (1.343)
Mother's School * Male * 2001 Cohort				0.072 (0.173)						0.055 (0.172)		0.073 (0.839)
<u>Family Structure:</u>												
Father Absent at Birth					-0.121 (0.198)	0.500 (0.485)			-0.118 (0.258)	0.283 (0.438)	-0.066 (0.218)	0.300 (5.987e+13)
Single Mother at Age 4					0.158 (0.184)	-0.000 (0.419)			0.221 (0.181)	-0.038 (0.407)	0.156 (0.183)	0.108 (5.987e+13)
Social Father at Age 4					-0.079 (0.287)	1.000 (2.564)			-0.073 (0.264)	1.264 (2.591)	-0.209 (0.251)	1.158 (21.527)
Two Biological Parents at Age 4 (=reference)					ref	ref			ref	ref	ref	ref
Father Absent at Birth * Male						-0.500 (0.691)				0.160 (0.690)		0.096 (5.987e+13)
Single Mother at Age 4 * Male						0.000 (0.578)				-0.137 (0.598)		-0.390 (5.987e+13)
Social Father at Age 4 * Male						0.500 (2.922)				-0.085 (3.001)		-0.684 (60.259)
Father Absent at Birth * 2001 Birth Cohort						-0.500 (0.560)				-0.264 (0.536)		-0.267 (5.987e+13)
Single Mother at Age 4 * 2001 Birth Cohort						-0.000 (0.518)				0.075 (0.509)		-0.052 (5.987e+13)
Social Father at Age 4 * 2001 Birth Cohort						-1.500 (2.587)				-1.774 (2.627)		-1.628 (20.569)
Father Absent at Birth * Male * 2001 Birth Cohort						0.500 (0.850)				-0.443 (0.889)		-0.431 (5.987e+13)
Single Mother at Age 4 * Male * 2001 Birth Cohort						0.500 (0.764)				0.439 (0.790)		0.751 (5.987e+13)
Social Father at Age 4 * Male * 2001 Birth Cohort						-0.000 (2.980)				0.708 (3.028)		1.340 (59.344)
<u>Early Childhood Health:</u>												
Low Birth Weight (<5.5 pounds, 2,500 g)							0.304 (0.234)	-0.000 (0.517)			0.303 (0.202)	-0.064 (5.153)
Pre-Term Birth (<37 weeks gestation)							-0.130 (0.207)	0.000 (0.435)			-0.090 (0.173)	-0.408 (0.444)
Asthma Diagnosis by Age 4 or 5							-0.000 (0.141)	-1.000 (0.827)			0.012 (0.140)	-0.971 (9.111)
Low Birth Weight * Male							0.500 (0.444)					-0.196 (1.074)
Pre-Term Birth * Male							-0.500 (0.375)					0.125 (0.608)
Asthma Diagnosis * Male							0.500 (0.366)					0.062 (0.365)
Low Birth Weight * 2001 Cohort							0.000 (0.545)					0.506 (5.450)
Pre-Term Birth * 2001 Cohort							-0.000 (0.457)					0.297 (0.556)
Asthma Diagnosis * 2001 Cohort							1.000 (0.814)					0.941 (9.858)
<u>Controls:</u>												
Black		-0.000 (0.199)	0.195 (0.153)	0.085 (0.149)	0.206 (0.199)	-0.000 (0.198)	0.174 (0.194)	0.000 (0.202)	0.187 (0.175)	0.094 (0.193)	0.161 (0.181)	0.172 (1.474)
Hispanic		0.000 (0.181)	0.073 (0.124)	0.043 (0.125)	0.194 (0.173)	0.000 (0.182)	0.174 (0.166)	0.000 (0.175)	0.099 (0.153)	0.019 (0.154)	0.095 (0.155)	0.057 (0.872)
Internalizing ¹		0.500*** (0.087)	0.439*** (0.076)	0.436*** (0.080)	0.467*** (0.081)	0.500*** (0.075)	0.478*** (0.075)	0.500*** (0.070)	0.443*** (0.073)	0.472*** (0.082)	0.453*** (0.077)	0.484 (0.613)
Mother's Age at Birth ¹		-0.000 (0.015)	0.024 (0.022)	0.021 (0.026)	0.006 (0.017)	-0.000 (0.018)	0.000 (0.020)	0.000 (0.019)	0.023 (0.026)	0.019 (0.027)	0.026 (0.024)	0.029 (0.077)
Birth Order		-0.000 (0.046)	0.000 (0.058)	-0.000 (0.052)	0.055 (0.055)	0.000 (0.055)	0.043 (0.047)	-0.000 (0.049)	0.004 (0.064)	0.019 (0.059)	-0.008 (0.070)	-0.014 (0.273)
Child Born 1983		ref	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref
Child Born 1984		0.000 (0.329)	-0.171 (0.323)	-0.250 (0.325)	0.097 (0.332)	0.000 (0.337)	-0.087 (0.341)	0.000 (0.355)	-0.137 (0.355)	-0.363 (0.351)	-0.157 (0.325)	-0.057 (2.397)
Child Born 1985		0.000 (0.349)	-0.049 (0.312)	-0.074 (0.325)	-0.018 (0.338)	0.000 (0.380)	-0.000 (0.348)	0.000 (0.349)	-0.015 (0.333)	-0.132 (0.341)	-0.045 (0.355)	-0.050 (1.381)
Child Born 1986		0.000 (0.298)	0.000 (0.278)	-0.043 (0.268)	0.061 (0.292)	0.000 (0.336)	-0.043 (0.290)	0.000 (0.343)	-0.122 (0.283)	-0.038 (0.325)	-0.069 (0.302)	0.039 (3.117)
Constant	8.000*** (0.045)	7.831*** (0.312)	7.742*** (0.255)	7.883*** (0.271)	7.653*** (0.293)	7.831*** (0.325)	7.795*** (0.274)	7.831*** (0.307)	7.594*** (0.269)	7.838*** (0.364)	7.593*** (0.266)	7.834 (4.940)
Observations	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650

¹Specified variables (including within interactions) are centered at their overall sample mean.

Sample sizes are rounded to the nearest 50 in compliance with the terms of the ECLS-B restricted-use data license.

Standard errors in parentheses. *** p<0.001, ** p<0.01, * p<0.05, + p<0.10. Model estimates are based on multiple imputation of 20 datasets. NC = No Controls, C = Controls, SES = Family Socioeconomic and Cultural Resources, S = Family Structure, H = Early Childhood Health. Model (I) refers to main effects models, Model (II) refers to models with interactions by gender, time period, and gender * time period.

Figure C.6: Potential Family and Health Mediators of the Growth of the Gender Gap in the Location of the 10th, 25th, and 50th Percentiles of Externalizing Behavior Problems at Ages 4-5 among Income Quartile 2 Children



Notes: See the Appendix for the full table of results. Model labels refer to: Controls (C): Internalizing problems (centered), mother's age at birth (centered), birth order, dummies for year of birth (1984-1986) and race/ethnicity; SES (I): mother's years of schooling at birth (centered); SES (II): mother's years of schooling interacted with each of the following: male, time period (2001 cohort indicator variable), and male*time period; Family Structure (S) (I): father absent at birth dummy and dummies for single mother at age 4 or social father at age 4 (two biological parents at age 4 is the reference); S (II): interactions between each of the S (I) variables and male, time period, and male*time period; Early Childhood Health (H) (I): a dummy for low birth weight, a dummy for pre-term, and a dummy for asthma diagnosis by age 4 or 5; H (II): interactions between each H (I) variable and male, time period, and male*time period.

C.3 Results by Mother's Education Level

Figure C.7 shows that the shifts in the externalizing problems distributions of females and males in the early and late time periods within the four categories of mother's education exhibit remarkably similar patterns to the shifts in the externalizing problems distributions within each of the four corresponding household income categories. At one extreme, children whose mothers had not completed high school exhibited similar shifts in externalizing problems by gender and time period as children in the lowest household income quartile. At the other extreme, children whose mothers had a college degree experienced similar shifts in externalizing problems by gender and time period as did children in the highest income quartile.

[FIGURE C.7 ABOUT HERE]

Figure C.8 displays the same expected values of externalizing problems as Figure 5.4 except broken down by mother's education level, time period and gender. The patterns of externalizing problems scores and gender gaps across categories of mother's education are very similar to those by household income quartile. Expected values of externalizing problems at virtually all observed quantiles are highest among the children whose mothers who do not have a high school degree and decrease gradually with mother's education. In the later period, gender gaps in expected values of externalizing problems are present even at the 10th and 25th quantiles among the children of mothers with no high school degree or a high school degree/GED; these gaps are not present in the later period at the 10th and 25th quantiles among children with more highly educated mothers.

[FIGURE C.8 ABOUT HERE]

Panel 1 of Figure C.9 shows that, in the 1980s, there was a 1- or 2-point gender gap in in the location of the 90th and 75th percentiles of externalizing problems across children from all four mother's education groups. The gender gap in the location of the 50th percentile showed up among children whose mothers had less than a high school degree or who had some college, but not among children whose mothers had a high school or a

college degree. The gap in the location of the 50th percentile among children of mothers with some college occurred because these mothers rated their girls as having very low levels of externalizing problems – levels on par with girls at the 50th percentile from the most-educated mothers – but rated their sons as having higher levels of externalizing problems than did the most-educated mothers of boys at the 50th percentile. The gender gap in the location of the 25th percentile appeared among children whose mother’s had some college. This gap in the location of the 25th percentile occurred for the same reason as the gaps in location of the 50th percentiles – because these mother’s rated their daughters as having the lowest possible levels of externalizing problems.

[FIGURE C.9 ABOUT HERE]

Panel 2 of Figure C.9 shows that, with one exception, the growth in the gender gap between the 1980s and 2000s appeared only among the children whose mothers had no more than a high school degree. Even more strikingly, this growth in the gap occurred at virtually every observed externalizing problems percentile, except for children of mothers with less than a high school degree at the 50th percentile. The result was the emergence of a gender gap even in the location of the 10th and 25th percentiles among children in the two lowest education brackets. By contrast, the children of mothers in the two highest education brackets did not exhibit a gender gap in the location of the 10th, 25th, or 50th percentiles (the growth in the gap in the location of the 50th percentile for children from the highest education bracket is based on a noisy estimate that is not statistically distinguishable from zero).

Figure C.7: Externalizing Problems Distribution, by Mother's Education, Gender, and Cohort

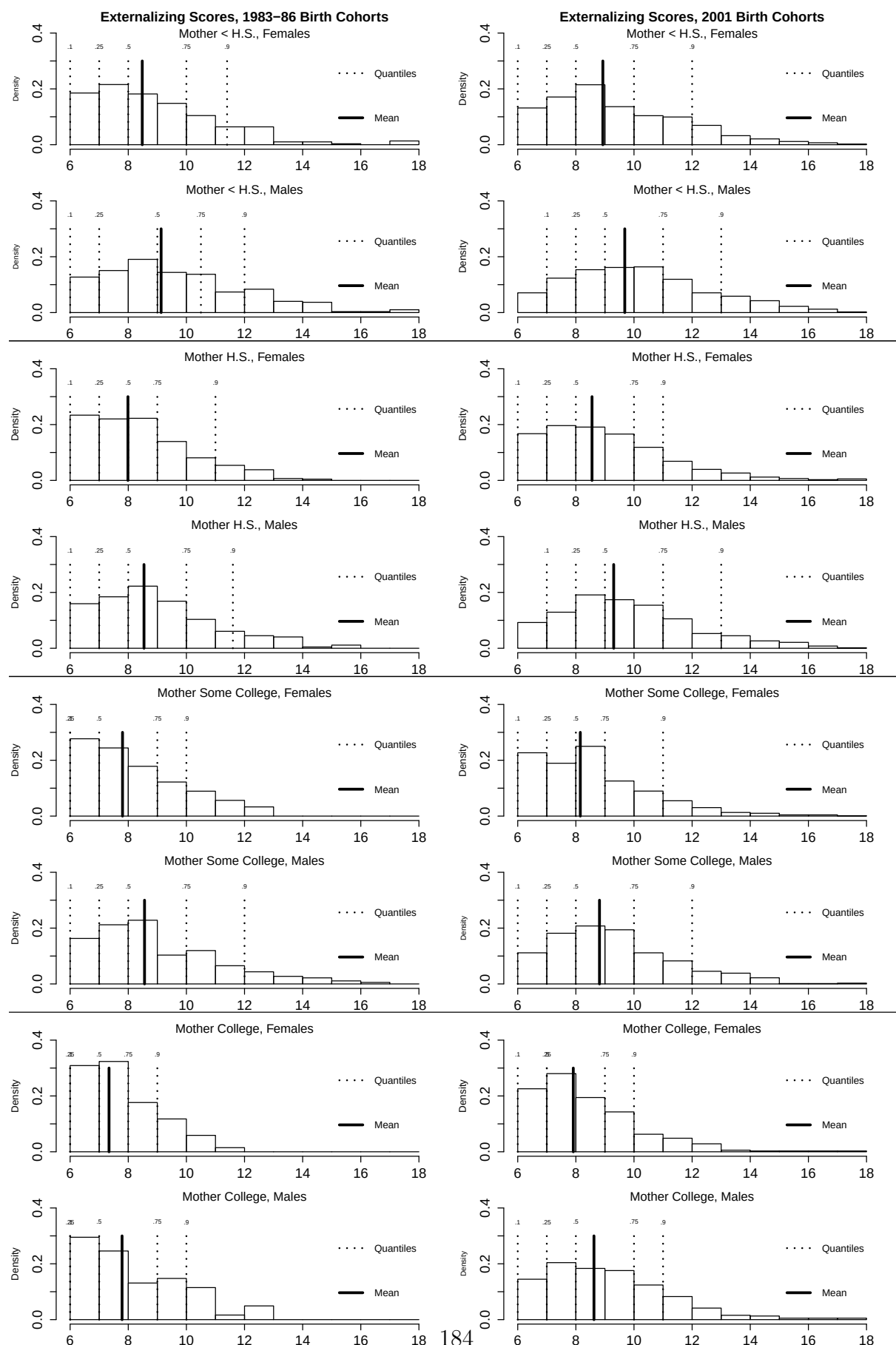


Figure C.8: Expected Values of Externalizing Problems at Ages 4 and 5 at Various Points in the Behavioral Distribution, by Mother's Education Level, Cohort, and Gender

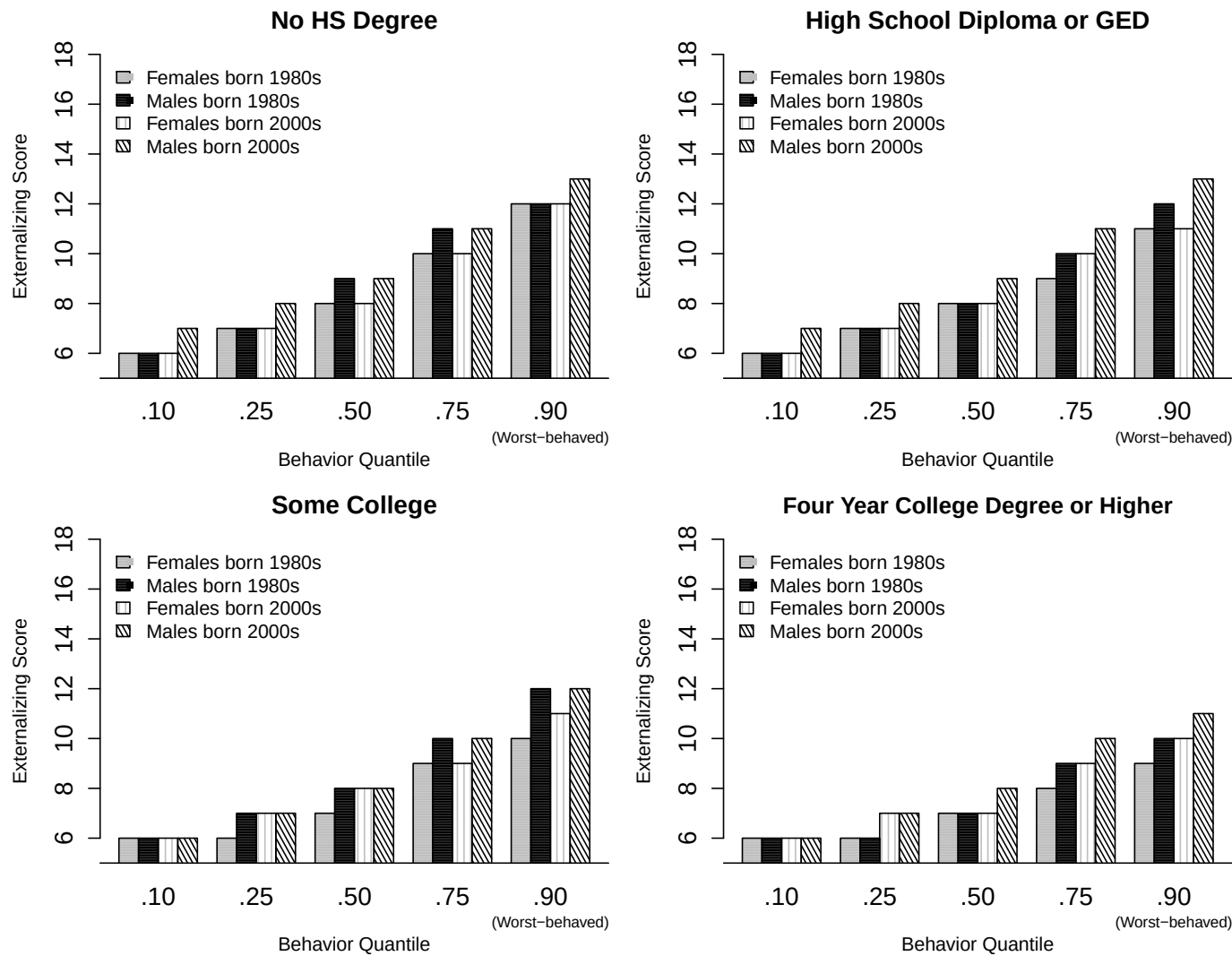
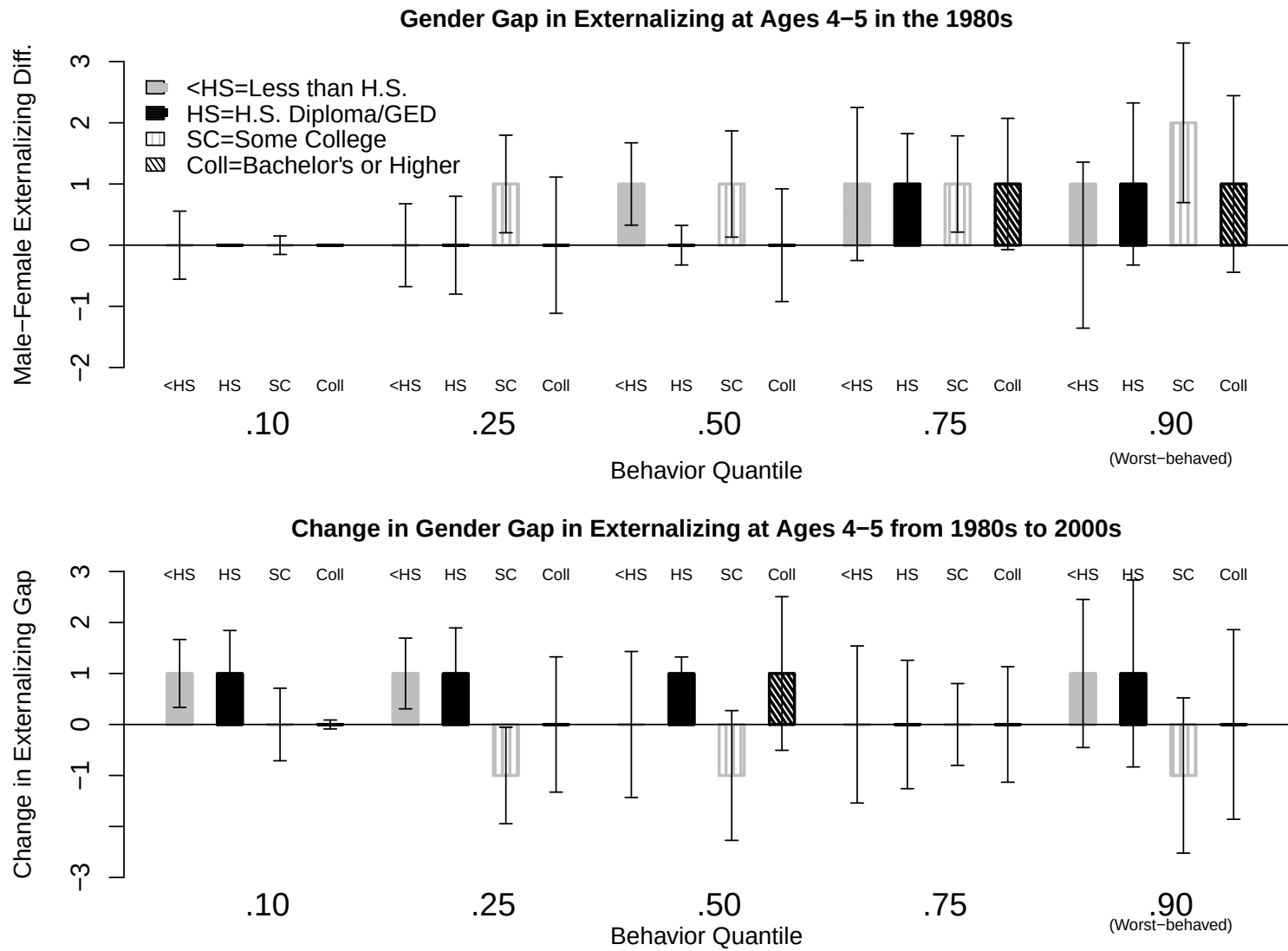


Figure C.9: Gender Gap in the location of the 10th, 25th, 50th, 75th, and 90th Percentiles of Externalizing Problems Within Girls' and Boys' Respective Behavioral Distributions and Change in Gender Gaps Between the 1980s and 2001 Cohorts, by Mother's Education Level



Bibliography

- Acker, J. (1990). Hierarchies, jobs, bodies. *Gender & Society*, 4(2):139–158.
- Akinbami, L. J., Moorman, J. E., Garbe, P. L., and Sondik, E. J. (March 2009). Status of childhood asthma in the United States, 1980-2007. *Pediatrics*, 123(Supplement 3):S131–S145.
- Alexander, K. L., Entwisle, D. R., and Horsey, C. S. (1997). From first grade forward: Early foundations of high school dropout. *Sociology of Education*, 70(2):87–107.
- Allison, P. D. (1999). Comparing Logit and Probit coefficients across groups. *Sociological Methods & Research*, 28(2):186–208.
- Allison, P. D. (2000). Multiple imputation for missing data: A cautionary tale. *Sociological Methods & Research*, 28:301–309.
- Almqvist, C., Pershagen, G., and Wickman, M. (2005). Low socioeconomic status as a risk factor for asthma, rhinitis and sensitization at 4 years in a birth cohort. *Clinical & Experimental Allergy*, 35(5):612–618.
- Altepeter, T. S. (1989). The PPVT-R as a measure of psycholinguistic functioning: A caution. *Journal of Clinical Psychology*, 45(6):935–941.
- Astone, N. M. and McLanahan, S. S. (1991). Family structure, parental practices and high school completion. *American Sociological Review*, 56(3):309–320.
- Aylward, G. P. (2002). Cognitive and neuropsychological outcomes: More than IQ scores. *Mental Retardation and Developmental Disabilities Research Reviews*, 8(4):234–240.
- Bailey, M. J. and Dynarski, S. M. (2011). Gains and gaps: Changing inequality in U.S. college entry and completion. Working Paper 17633, National Bureau of Economic Research.
- Becker, G. S. (1981). *A Treatise on the Family*. Harvard University Press.
- Belsky, J., Hsieh, K.-H., and Crnic, K. (1998). Mothering, fathering, and infant negativity as antecedents of boys’ externalizing problems and inhibition at age 3 years: Differential susceptibility to rearing experience? *Development and Psychopathology*, 10(02):301–319.
- Bertrand, M. and Pan, J. (2011). The trouble with boys: Social influences and the gender gap in disruptive behavior. Working Paper 17541, National Bureau of Economic Research.

- Bhutta, A., Cleves, M., Casey, P., Cradock, M., and Anand, K. (2002). Cognitive and behavioral outcomes of school-aged children who were born preterm: A meta-analysis. *JAMA: The Journal of the American Medical Association*, 288(6):728–737.
- Bianchi, S. M. (2000). Maternal employment and time with children: Dramatic change or surprising continuity? *Demography*, 37(4):401–414.
- Bianchi, S. M. and Casper, L. M. (2000). *American families*, volume 55. Population Reference Bureau.
- Blackman, J. A. and Gurka, M. J. (2007). Developmental and behavioral comorbidities of asthma in children. *Journal of Developmental & Behavioral Pediatrics*, 28(2):92–99.
- Blair, C. (2002). School readiness: Integrating cognition and emotion in a neurobiological conceptualization of children’s functioning at school entry. *American Psychologist*, 57(2):111–127.
- Bornstein, M. H. and Haynes, O. M. (1998). Vocabulary competence in early childhood: Measurement, latent construct, and predictive validity. *Child Development*, 69(3):654–671.
- Bowles, S. (1972). Schooling and inequality from generation to generation. *Journal of Political Economy*, 80(3):pp. S219–S251.
- Boyle, C. A., Boulet, S., Schieve, L. A., Cohen, R. A., Blumberg, S. J., Yeargin-Allsopp, M., Visser, S., and Kogan, M. D. (2011). Trends in the prevalence of developmental disabilities in U.S. children, 1997-2008. *Pediatrics*, 127(6):1034–1042.
- Bradley, R. H. and Corwyn, R. F. (2002). Socioeconomic status and child development. *Annual Review of Psychology*, 53(1):371–399.
- Branum, A. M. and Schoendorf, K. C. (2002). Changing patterns of low birthweight and preterm birth in the United States, 1981–98. *Paediatric and Perinatal Epidemiology*, 16(1):8–15.
- Breslau, N., Chilcoat, H. D., Johnson, E. O., Andreski, P., and Lucia, V. C. (2000). Neurologic soft signs and low birthweight: Their association and neuropsychiatric implications. *Biological Psychiatry*, 47(1):71 – 79.
- Buchmann, C. and DiPrete, T. A. (2006). The growing female advantage in college completion: The role of family background and academic achievement. *American Sociological Review*, 71(4):515–541.
- Buchmann, C., DiPrete, T. A., and McDaniel, A. (2008). Gender inequalities in education. *Annual Review of Sociology*, 34(1):319–337.
- Bugental, D. B. and Happaney, K. (2004). Predicting infant maltreatment in low-income families: The interactive effects of maternal attributions and child status at birth. *Developmental Psychology*, 40(2):234–243.
- Burke, P. J. (1989). Gender identity, sex, and school performance. *Social Psychology Quarterly*, pages 159–169.

- Byrd, R. S. and Weitzman, M. L. (1994). Predictors of early grade retention among children in the United States. *Pediatrics*, 93(3):481–487.
- Carlson, E. A. (1998). A prospective longitudinal study of attachment disorganization/disorientation. *Child Development*, 69(4):1107–1128.
- Carlson, M. and England, P. (2011). *Social class and changing families in an unequal America*, chapter Social class and family patterns, pages 1–20. Stanford University Press.
- Carlson, M. J. (2006). Family structure, father involvement, and adolescent behavioral outcomes. *Journal of Marriage and Family*, 68(1):137–154.
- Caspi, A., Henry, B., McGee, R. O., Moffitt, T. E., and Silva, P. A. (1995). Temperamental origins of child and adolescent behavior problems: From age three to age fifteen. *Child Development*, 66(1):55–68.
- CDC (2007). Health, United States, 2007: Chartbook on Trends in the Health of Americans. Centers for Disease Control and Prevention, National Center for Health Statistics. Accessed Online: <http://www.cdc.gov/nchs/data/hus/hus07.pdf>.
- CDC (2013). Attention-Deficit/Hyperactivity Disorder. Centers for Disease Control and Prevention. Accessed Online: <http://www.cdc.gov/ncbddd/adhd/timeline.html>.
- Charles, C. Z., Fischer, M. J., Mooney, M. A., and Massey, D. S. (2009). *Taming the river: Negotiating the academic, financial, and social currents in selective colleges and universities*. Princeton University Press.
- Cherlin, A. J. (2011). *Social class and changing families in an unequal America*, chapter Between poor and prosperous: Do the family patterns of moderately educated Americans deserve a closer look?, pages 68–84. Stanford University Press.
- Cherlin, A. J., Chase-Lansdale, P. L., and McRae, C. (1998). Effects of parental divorce on mental health throughout the life course. *American Sociological Review*, 63(2):239–249.
- Child Trends Data Bank. (2013). Family Structure. Child Trends. Accessed Online: <http://www.childtrends.org/?indicators=family-structure>.
- ChildStats.gov (2012). Current population reports: Child population: Number of children (in millions) ages 0 to 17 in the United States by age, 1950 to 2011 and projected 2012 to 2050. Technical report, U.S. Census Bureau.
- Cho, D. (2007). The role of high school performance in explaining women’s rising college enrollment. *Economics of Education Review*, 26(4):450–462.
- Conley, D. (1999). *Being Black, Living in the Red: Race, Wealth, Social Policy*. Univ of California Press.
- Cooper, C. E., Osborne, C. A., Beck, A. N., and McLanahan, S. S. (2011). Partnership instability, school readiness, and gender disparities. *Sociology of Education*, 84(3):246–259.

- Correll, S. J. and Ridgeway, C. L. (2006). Expectation states theory. In Delamater, J., editor, *Handbook of Social Psychology*, Handbooks of Sociology and Social Research, pages 29–51. Springer U.S.
- Crenshaw, K. (1991). Mapping the margins: Intersectionality, identity politics, and violence against women of color. *Stanford Law Review*, pages 1241–1299.
- Crone, D. A. and Whitehurst, G. J. (1999). Age and schooling effects on emergent literacy and early reading skills. *Journal of Educational Psychology*, 91(4):604–614.
- Cuffe, S. P., Moore, C. G., and McKeown, R. E. (2005). Prevalence and correlates of ADHD symptoms in the National Health Interview Survey. *Journal of Attention Disorders*, 9(2):392–401.
- Davies, P. T. and Lindsay, L. L. (2004). Interparental conflict and adolescent adjustment: Why does gender moderate early adolescent vulnerability? *Journal of Family Psychology*, 18(1):160–170.
- Dawson, D. A. (1991). Family structure and children’s health and well-being: Data from the 1988 National Health Interview Survey on Child Health. *Journal of Marriage and Family*, 53(3):573–584.
- Dearing, E., McCartney, K., Taylor, B. A., et al. (2006). Within-child associations between family income and externalizing and internalizing problems. *Developmental Psychology*, 42(2):237–252.
- Deater-Deckard, K. and Dodge, K. A. (1997). Externalizing behavior problems and discipline revisited: Nonlinear effects and variation by culture, context, and gender. *Psychological Inquiry*, 8(3):161–175.
- Deaux, K. and Major, B. (1987). Putting gender into context: An interactive model of gender-related behavior. *Psychological review*, 94(3):369.
- Demissie, K., Rhoads, G. G., Ananth, C. V., Alexander, G. R., Kramer, M. S., Kogan, M. D., and Joseph, K. S. (2001). Trends in preterm birth and neonatal mortality among blacks and whites in the United States from 1989 to 1997. *American Journal of Epidemiology*, 154(4):307–315.
- Demo, D. H. and Acock, A. C. (1988). The impact of divorce on children. *Journal of Marriage and Family*, 50(3):619–648.
- Department of Education, U. (2004). Digest of education statistics 2003. Technical report, National Center for Education Statistics.
- Diprete, T. and Buchmann, C. (2006). Gender-specific trends in the value of education and the emerging gender gap in college completion. *Demography*, 43:1–24. 10.1353/dem.2006.0003.
- DiPrete, T. A. and Jennings, J. L. (2012). Social and behavioral skills and the gender gap in early educational achievement. *Social Science Research*, 41(1):1 – 15.
- Dufur, M. J., Parcel, T. L., and Mckune, B. A. (2008). Capital and context: Using social capital at home and at school to predict child social adjustment. *Journal of Health and Social Behavior*, 49(2):146–161.

- Duncan, G. J., Dowsett, C. J., Claessens, A., Magnuson, K., Huston, A. C., Klebanov, P., Pagani, L. S., Feinstein, L., Engel, M., Brooks-Gunn, J., et al. (2007). School readiness and later achievement. *Developmental psychology*, 43(6):1428.
- Duncan, G. J. and Magnuson, K. (2011). The nature and impact of early achievement skills, attention skills, and behavior problems. In Duncan, G. J. and Murnane, R. J., editors, *Whither Opportunity?: Rising Inequality, Schools, and Children's Life Chances*, pages 47–70. Russell Sage Foundation.
- Dunn, L. M. (1965). Peabody Picture Vocabulary Test. American Guidance Service, Circle Pines, MN.
- Eisenberg, N., Guthrie, I. K., Fabes, R. A., Shepard, S., Losoya, S., Murphy, B., Jones, S., Poulin, R., and Reiser, M. (2000). Prediction of elementary school children's externalizing problem behaviors from attentional and behavioral regulation and negative emotionality. *Child Development*, 71(5):1367–1382.
- Elder, T. E. and Lubotsky, D. H. (2009). Kindergarten entrance age and children's achievement: Impacts of state policies, family background, and peers. *Journal of Human Resources*, 44(3):641–683.
- Ellwood, D. and Jencks, C. (2004). The spread of single-parent families in the United States since 1960. Research Programs, John F. Kennedy School of Government, Harvard University.
- Elsmen, E., Steen, M., and Hellstrom-Westas, L. (2004). Sex and gender differences in newborn infants: Why are boys at increased risk? *The Journal of Men's Health & Gender*, 1(4):303–311.
- England, P. and Farkas, G. (1986). *Households, employment, and gender: A social, economic, and demographic view*. Aldine Publishing Co, Hawthorne, NY, US.
- Ensminger, M. E. and Shusarcick, A. L. (1992). Paths to high school graduation or dropout: A longitudinal study of a first-grade cohort. *Sociology of Education*, 65(2):95–113.
- Entwisle, D., Alexander, K., and Olson, L. (2005). First grade and educational attainment by age 22: A new story. *American Journal of Sociology*, 110(5):1458–1502.
- Entwisle, D. R., Alexander, K. L., and Olson, L. S. (2007). Early schooling: The handicap of being poor and male. *Sociology of Education*, 80(2):114–138.
- Farkas, G. (2003). Cognitive skills and noncognitive traits and behaviors in stratification processes. *Annual Review of Sociology*, 29:541–562.
- Ferguson, J. H. (2000). National Institutes of Health consensus development conference statement: Diagnosis and treatment of Attention-Deficit/Hyperactivity Disorder (ADHD). *Journal of the American Academy of Child & Adolescent Psychiatry*, 39(2):182 – 193.
- Gaub, M. and Carlson, C. L. (1997). Gender differences in adhd: A meta-analysis and critical review. *Journal of the American Academy of Child & Adolescent Psychiatry*, 36(8):1036–1045.

- Goldin, C. (2006). The quiet revolution that transformed women's employment, education, and family. *National Bureau of Economic Research Working Paper Series*, No. 11953.
- Goldin, C. and Katz, L. F. (2000). The power of the pill: Oral contraceptives and women's career and marriage decisions. Technical report, National Bureau of Economic Research.
- Goldin, C., Katz, L. F., and Kuziemko, I. (2006). The homecoming of American college women: The reversal of the college gender gap. Working Paper 12139, National Bureau of Economic Research.
- Goodwin, P., McGill, B., and Chandra, A. (2009). Who marries and when? Age at first marriage in the United States: 2002. *NCHS data brief*, (19):1–8.
- Gottschalk, P. and Danziger, S. (2005). Inequality of wage rates, earnings and family income in the United States, 1975–2002. *Review of Income and Wealth*, 51(2):231–254.
- Gullo, D. F. and Burton, C. B. (1992). Age of entry, preschool experience, and sex as antecedents of academic readiness in kindergarten. *Early Childhood Research Quarterly*, 7(2):175–186.
- Guttmannova, K., Szanyi, J. M., and Cali, P. W. (2008). Internalizing and externalizing behavior problem scores. *Educational and Psychological Measurement*, 68(4):676–694.
- Hack, M., Klein, N. K., and Taylor, H. G. (1995). Long-term developmental outcomes of low birth weight infants. *The Future of Children*, 5(1): 176–196.
- Harris, K. M. and Morgan, S. P. (1991). Fathers, sons, and daughters: Differential paternal involvement in parenting. *Journal of Marriage and the Family*, 53(3): 531–544.
- Health and Human Services, U.S. Department of. (2005). Natality public-use data 1995–2002, on CDC wonder online database.
- Heckman, J. J. and LaFontaine, P. A. (2007). The American high school graduation rate: Trends and levels. Working Paper 13670, National Bureau of Economic Research.
- Heckman, J. J. and LaFontaine, P. A. (2010). The American high school graduation rate: Trends and levels. *Review of Economics and Statistics*, 92(2):244–262.
- Heckman, J. J. and Rubinstein, Y. (2001). The importance of noncognitive skills: Lessons from the GED testing program. *The American Economic Review*, 91(2):145–149.
- Heckman, J. J., Stixrud, J., and Urzua, S. (2006). The effects of cognitive and noncognitive abilities on labor market outcomes and social behavior. Working Paper 12006, National Bureau of Economic Research.
- Hetherington, E. M., Cox, M., and Cox, R. (1982). Effects of Divorce on Parents and Children, In *Nontraditional Families: Parenting and Child Development*, ed. M.E. Lamb. Pages 233–287. Erlbaum, Hillsdale, NJ.
- Hetherington, E. M., Cox, M., and Cox, R. (1985). Long-term effects of divorce and remarriage on the adjustment of children. *Journal of the American Academy of Child Psychiatry*, 24(5):518 – 530.

- Hill, A. L., Degnan, K. A., Calkins, S. D., and Keane, S. P. (2006). Profiles of externalizing behavior problems for boys and girls across preschool: The roles of emotion regulation and inattention. *Developmental Psychology*, 42(5):913–928.
- Hill, H. D., Morris, P., Gennetian, L. A., Wolf, S., and Tubbs, C. (2013). The consequences of income instability for children’s well-being. *Child Development Perspectives*, 7(2): 85–90.
- Horbar, J. D., Badger, G. J., Carpenter, J. H., Fanaroff, A. A., Kilpatrick, S., LaCorte, M., Phibbs, R., Soll, R. F., and for the Members of the Vermont Oxford Network (2002). Trends in mortality and morbidity for very low birth weight infants, 1991–1999. *Pediatrics*, 110(1):143–151.
- Ingemarsson, I. (2003). Gender aspects of preterm birth. *BJOG: An International Journal of Obstetrics & Gynaecology*, 110:34–38.
- Jacob, B. A. (2002). Where the boys aren’t: Non-cognitive skills, returns to school and the gender gap in higher education. *Economics of Education Review*, 21(6):589 – 598.
- Kane, T. J. (1994). College entry by blacks since 1970: The role of college costs, family background, and the returns to education. *Journal of Political Economy*, 102(5):878–911.
- Karlson, K. B., Holm, A., and Breen, R. (2012). Comparing regression coefficients between same-sample nested models using logit and probit: A new method. *Sociological Methodology*, 42(1):286–313.
- KewalRamani, A. (2007). *Status & Trends in the Education of Racial & Ethnic Minorities*. DIANE Publishing.
- King, M. and Bearman, P. (2011). Socioeconomic status and the increased prevalence of autism in California. *American Sociological Review*, 76(2):320–346.
- Kochanska, G., Murray, K. T., and Harlan, E. T. (2000). Effortful control in early childhood: Continuity and change, antecedents, and implications for social development. *Developmental Psychology*, 36(2):220–232.
- Koenker, R. and Bassett, Gilbert, J. (1978). Regression quantiles. *Econometrica*, 46(1):33–50.
- Koenker, R. and Hallock, K. (2001). Quantile regression: An introduction. *Journal of Economic Perspectives*, 15(4):43–56.
- Kraft, R. and Nickel, L. D. (1995). Sex-related differences in cognition: Development during early childhood. *Learning and Individual Differences*, 7(3):249 – 271.
- Krein, S. and Beller, A. (1988). Educational attainment of children from single-parent families: Differences by exposure, gender, and race. *Demography*, 25:221–234. 10.2307/2061290.
- Lahey, B. B., Hartung, C. M., Loney, J., Pelham, W. E., Chronis, A. M., and Lee, S. S. (2007). Are there sex differences in the predictive validity of DSM–IV ADHD among younger children? *Journal of Clinical Child & Adolescent Psychology*, 36(2):113–126.

- Lange, K., Reichl, S., Lange, K., Tucha, L., and Tucha, O. (2010). The history of attention deficit hyperactivity disorder. *ADHD Attention Deficit and Hyperactivity Disorders*, 2(4):241–255.
- Legewie, J. and DiPrete, T. A. (2012). School context and the gender gap in educational achievement. *American Sociological Review*, 77(3):463–485.
- Link, B. G. and Phelan, J. (1995). Social conditions as fundamental causes of disease. *Journal of Health and Social Behavior*, pages 80–94.
- Link, B. G. and Phelan, J. C. (2001). Conceptualizing stigma. *Annual Review of Sociology*, pages 363–385.
- Linver, M. R., Brooks-Gunn, J., and Kohen, D. E. (2002). Family processes as pathways from income to young children’s development. *Developmental Psychology*, 38(5):719–734.
- Luciana, M. (2003). Cognitive development in children born preterm: Implications for theories of brain plasticity following early injury. *Development and Psychopathology*, 15(4):1017–1047.
- Lynch, S. M. and Brown, J. S. (2014). *Handling Missing Data in Social Research*. Chapman and Hall. Forthcoming.
- Maccoby, E. E. (1988). Gender as a social category. *Developmental Psychology*, 24(6):755.
- Mare, R. D. (1991). Five decades of educational assortative mating. *American Sociological Review*, 56(1):15–32.
- Martin, P. Y. (2003). “said and done” versus “saying and doing” gendering practices, practicing gender at work. *Gender & Society*, 17(3):342–366.
- Massey, D. S. and Denton, N. A. (1993). *American Apartheid: Segregation and the Making of the Underclass*. Harvard University Press.
- Mathews, T. and Hamilton, B. (2002). Mean age of mother, 1970 to 2000: National vital statistics reports. Technical Report 51(1), National Center for Health Statistics.
- Matthews, J. S., Ponitz, C. C., and Morrison, F. J. (2009). Early gender differences in self-regulation and academic achievement. *Journal of Educational Psychology*, 101(3):689–704.
- Mayes, R., Bagwell, C., and Erkulwater, J. (2009). *Medicating Children: ADHD and Pediatric Mental Health*. Harvard University Press.
- McClelland, M. M., Cameron, C. E., Connor, C., Farris, C. L., Jewkes, A. M., Morrison, F. J., et al. (2007). Links between behavioral regulation and preschoolers’ literacy, vocabulary, and math skills. *Developmental Psychology*, 43(4):947–959.
- McDaniel, M., Paxson, C., and Waldfogel, J. (May 2006). Racial disparities in childhood asthma in the United States: Evidence from the National Health Interview Survey, 1997 to 2003. *Pediatrics*, 117(5):e868–e877.

- McFadyen-Ketchum, S. A., Bates, J. E., Dodge, K. A., and Pettit, G. S. (1996). Patterns of change in early childhood aggressive-disruptive behavior: Gender differences in predictions from early coercive and affectionate mother-child interactions. *Child Development*, 67(5):2417–2433.
- McGregor, J. A., Leff, M., Orleans, M., and Baron, A. (1992). Fetal gender differences in preterm birth: findings in a north American cohort. *American Journal of Perinatology*, 9(1)(01):43–48.
- McLanahan, S. (2004). Diverging destinies: How children are faring under the second demographic transition. *Demography*, 41(4):607–627.
- McLanahan, S. and Percheski, C. (2008). Family structure and the reproduction of inequalities. *Annual Review of Sociology*, 34(1):257–276.
- McLeod, J. D. and Kaiser, K. (2004). Childhood emotional and behavioral problems and educational attainment. *American Sociological Review*, 69(5):636–658.
- Mendez, L. M. R. (2003). Predictors of suspension and negative school outcomes: A longitudinal investigation. *New Directions for Youth Development*, 2003(99):17–33.
- Mendez, L. R. and Knopf, H. (2003). Who gets suspended from school and why: A demographic analysis of schools and disciplinary infractions in a large school district. *Education and Treatment of Children*, 26(1):30–51.
- Mick, E., Biederman, J., Prince, J., Fischer, M. J., and Faraone, S. V. (2002). Impact of low birth weight on attention-deficit hyperactivity disorder. *Journal of Developmental & Behavioral Pediatrics*, 23(1):16–22.
- Mickelson, R. A. (2003). Gender, Bourdieu, and the anomaly of women’s achievement redux. *Sociology of Education*, 76(4):373–375.
- Miller, G. E. and Chen, E. (2013). The biological residue of childhood poverty. *Child Development Perspectives*, 7(2): 67–73.
- Miner, J. L. and Clarke-Stewart, K. A. (2008). Trajectories of externalizing behavior from age 2 to age 9: Relations with gender, temperament, ethnicity, parenting, and rater. *Developmental Psychology*, 44(3):771.
- Moffitt, T. E. and Caspi, A. (2001). Childhood predictors differentiate life-course persistent and adolescence-limited antisocial pathways among males and females. *Development and Psychopathology*, 13(02):355–375.
- Moffitt, T. E., Caspi, A., Harrington, H., and Milne, B. J. (2002). Males on the life-course-persistent and adolescence-limited antisocial pathways: Follow-up at age 26 years. *Development and Psychopathology*, 14(01):179–207.
- Moiduddin, E. M. (2008). Understanding the sources of racial and gender disparities in early childhood aggression. Doctoral Dissertation, Princeton University.
- Moorman, J. E., Rudd, R. A., Johnson, C. A., King, M., and et al. (2007). National surveillance for asthma — United States, 1980–2004. *Surveillance Summaries*, 56(SS08):1–14.

- Morris, P., Duncan, G., and Rodrigues, C. (2004). Does money really matter? Estimating impacts of family income on children's achievement with data from random-assignment experiments. *Unpublished manuscript*.
- Murphy, K. and Welch, F. (1989). Wage premiums for college graduates: Recent growth and possible explanations. *Educational Researcher*, 18(4):17–26.
- Murphy, K. M. and Welch, F. (1992). The structure of wages. *The Quarterly Journal of Economics*, 107(1):285–326.
- Murphy, K. M. and Welch, F. (1993). Occupational change and the demand for skill, 1940–1990. *The American Economic Review*, 83(2):122–126.
- NCES (2010). Digest of education statistics 2010. Technical report, Institute for Education Sciences.
- Olfson, M., Gameroff, M., Marcus, S., and Jensen, P. (2003). National trends in the treatment of attention deficit hyperactivity disorder. *Am J Psychiatry*, 160(6):1071–1077.
- Oliver, M. L. and Shapiro, T. M. (2006). *Black wealth, White Wealth: A New Perspective on Racial Inequality*. CRC Press.
- Oppenheimer, V. K. (1988). A theory of marriage timing. *American Journal of Sociology*, 94(3): 563–591.
- Ouazad, A. (2008). Assessed by a teacher like me: Race, gender, and subjective evaluations. CEE discussion papers, CEEDP0098. Centre for the Economics of Education, London School of Economics and Political Science, London, UK
- Owens, J. and Massey, D. S. (2011). Stereotype threat and college academic performance: A latent variables approach. *Social Science Research*, 40(1):150 – 166.
- Pan, B. A., Rowe, M. L., Spier, E., and Tamis-Lemonda, C. (2004). Measuring productive vocabulary of toddlers in low-income families: Concurrent and predictive validity of three sources of data. *Journal of Child Language*, 31(3):587–608.
- Paneth, N. S. (1995). The problem of low birth weight. *The Future of Children*, 5(1):19–34.
- Peterson, J. L. and Zill, N. (1986). Marital disruption, parent-child relationships, and behavior problems in children. *Journal of Marriage and Family*, 48(2):295–307.
- Pharoah, P., Stevenson, C., Cooke, R., and Stevenson, R. (1994). Prevalence of behaviour disorders in low birthweight infants. *Archives of Disease in Childhood*, 70(4):271–274.
- Raver, C. C. (2002). Emotions matter: Making the case for the role of young children's emotional development for early school readiness. Working Papers 0206, Harris School of Public Policy Studies, University of Chicago.
- Reardon, S. F. (2011). The widening academic achievement gap between the rich and the poor: New evidence and possible explanations. In Duncan, G. J. and Murnane, R. J., editors, *Whither Opportunity?: Rising Inequality, Schools, and Children's Life Chances*, pages 91–116. Russell Sage Foundation.

- Reichman, N. E. (2005). Low birth weight and school readiness. *The Future of Children*, 15(1):91–116.
- Reid, R., Casat, C. D., Norton, H. J., Anastopoulos, A. D., and Temple, E. P. (2001). Using behavior rating scales for adhd across ethnic groups the iowa conners. *Journal of Emotional and Behavioral Disorders*, 9(4):210–218.
- Reid, R., DuPaul, G. J., Power, T. J., Anastopoulos, A. D., Rogers-Adkinson, D., Noll, M.-B., and Riccio, C. (1998). Assessing culturally different students for attention deficit hyperactivity disorder using behavior rating scales. *Journal of Abnormal Child Psychology*, 26(3):187–198.
- Reskin, B. (1990). *Job Queues, Gender Queues: Explaining Women's Inroads into Male Occupations*. Women In The Political Economy. Temple University Press.
- Risman, B. J. (2004). Gender as a social structure: Theory wrestling with activism. *Gender and Society*, 18(4):429–450.
- Rossi, A. S. and Rossi, P. H. (1990). *Of Human Bonding: Parent-Child Relations Across the Life Course*. Aldine de Gruyter.
- Rothman, K. J., Greenland, S., and Lash, T. L. (2008). *Modern Epidemiology*. Lippincott Williams & Wilkins.
- Royston, P. (2004). Multiple imputation of missing values. *Stata Journal*, 4(3):227–241.
- Rutchick, A. M., Smyth, J. M., Lopoo, L. M., and Dusek, J. B. (2009). Great expectations: The biasing effects of reported child behavior problems on educational expectations and subsequent academic achievement. *Journal of Social and Clinical Psychology*, 28(3):392–413.
- Rutter, M., Caspi, A., Fergusson, D., et al. (2004). Sex differences in developmental reading disability: New findings from 4 epidemiological studies. *JAMA: The Journal of the American Medical Association*, 291(16):2007–2012.
- Sampson, R. and Laub, J. (1995). *Crime in the Making: Pathways and Turning Points Through Life*. Harvard University Press.
- Schneider, D. (2011). Wealth and the marital divide. *American Journal of Sociology*, 117(2):627–667.
- Schwartz, C. R. and Mare, R. D. (2005). Trends in educational assortative marriage from 1940 to 2003. *Demography*, 42(4):621–646.
- Sewell, W. H., Haller, A. O., and Ohlendorf, G. W. (1970). The educational and early occupational status attainment process: Replication and revision. *American Sociological Review*, 35(6):pp. 1014–1027.
- Shaw, D. S., Keenan, K., and Vondra, J. I. (1994). Developmental precursors of externalizing behavior: Ages 1 to 3. *Developmental Psychology*, 30(3):355.

- Shaw, D. S., Winslow, E. B., Owens, E. B., Vondra, J. I., Cohn, J. F., and Bell, R. Q. (1998). The development of early externalizing problems among children from low-income families: A transformational perspective. *Journal of Abnormal Child Psychology*, 26(2):95–107.
- Shonkoff, J. and Phillips, D. (2000). *From Neurons to Neighborhoods: The Science of Early Childhood Development*. National Academy Press.
- Sigle-Rushton, W. and McLanahan, S. (2002). Father absence and child well-being: A critical review. *Center for Research on Child Well-Being Working Paper Series*, 02-20:1–54.
- Skiba, R., Trachok, M., Chung, C.-G., Baker, T., Sheya, A., and Hughes, R. (2013). Where should we intervene? Contributions of behavior, student, and school characteristics to suspension and expulsion. Closing the School Discipline Gap: Research to Practice conference, Washington, DC.
- Skiba, R. J., Horner, R. H., Chung, C.-G., Karega Rausch, M., May, S. L., and Tobin, T. (2011). Race is not neutral: A national investigation of African American and Latino disproportionality in school discipline. *School Psychology Review*, 40(1):85.
- Skiba, R. J. and Peterson, R. L. (2000). School discipline at a crossroads: From zero tolerance to early response. *Exceptional Children*, 6(3):335–347.
- Spencer, S. J., Steele, C. M., and Quinn, D. M. (1999). Stereotype threat and women’s math performance. *Journal of Experimental Social Psychology*, 35(1):4–28.
- Steele, C. M. and Aronson, J. (1995). Stereotype threat and the intellectual test performance of African Americans. *Journal of Personality and Social Psychology*, 69(5):797–811.
- Stowe, R. M., Arnold, D. H., and Ortiz, C. (1999). Gender differences in the relationship of language development to disruptive behavior and peer relationships in preschoolers. *Journal of Applied Developmental Psychology*, 20(4):521 – 536.
- Tanner, J. (1990). *Foetus Into Man: Physical Growth from Conception to Maturity*. Harvard University Press.
- Teachman, J. D., Tedrow, L. M., and Crowder, K. D. (2000). The changing demography of America’s families. *Journal of Marriage and Family*, 62(4):1234–1246.
- Thebaud, S. (2010). Gender and entrepreneurship as a career choice. *Social Psychology Quarterly*, 73(3):288–304.
- Thomson, E., Hanson, T. L., and McLanahan, S. S. (1994). Family structure and child well-being: Economic resources vs. parental behaviors. *Social Forces*, 73(1):221–242.
- Thorne, B. (1993). *Gender play: Girls and boys in school*. Rutgers University Press.
- Van Vliet, G., Liu, S., and Kramer, M. S. (2009). Decreasing sex difference in birth weight. *Epidemiology*, 20(4):622–623.
- Von Hippel, P. T. (2007). Regression with missing y’s: An improved strategy for analyzing multiply imputed data. *Sociological Methodology*, 37(1):83–117.

- Wallace Jr, J. M., Goodkind, S., Wallace, C. M., and Bachman, J. G. (2008). Racial, ethnic, and gender differences in school discipline among U.S. high school students: 1991-2005. *The Negro Educational Review*, 59(1-2):47.
- Waschbusch, D. A. and Willoughby, M. T. (2008). Parent and teacher ratings on the iowa conners rating scale. *Journal of Psychopathology and Behavioral Assessment*, 30(3):180–192.
- Weitzman, M., Gortmaker, S., and Sobol, A. (1990). Racial, social, and environmental risks for childhood asthma. *American Journal of Diseases of Children*, 144(11):1189–1194.
- West, C. and Zimmerman, D. H. (1987). Doing gender. *Gender & society*, 1(2):125–151.
- Western, B. (2006). *Punishment And Inequality in America*. Russell Sage.
- Whitmire, R. (2010). *Why Boys Fail: Saving Our Sons From an Educational System That's Leaving Them Behind*. American Management Association.
- Wilson, W. J. (1987). *The Truly Disadvantaged: The Inner City, the Underclass, and Public Policy*. University of Chicago Press.
- Wolraich, M. L., Hannah, J. N., Pinnock, T. Y., Baumgaertel, A., and Brown, J. (1996). Comparison of diagnostic criteria for attention-deficit hyperactivity disorder in a county-wide sample. *Journal of the American Academy of Child & Adolescent Psychiatry*, 35(3):319–324.
- Zeitlin, J., Saurel-Cubizolles, M.-J., de Mouzon, J., Rivera, L., Ancel, P.-Y., Blondel, B., and Kaminski, M. (2002). Fetal sex and preterm birth: Are males at greater risk? *Human Reproduction*, 17(10):2762–2768.
- Zill, N. and West, J. (2001). *Entering kindergarten: A portrait of American children when they begin school*. Findings from the condition of education, 2000.