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Growing up with Depressed Parents: Social Pathways to Disadvantaged Outcomes in Early Childhood

Abstract
Theoretical perspectives suggest that depression can have particularly detrimental consequences for the family system, and children of depressed parents may have an increased risk of negative outcomes throughout the life course. In this dissertation, I use data from the Fragile Families and Child Wellbeing survey, a longitudinal study of nearly 5,000 new and mostly unmarried parents in 20 U.S. cities, to examine the consequences of parental depression for children's cognitive and behavioral outcomes in early childhood. The findings presented in this dissertation suggest that parental depression is consequential for young children, and that parental depression may have wide-ranging consequences for aspects of the broader family system including maternal parenting behaviors, relationship quality, and social support.

This dissertation extends our understanding about the consequences of parental depression in several ways. First, I consider the pathways through which maternal depression matters for children, as little is known about the factors that mediate or moderate this association. Second, I advance our knowledge of child wellbeing by examining the dynamic nature of parental depression, and how children fare when their parents move in and out of depressive episodes. Finally, I use a representative sample of parents and their children, which allows me to pay particular attention to the importance of contextual circumstances in altering the association between depression and children's outcomes. Understanding the variation inherent in the outcomes of children of depressed parents is particularly important, as impairments in early childhood may place children on trajectories to experience further disadvantage throughout adolescence and adulthood.

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GROWING UP WITH DEPRESSED PARENTS:

SOCIAL PATHWAYS TO DISADVANTAGED OUTCOMES

IN EARLY CHILDHOOD

Kristin E. Turney

A DISSERTATION

in

Sociology

Presented to the Faculties of the University of Pennsylvania

in

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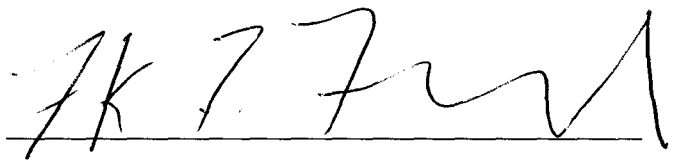

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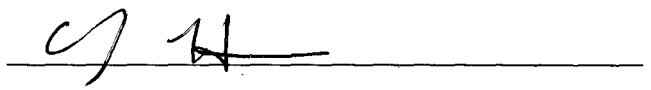

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GROWING UP WITH DEPRESSED PARENTS:

SOCIAL PATHWAYS TO DISADVANTAGED OUTCOMES

IN EARLY CHILDHOOD

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2009

Kristin E. Turney

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ABSTRACT

GROWING UP WITH DEPRESSED PARENTS:

SOCIAL PATHWAYS TO DISADVANTAGED OUTCOMES

IN EARLY CHILDHOOD

Kristin E. Turney

Dr. Frank F. Furstenberg (Dissertation Supervisor)

Theoretical perspectives suggest that depression can have particularly detrimental consequences for the family system, and children of depressed parents may have an increased risk of negative outcomes throughout the life course. In this dissertation, I use data from the Fragile Families and Child Wellbeing survey, a longitudinal study of nearly 5,000 new and mostly unmarried parents in 20 U.S. cities, to examine the consequences of parental depression for children's cognitive and behavioral outcomes in early childhood. The findings presented in this dissertation suggest that parental depression is consequential for young children, and that parental depression may have wide-ranging consequences for aspects of the broader family system including maternal parenting behaviors, relationship quality, and social support.

This dissertation extends our understanding about the consequences of parental depression in several ways. First, I consider the pathways through which maternal

depression matters for children, as little is known about the factors that mediate or moderate this association. I find that children's behavioral but not cognitive outcomes suffer when their parents, particularly their mothers, are depressed during their earliest years. The consequences of maternal depression for children's behavioral outcomes are largely indirect, however, working at least partially through maternal parenting behaviors, relationship quality, and social support. Second, I advance our knowledge of child wellbeing by examining the dynamic nature of parental depression, and how children fare when their parents move in and out of depressive episodes. Chronic maternal depression is more detrimental than transitory maternal depression, though children suffer more from transitory paternal depression than chronic paternal depression. Finally, I use a representative sample of parents and their children, which allows me to pay particular attention to the importance of contextual circumstances in altering the association between depression and children's outcomes. Findings suggest that maternal depression is not an equal opportunity risk factor for children. Understanding the variation inherent in the outcomes of children of depressed parents is particularly important, as impairments in early childhood may place children on trajectories to experience further disadvantage throughout adolescence and adulthood.

TABLE OF CONTENTS

Acknowledgements	iii
Abstract	vi
List of Tables	ix
List of Figures	xvii
CHAPTER ONE Introduction	1
CHAPTER TWO Background	9
CHAPTER THREE Data and Methods	46
CHAPTER FOUR The Consequences of Parental Depression during Early Childhood	74
CHAPTER FIVE Maternal Depression and Children's Behavioral Outcomes: Maternal Parenting Behaviors as a Mechanism of Risk	108
CHAPTER SIX Maternal Depression and Children's Behavioral Outcomes: Partner Relationship Quality as a Mechanism of Risk	138
CHAPTER SEVEN Maternal Depression and Children's Behavioral Outcomes: The Moderating Influence of Social Support	166
CHAPTER EIGHT Conclusions	194
TABLES	207
FIGURES	285
APPENDICES	290
REFERENCES	371

LIST OF TABLES

Title	Page
Table 3.1. Descriptive Statistics of Mother, Father, and Child Characteristics Included in Analyses (Full Sample)	207
Table 3.2. Descriptive Statistics of Mother, Father, and Child Characteristics Included in Analyses (Analytic Sample A)	209
Table 3.3. Descriptive Statistics of Mother, Father, and Child Characteristics Included in Analyses (Analytic Sample B)	211
Table 3.4. Statistically Significant Differences in Means of Variables Between Full Sample, Analytic Sample A, and Analytic Sample B	213
Table 4.1. Means of Children's Developmental Outcomes, by Parental Major Depressive Disorder (MDD) at 12-Month Wave	216
Table 4.2. Means of Children's Developmental Outcomes, by Parental Major Depressive Disorder (MDD) at 30-Month Wave	217
Table 4.3. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Parental Major Depressive Disorder (MDD) at 12-Month Wave	218
Table 4.4. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave	219
Table 4.5. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Maternal Major Depressive Disorder (MDD) Over Time	220
Table 4.6. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Maternal Major Depressive Disorder (MDD) Over Time (Restricted Sample)	221
Table 4.7. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Paternal Major Depressive Disorder (MDD) Over Time (Restricted Sample)	223

Table 4.8. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave, with Interactions by Maternal Race 225

Table 4.9. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave, with Interactions by Maternal Education 227

Table 4.10. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave, with Interactions by Maternal Household Income 229

Table 4.11. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave, with Interactions by Parents' Relationship Status at Baseline 230

Table 5.1. Means and Standard Deviations of Additional Variables Included in Analyses 232

Table 5.2. Means of Maternal Parenting Behaviors, by Maternal Major Depressive Disorder (MDD) at 12-Month Wave 233

Table 5.3. Means of Maternal Parenting Behaviors, by Maternal Major Depressive Disorder (MDD) at 30-Month Wave 234

Table 5.4. OLS Regression Models Predicting Maternal Parenting Behaviors, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave 235

Table 5.5. OLS Regression Models Predicting Maternal Parenting Behaviors, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave, with Interactions by Maternal Race 236

Table 5.6. OLS Regression Models Predicting Maternal Parenting Behaviors, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave, with Interactions by Maternal Education 238

Table 5.7. OLS Regression Models Predicting Maternal Parenting Behaviors, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave, with Interactions by Maternal Household Income 240

Table 5.8. OLS Regression Models Predicting Maternal Parenting Behaviors, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave, with Interactions by Parents' Relationship Status at Baseline 241

Table 5.9. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave and Maternal Parenting Behaviors 243

Table 5.10. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Maternal Major Depressive Disorder (MDD) Over Time and Maternal Parenting Behaviors 246

Table 6.1. Means and Standard Deviations of Additional Variables Included in Analyses 248

Table 6.2. Means of Relationship Quality with Current Partner, by Maternal Major Depressive Disorder (MDD) Over Time 249

Table 6.3. OLS Regression Models Predicting Relationship Quality with Current Partner at 30-Month Wave, Regressed on Maternal Major Depressive Disorder (MDD) Over Time 250

Table 6.4. OLS Regression Models Predicting Relationship Quality with Current Partner at 30-Month Wave, Regressed on Maternal Major Depressive Disorder (MDD) Over Time, with Interactions by Maternal Race 251

Table 6.5. OLS Regression Models Predicting Relationship Quality with Current Partner at 30-Month Wave, Regressed on Maternal Major Depressive Disorder (MDD) Over Time, with Interactions by Maternal Education 254

Table 6.6. OLS Regression Models Predicting Relationship Quality with Current Partner at 30-Month Wave, Regressed on Maternal Major Depressive Disorder (MDD) Over Time, with Interactions by Maternal Household Income 257

Table 6.7. OLS Regression Models Predicting Relationship Quality with Current Partner at 30-Month Wave, Regressed on Maternal Major Depressive Disorder (MDD) Over Time, with Interactions by Maternal Relationship Status 259

Table 6.8. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave and Maternal Reports of Relationship Quality with Current Partner 261

Table 6.9. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Maternal Major Depressive Disorder (MDD) Over Time and Maternal Reports of Relationship Quality with Current Partner 264

Table 7.1. Means and Standard Deviations of Additional Variables Included in

Analyses 266

Table 7.2. Means of Social Support, by Maternal Major Depressive Disorder (MDD) Over Time 267

Table 7.3. OLS Regression Models Predicting Maternal Social Support at 30-Month Wave, Regressed on Maternal Major Depressive Disorder (MDD) Over Time 268

Table 7.4. OLS Regression Models Predicting Maternal Social Support at 30-Month Wave, Regressed on Maternal Major Depressive Disorder (MDD) Over Time, with Interactions by Maternal Education 269

Table 7.5. OLS Regression Models Predicting Maternal Social Support at 30-Month Wave, Regressed on Maternal Major Depressive Disorder (MDD) Over Time, with Interactions by Maternal Education 272

Table 7.6. OLS Regression Models Predicting Maternal Social Support at 30-Month Wave, Regressed on Maternal Major Depressive Disorder (MDD) Over Time, with Interactions by Maternal Household Income 275

Table 7.7. OLS Regression Models Predicting Maternal Social Support at 30-Month Wave, Regressed on Maternal Major Depressive Disorder (MDD) Over Time, with Interactions by Parents' Relationship Status at Baseline 277

Table 7.8. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave, with Interactions by Maternal Social Support 280

Appendix 3.1. Description of Individual Items that Comprise Behavioral Outcomes 290

Appendix 4.1. Means of Individual Items that Comprise Behavioral Outcomes, by Parental Major Depressive Disorder (MDD) at 12-Month Wave 292

Appendix 4.2. OLS Regression Models Predicting Children's Anxious/ Depressed Behaviors at 36-Month In-Home Wave, Regressed on Parental Major Depressive Disorder (MDD) at 12-Month Wave 294

Appendix 4.3. OLS Regression Models Predicting Children's Withdrawn Behaviors at 36-Month In-Home Wave, Regressed on Parental Major Depressive Disorder (MDD) at 12-Month Wave 296

Appendix 4.4. OLS Regression Models Predicting Children's Attention

Deficit Hyperactivity Disorder (ADHD) Behaviors at 36-Month In-Home Wave, Regressed on Parental Major Depressive Disorder (MDD) at 12-Month Wave 298

Appendix 4.5. OLS Regression Models Predicting Children's Aggressive Behaviors at 36-Month In-Home Wave, Regressed on Parental Major Depressive Disorder (MDD) at 12-Month Wave 300

Appendix 4.6. OLS Regression Models Predicting Children's Oppositional Defiant Disorder (ODD) Behaviors at 36-Month In-Home Wave, Regressed on Parental Major Depressive Disorder (MDD) at 12-Month Wave 302

Appendix 4.7. Logistic Regression Models Predicting Children's Problem Behaviors (90th Percentile of Population) at 36-Month In-Home Wave, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave 304

Appendix 4.8. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Conservative Measure of Maternal Major Depressive Disorder (MDD) at 12-Month Wave 305

Appendix 4.9. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Mother's Probability of Receiving a Major Depressive Disorder (MDD) Diagnosis at 12-Month Wave 306

Appendix 4.10. OLS Regression Models Predicting Children's Behavior at 36-Month Wave, Regressed on Maternal Major Depressive Disorder (MDD) at 30-Month Wave 307

Appendix 4.11. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Maternal Mental Illness Prior to Pregnancy 308

Appendix 4.12. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Maternal Mental Illness Prior to Pregnancy and Maternal Major Depressive Disorder (MDD) at 12-Month Wave 309

Appendix 5.1. Means of Individual Items that Comprise Maternal Parenting Behaviors, by Maternal Major Depressive Disorder (MDD) at 12-Month Wave 310

Appendix 5.2. OLS Regression Models Predicting Maternal Reports of Parenting Stress at 30-Month Wave, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave 312

Appendix 5.3. OLS Regression Models Predicting Maternal Reports of

Neglect at 36-Month In-Home Wave, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave 314

Appendix 5.4. OLS Regression Models Predicting Maternal Reports of Psychological Aggression at 36-Month In-Home Wave, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave 316

Appendix 5.5. OLS Regression Models Predicting Maternal Reports of Physical Assault at 36-Month In-Home Wave, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave 318

Appendix 5.6. OLS Regression Models Predicting Maternal Reports of Engagement at 30-Month Wave, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave 320

Appendix 5.7. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave and Maternal Parenting Behaviors, with Interactions Between Maternal Parenting Behaviors and Maternal Race 322

Appendix 5.8. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave and Maternal Parenting Behaviors, with Interactions Between Maternal Parenting Behaviors and Maternal Education 325

Appendix 5.9. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave and Maternal Parenting Behaviors, with Interactions Between Maternal Parenting Behaviors and Maternal Household Income 328

Appendix 5.10. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave and Maternal Parenting Behaviors, with Interactions Between Maternal Parenting Behaviors and Parents' Relationship Status at Baseline 330

Appendix 6.1. Means of Individual Items that Comprise Measures of Relationship Quality with Current Partner, by Maternal Major Depressive Disorder (MDD) Over Time 333

Appendix 6.2. OLS Regression Models Predicting Maternal Reports of Supportive Behaviors with Current Partner at 30-Month Wave, Regressed on Maternal Major Depressive Disorder (MDD) Over Time 336

Appendix 6.3. OLS Regression Models Predicting Maternal Reports of Hostile Behaviors with Current Partner at 30-Month Wave, Regressed on Maternal Major Depressive Disorder (MDD) Over Time 339

Appendix 6.4. OLS Regression Models Predicting Maternal Reports of Shared Responsibility in Parenting with Current Partner at 30-Month Wave, Regressed on Maternal Major Depressive Disorder (MDD) Over Time 342

Appendix 6.5. OLS Regression Models Predicting Maternal Reports of Cooperation in Parenting with Current Partner at 30-Month Wave, Regressed on Maternal Major Depressive Disorder (MDD) Over Time 345

Appendix 6.6. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave and Maternal Reports of Relationship Quality with Current Partner, with Interactions Between Relationship Quality and Maternal Race 348

Appendix 6.7. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave and Maternal Reports of Relationship Quality with Current Partner, with Interactions Between Relationship Quality and Maternal Education 351

Appendix 6.8. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave and Maternal Reports of Relationship Quality with Current Partner, with Interactions Between Relationship Quality and Maternal Household Income 354

Appendix 7.1. Means of Individual Items that Comprise Perceptions of Instrumental and Neighborhood Support, by Maternal Major Depressive Disorder (MDD) Over Time 356

Appendix 7.2. OLS Regression Models Predicting Perceived Instrumental Support at 30-Month Wave, Regressed on Maternal Major Depressive Disorder (MDD) Over Time 358

Appendix 7.3. OLS Regression Models Predicting Perceived Neighborhood Support at 30-Month Wave, Regressed on Maternal Major Depressive Disorder (MDD) Over Time 361

Appendix 7.4. Logistic Regression Models Predicting Received Financial Support at 30-Month Wave, Regressed on Maternal Major Depressive

Disorder (MDD) Over Time 364

Appendix 7.5. Logistic Regression Models Predicting Co-Residence with a Grandparent at 30-Month Wave, Regressed on Maternal Major Depressive Disorder (MDD) Over Time 367

Appendix 7.6. Logistic Regression Models Predicting Individual Measures of Perceptions of Instrumental Support at 30-Month Wave, Regressed on Maternal Major Depressive Disorder (MDD) Over Time 370

LIST OF FIGURES

Title	Page
Figure 2.1. Conceptual Framework for Examining Relationship between Parental Depression and Children's Behavior	285
Figure 3.1. Frequency of Major Depressive Disorder (MDD) among Parents at 12-Month Wave (N = 1,989)	286
Figure 3.2. Frequency of Major Depressive Disorder (MDD) among Parents at 30-Month Wave (N = 1,989)	287
Figure 3.3. Frequency of Major Depressive Disorder (MDD) among Mothers at 12- and 30-Month Waves (N = 1,989)	288
Figure 3.4. Frequency of Major Depressive Disorder (MDD) among Fathers at 12- and 30-Month Waves (N = 1,989)	289

CHAPTER ONE:

INTRODUCTION

A nontrivial percentage of families and children are affected by depression (Kessler et al. 1994). Nationally, as many as 10% of individuals suffer from Major Depressive Disorder (MDD) each year, and lifetime prevalence rates are about 17% (Kessler and Zhao 1999). Depression can be a particularly debilitating, chronic condition and is often linked to impairments throughout the life course. For example, depression may lead to physical health problems, reduced economic wellbeing, and a reduced likelihood of union formation (Miech and Shanahan 2000; Teitler and Reichman 2008; Yu and Williams 1999). The family is one important institution through which depression and depressive symptoms manifest themselves, as both theoretical perspectives and empirical research suggest that depressed individuals may have challenged interpersonal relationships, including more withdrawn negative interactions when dealing with others. These negative interactions may even facilitate the maintenance of depression (Coyne 1976).

Thus, depression can have particularly detrimental consequences for the family system, and children of depressed parents may have an increased risk of negative outcomes throughout the life course. In accordance with life course theory that highlights the interdependency of parents and their offspring, empirical research consistently demonstrates that depressed parents transmit disadvantages to their children. Children of depressed parents, compared to their counterparts with non-depressed parents, are more

likely to have impaired social, behavioral, and cognitive outcomes in infancy, childhood, adolescence and adulthood (Dodge 1990; Downey and Coyne 1990; Goodman and Gotlib 2002; Phares and Compas 1992). Children may be most vulnerable to parental depression in their earliest years, as it is during this period of the life course when individuals attach themselves to others and learn to regulate their emotions (Baydar, Brooks-Gunn, and Furstenberg 1993; Gladstone and Beardslee 2002; Goodman and Gotlib 1999).

In recent years, there has been a growing body of literature on the consequences of parental depression for the behavioral and cognitive outcomes of young children. There are notable gaps in this literature, though, and this dissertation advances this literature in several ways. To begin with, much of the existing research on the consequences of parental depression for children's outcomes is limited because it only considers depression at one point in time. Much less is known about how chronic parental depression and transitory parental depression may differentially influence children's behavioral outcomes. Additionally, there is scarce research on how the consequences of parental depression may vary among subgroups of the population, as most prior research is based on small, homogenous samples. Finally, and perhaps most importantly, little existing research documents the mechanisms through which depressed parents transmit disadvantages to their children (Downey and Coyne 1990; Goodman and Gotlib 2002; Gotlib and Lee 1996; Kane and Garber 2004). Genetics, of course, may facilitate the transmission of mental health problems across generations (Downey and Coyne 1990). However, not all children with a depressed parent exhibit behavioral problems in early

childhood, which indicates that environmental factors play an important role in how children adapt to their contextual circumstances.

Thus, in this dissertation, I advance our understanding of parental depression and children's outcomes in several ways. First, I use longitudinal data that allows me to explore the dynamic nature of depression. Second, I use a representative sample of parents and their children, which allows me to pay particular attention to how demographic factors such as race, socioeconomic status, and family structure may alter the association between parental depression and children's outcomes. Finally, I focus on three potential mechanisms that may alter the relationship between maternal depression and children's outcomes. First, I examine the extent to which maternal parenting behaviors may mediate the association between maternal depression and children's outcomes. Mothers, of course, do not exist in isolation; thus, I expand my analyses to examine the role of mothers' partners and, ultimately, mothers' broader networks of family, friend, and community social support. These three contextual factors are by no means an exhaustive list of the pathways through which depression may get played out within families, but they provide a wide-ranging, valuable starting point for better understanding the consequences of parental depression for young children.

Understanding the variation inherent in outcomes of children of depressed parents, as well as the mechanisms that link parental depression to children's behaviors, is imperative for at least three reasons. To begin with, outcomes in early childhood have substantial implications for short- and long-term life course trajectories. In recent years, the development of longitudinal studies, along with methodological advances, has

allowed researchers to clearly establish that early childhood is a critical period in the life course. Impairments in early childhood may place children on trajectories to experience further disadvantage throughout adolescence and adulthood (Entwisle and Alexander 1989). Behavioral problems in childhood, for example, can lead to reduced educational attainment, impaired psychological wellbeing, and few social support networks in adulthood (Knoester 2003; McLeod and Kaiser 2004).

Second, it is particularly important to understand how parental depression influences the broader family environment given the dramatic changes in family structure that have occurred throughout the second half of the twentieth century. Marriage has become increasingly optional and more uncertain, and the prevalence of cohabitation and nonmarital childbearing mean that substantial numbers of children live with unmarried parents (Bumpass and Lu 2000; Ellwood and Jencks 2004). The majority of existing research that examines the consequences of parental depression, however, is based on small samples of married parents and their adolescent children, which ignores the heterogeneous types of family arrangements that children experience. However, it is important to understand the consequences of parental depression for the behavior of children of unmarried parents, as well as the pathways through which these parents transmit disadvantages to their children. In addition to advancing our knowledge about this group of children already at risk for disadvantaged outcomes, an understanding of the intergenerational transmission of mental health problems may shed light on the broader processes operating in these families (Sigle-Ruston and McLanahan 2004).

Finally, the transition to parenthood is a consequential, significant turning point in the life course, which makes it a critical, distinct time to understand family dynamics (Belsky and Rovine 1990; Cox, Paley, Burchinal, and Payne 1999). The transition to parenthood, commonly defined as the period from the third trimester of pregnancy to the child's third birthday, may be a particularly stressful period in the life course, especially among first-time parents (Belsky and Kelly 1994). Though the onset of parenthood is often filled with rewarding, exciting changes, this life course transition may also bring a host of emotional and financial challenges (Demo and Cox 2000). A substantial body of research documents how the addition of a child is associated with an increased likelihood of depression and depressive symptoms (Belsky and Kelly 1994; Cowan and Cowan 1992; McLanahan and Adams 1987; Miller and Sollie 1980; Simon 1992), though this association may be contingent on contextual conditions such as gender, marital status, or the presence of other children (Nomaguchi and Milkie 2003; Evenson and Simon 2005). The transition to parenthood may also be accompanied with a reduction in the quality of the couple relationship (Belsky and Kelly 1994; Cowan and Cowan 1992; Cox et al. 1999; Twenge, Campbell, and Foster 2003), as well as changes in the composition of one's social support network and the availability of social support from friends and family members (Belsky and Rovine 1984; Bost, Cox, Burchinal, and Payne 2002; Knoester and Eggebeen 2006; Nomaguchi and Milkie 2003). Thus, understanding the social context of parental depression during this transition, as well as the consequences of depression for children, is important for understanding individual- and family-level wellbeing.

In this dissertation, I examine parental depression during the transition to parenthood by using data from the Fragile Families and Child Wellbeing survey (Fragile Families), a longitudinal study of nearly 5,000 new and mostly unmarried parents in 20 U.S. cities. Mothers were interviewed in the hospital after giving birth to a child between 1998 and 2000, and fathers were interviewed as soon as possible after the birth. Both parents were re-interviewed by telephone when their children were 12, 30, and 60 months old. A subsample of families participated in two waves of the In-Home Longitudinal Study of Pre-School Aged Children, conducted when children were, on average, 36 months old and 60 months old (Bendheim-Thoman Center for Research on Child Wellbeing 2008a). Specifically, I examine how parental depression is associated with five indicators of children's behavior, as well as children's cognitive outcomes, when they are about 36 months old. Children's behavioral outcomes include the following: anxious/depressed behaviors, withdrawn behaviors, Attention Deficit Hyperactivity Disorder (ADHD) behaviors, aggressive behaviors, and Oppositional Defiant Disorder (ODD) behaviors. These behavioral outcomes come from the Child Behavior Checklist 2-3 (CBCL), which are reliable, valid scales commonly used to measure the behavior of young children (Achenbach 1992; Achenbach and Rescorla 2000). Children's cognitive development is measured with the Peabody Picture Vocabulary Test-Third Edition (PPVT-III).

In addition to having standard indicators of child development, the Fragile Families data are well-suited to answer my research questions for several other reasons (see Chapter 3 for a more detailed discussion of these data). To begin with, these data

contain longitudinal information on both maternal and paternal depression, which facilitates an examination of both chronic and transitory depression. Additionally, these data contain a diverse group of mothers and fathers, which allows me to examine how the link between parental depression and children's outcomes may vary by individual-level characteristics such as race, socioeconomic status, and parents' relationship status at birth. Finally, they include a host of rich covariates that make it possible to isolate the association between parental depression and children's behaviors and to examine contextual factors that may mediate or moderate the consequences of parental depression.

This dissertation proceeds as follows. First, in Chapter 2, I review life course theory, the sociological perspective that most substantially motivates the research questions throughout this dissertation. I then turn my attention to the existing empirical research on the consequences of parental depression for young children. This literature is voluminous and spans across many disciplines, so I limit my review of the literature to those studies most relevant to my research questions. In Chapter 3, I provide an overview of the Fragile Families data, describe the measures used in the subsequent analyses, and document the analytic tools employed throughout the dissertation. The first empirical chapter, Chapter 4, examines the association between parental depression and children's behavioral outcomes, and considers whether this association varies by demographic factors such as race, socioeconomic status, and parents' relationship status at birth. In this chapter and in subsequent chapters, I also examine differences in the consequences of chronic depression compared to the consequences of transitory depression. In Chapter 5 and Chapter 6, I examine how maternal parenting behaviors and maternal reports of

relationship quality, respectively, may attenuate the negative consequences of maternal depression for children. The analyses in the final empirical chapter, Chapter 7, consider how mothers' networks of social support may buffer children from the negative consequences of maternal depression. Finally, in Chapter 8, I synthesize the main findings of the preceding analyses and discuss directions for future research.

CHAPTER TWO:

BACKGROUND

As previously stated, both theoretical perspectives and empirical research supports the idea that parental depression may have harmful consequences for behavior in early childhood, a formative period in the life course that has lasting consequences for individuals' future trajectories. In this section, I present an overview of life course theory and discuss how this theoretical framework is appropriate for understanding the link between parental depression and children's outcomes. There is a large body of literature that highlights the importance of understanding children's outcomes in early childhood, and I discuss these findings. Next, I turn my attention to reviewing the empirical research most relevant to the analyses presented in this dissertation (see Figure 2.1 for a conceptual diagram). I review empirical findings regarding the link between parental depression, particularly maternal depression, and children's behavioral and cognitive outcomes at the beginning of the life course. To motivate the contributions of the analyses, I pay particular attention to the limitations of this existing literature. I then turn my attention to three pathways that may alter the relationship between maternal depression and children's outcomes: maternal parenting behaviors, maternal reports of relationship quality with her current romantic partner, and maternal social support networks. I first devote considerable attention to reviewing the link between maternal depression and maternal parenting behaviors, and then summarize prior research that links maternal parenting behaviors to children's behavioral outcomes. I also examine how

relationship quality and social support are linked to both maternal depression and children's behaviors. Finally, to motivate the inclusion of the covariates in my analyses, I briefly review prior research on additional predictors of children's behavior. At the end of this chapter, I summarize the limitations to the existing literature and highlight how the analyses presented in this dissertation can advance our understanding of how depressed parents transmit disadvantages to their young children.

[Figure 2.1 about here.]

Life Course Theory

Over the past four decades, life course theory has emerged as the dominant perspective in understanding human development and functioning from early childhood through adulthood. Broadly speaking, this theory rests on the assumption that life trajectories are influenced by both social structure and human agency. Five paradigmatic principles underlie this theoretical perspective (Elder 1998; Elder, Johnson, and Crosnoe 2003). To begin with, human development is a lifelong process. Development does not stop once an individual reaches adolescence or even adulthood (Cote 2000; Elder et al. 2003). Second, the life course is embedded in time and place, and both historical circumstances and ecological context shape developmental outcomes (Bronfenbrenner and Morris 1998; Elder, Modell, and Parke 1993; Elder et al. 2003; Mintz 2004; Schneider and Stevenson 1999). Third, although social pathways are shaped by structural forces and institutions, individuals have agency throughout childhood, adolescence, and adulthood. Social structure may interact with human agency to produce individual

outcomes (Elder et al. 2003; Johnson 2001; Shanahan 2000). The fourth principle of life course theory is that of linked lives; individuals live their lives interdependently of one another. Finally, social pathways are age-graded; timing of events, beginning early in one's development, have lasting implications on subsequent development. Thus, the causes and consequences of developmental outcomes are contingent on their timing of occurrence (Elder et al. 2003).

This theoretical framework for understanding human development provides an important grounding for this dissertation. The psychological wellbeing of parents can be linked to the wellbeing of their children, and the social contexts in which these families are embedded may be particularly important to understand the divergent trajectories of children of depressed parents. Consistent with life course theory, most research suggests that children of all ages experience negative ramifications when their mother is depressed, but that children in early childhood are most vulnerable (Gotlib and Lee 1996; Hay et al. 2001). Younger children may be particularly dependent on their mothers, may have little exposure to social settings outside of the home, and may be less equipped to understand and cope with maternal depression (Goodman and Gotlib 1999; Radke-Yarrow and Klimes-Dougan 2002).

The life course perspective, along with the empirical research that supports it, also indicates the importance of understanding the predictors of variation in early childhood outcomes. There is a large and growing literature that finds that children's early developmental outcomes are linked to divergent trajectories throughout childhood and the entire life course (Entwisle and Alexander 1989; McLeod and Kaiser 2004). Notably,

behavioral problems in early childhood are the strongest predictors of behavioral problems in later childhood (Hymel, Rubin, Rowden, and LeMare 1990; Ladd and Burgess 2001). Some research, for example, finds that externalizing and internalizing problems when children are two years old are predictive of these same problems three to four years later (Fischer, Rolf, Hasazi, and Cummings 1984). Additionally, behavioral problems in early childhood continue to influence wellbeing as individuals move through adolescence (Caspi, Bem, and Elder 1989; Hofstra, Van der Ende, and Verhulst 2000). For instance, greater internalizing and externalizing behavior problems among six- to eight-year-old children are associated with a reduced probability of graduating from high school. Among those who do graduate from high school, greater externalizing behavior problems in early childhood are associated with a reduced likelihood of attending college (McLeod and Kaiser 2004). In fact, the externalizing problem behaviors more commonly exhibited by young boys than young girls may contribute to the growing gender gap in educational attainment (McLanahan 2009; Buchmann and DiPrete 2006).

The negative consequences of externalizing behavior problems in early childhood also persist into adulthood. These behavior problems are associated with lower psychological wellbeing in adulthood, measured by global happiness, life satisfaction, self-esteem, and psychological distress. Furthermore, externalizing problem behaviors in childhood are predictive of less kin support and lower quality intimate relationships in adulthood (Knoester 2003). Other research also finds that early childhood antisocial behaviors predict problems throughout the life course, including more psychopathic personality traits, more mental health problems, an increased likelihood of substance

dependence, financial problems, and criminal behavior (Moffitt, Caspi, Harrington, and Milne 2002).

Parental Depression and Children's Outcomes

There is a large body of literature that links parental depression to children's outcomes. However, as discussed earlier, many prior examinations of parental depression and children's outcomes rely on cross-sectional studies of children and their parents. These studies are limited because they only capture parental depression at one point in time and ignore the fact that many parents move in and out of depression (Klier et al. 2008). Thus, in this dissertation, I use longitudinal data from a representative birth cohort of children to advance our understanding of how chronic and transitory parental depression may differentially influence children's outcomes at the beginning of the life course. Prior research is also limited because it rarely considers how the consequences of parental depression may vary for different subgroups of the population, and, in this dissertation, I use a large, diverse sample of young children and their parents to explore these potential complexities. In the following section, I first review the literature that links maternal depression to children's outcomes. I then pay special attention to the role of paternal depression in predicting children's outcomes, as well as prior research that has considered the potentially differential consequences of chronic and transitory depression. Finally, I review the relatively scarce existing studies that consider how maternal depression may differentially influence particular subgroups of children.

Maternal Depression and Children's Outcomes

Depression is a common mental health problem that affects a substantial number of families and children are affected by depression (Kessler et al. 1994). Nationally, as many as 10% of individuals suffer from Major Depressive Disorder (MDD) each year, and lifetime prevalence rates are about 17% (Kessler and Zhao 1999). Depression affects the sufferer's interpersonal relationships (Coyne 1976) and, naturally, the family is an important institution in which depression and depressive symptoms are expressed. Depression among parents, for example, may create a stressful family environment, disrupt family routines, or limit one's ability to parent effectively (Marmorstein, Malone, and Iacono 2004; Oyserman, Mowbray, Allen-Meares, and Firminger 2003; Parker et al. 1997). Indeed, depressed parents often exhibit hostile, negative, or withdrawn behaviors when interacting with their children (Cummings and Davies 1994; Downey and Coyne 1990; Lovejoy, Graczyk, O'Hare, and Neuman 2000; Lyons-Ruth, Lyubchik, Wolfe, and Bronfman 2002).

Empirical research consistently finds that parental depression, particularly maternal depression, is associated with children's outcomes from infancy through adolescence (Dodge 1990; Downey and Coyne 1990; Goodman and Gotlib 2002; Phares and Compas 1992). In fact, maternal depression may exert its influence on children as early as birth (Field 2002). Children with depressed mothers, compared to their counterparts with non-depressed mothers, have less secure attachments to their mothers in infancy and throughout preschool (Carter, Garrity-Rokous, Chazan-Cohen, Little, and Briggs-Gowan 2001; Gladstone and Beardslee 2002; Teti, Gelfand, Messinger, and

Isabella 1995). This may have long-term implications for children, as some evidence suggests that less secure attachments in infancy lead to behavioral problems in early childhood (Lyons-Ruth et al. 2002).

Most relevant to this dissertation, a large body of research finds that maternal depression can lead to a host of negative behavioral outcomes in children, including internalizing and externalizing behavior problems (Brown 2004; Cummings and Davies 1994; Downey and Coyne 1990; Kahn, Brandt, and Whitaker 2004; Meadows, McLanahan, and Brooks-Gunn 2007). Meadows et al. (2007), for example, use data from the Fragile Families and Child Wellbeing survey (Fragile Families), the same data used in this dissertation, and find that three-year-old children are more likely to have anxious/depressed, attention deficit, and oppositional defiant disorders when their mothers report MDD or Generalized Anxiety Disorder (GAD) in the past year. Whitaker, Orzol, and Kahn (2006) also use these data and find that MDD among mothers is associated with less favorable anxious/depressed, attention deficit/hyperactivity, and inattention/hyperactivity behaviors. Results from the Millennium Cohort Study, a recent and representative sample of families in the United Kingdom, also indicate that maternal depression is associated with less favorable internalizing and externalizing behaviors among three-year-old children (Kiernan and Huerta 2008). Maternal depression is also associated with greater reports of antisocial behavior (Kim-Cohen, Moffitt, Taylor, Pawlby, and Caspi 2005), overanxious symptoms (Foley et al. 2001), and conduct disorder (Marmorstein et al. 2004).

Research also suggests that maternal depression is associated with less favorable behavior among adolescents. Forehand and colleagues, for example, find a link between maternal depression and both internalizing and externalizing behavior problems among adolescents (Forehand, Long, Brody, and Fauber 1986; Tannenbaum and Forehand 1994). Maternal depression is also associated with clinical measures of psychiatric disorders in adolescence, including depression and anxiety disorders (Brennan, Hammen, Katz, and LeBrocque 2002; Dierker, Merikangas, and Szatmari 1999; Nomura, Wickramaratne, Warner, Mufson, and Weissman 2002; Weissman et al. 2006).

The evidence that links maternal depression to children's cognitive outcomes is inconsistent. On the one hand, there is a substantial body of research that suggests maternal depression can lead to less favorable cognitive outcomes in children, both in early childhood and throughout adolescence. For example, maternal post-partum depression when children are three months old is associated with lower IQ scores, lower math skills, and more special education needs among 11-year-old children (Hay et al. 2001). Research also finds that maternal depression is associated with other aspects of cognitive development, including language, vocabulary, and IQ among young children (Brennan et al. 2000; Grace, Evindar, and Stewart 2003; Kiernan and Huerta 2008). Additionally, according to one study, adolescents with depressed mothers have lower grade point averages than their counterparts with non-depressed mothers (Tannenbaum and Forehand 1994).

On the other hand, another body of literature suggests that, on average, maternal depression does not independently contribute to the variation in cognitive outcomes

among children. Kurstjens and Wolke (2001), for example, find that children of depressed and non-depressed mothers have similar cognitive outcomes during the first seven years of their lives. Other evidence suggests that the differences in cognitive outcomes among children of depressed and non-depressed mothers are merely an artifact of the differences in socioeconomic status among these mothers (Petterson and Albers 2001). Furthermore, a recent study finds that maternal psychological wellbeing is associated with greater school engagement among children (Brown 2004).

Paternal Depression and Children's Outcomes

The relationship between fathers' characteristics, including fathers' mental health, and children's wellbeing has been ignored until recently, as mothers are more likely than fathers to respond to surveys and nearly all children live with their mothers (Phares and Compas 1992; Phares, Fields, Kamboukos, and Lopez 2005). Minority, low-income, and unmarried fathers have proven particularly difficult for survey researchers to track down, and most research on these populations comes from mothers' reports (Coley 2001).

Many studies find that paternal depression and depressive symptoms are associated with more behavioral problems in children, particularly externalizing problems, net of maternal depression (Brennan et al. 2002; Kane and Garber 2004; Phares and Compas 1992). Paternal depression shortly after a child is born, for example, is associated with less favorable behavior problems in young children (Carro, Grant, Gotlib, and Compas 1993; Ramchandani et al. 2008; Ramchandani, Stein, Evans, O'Connor, and the ALSPAC study team 2005). Some research even suggests that

paternal depression may exert as much as an influence on children's wellbeing as maternal depression (Phares, Duhig, and Watkins 2002).

However, other research finds that paternal depression does not matter above and beyond mothers' characteristics or that the relationship between paternal depression and children's outcomes is more nuanced. Three recent studies find that paternal depression is not independently associated with young children's behavior (Kahn et al. 2004; Meadows et al. 2007; Mezulis, Hyde, and Clark 2004). Another study finds that paternal depression is associated with less prosocial behavior and peer problems among four- to six-year-old children but is not associated with conduct problems among these children (Dave, Sherr, Senior, and Nazareth 2008). Among adolescents, paternal depression is independently associated with externalizing behavior problems but not internalizing behavior problems (Brennan et al. 2002).

Regardless of whether paternal depression is independently associated with wellbeing among children, paternal depression may interact with maternal depression in predicting children's outcomes at the beginning of the life course. For example, fathers who are not depressed may buffer children from the negative consequences of maternal depression (Brennan et al. 2002; Goodman, Brogan, Lynch, and Fielding 1993; Goodman and Gotlib 1999; Mezulis et al. 2004). Non-depressed fathers, for example, may be positive role models for their children or provide offspring with emotional support their mothers are unable to give. One study, for example, finds that non-depressed fathers buffered children of depressed mothers from internalizing and externalizing behavior problems, but does not moderate the association between maternal depression and grade

point average (Tannenbaum and Forehand 1994). Another study finds that non-depressed fathers buffered children from externalizing problems but not internalizing problems (Mezulis et al. 2004).

On the other hand, children may be most at risk if both parents are depressed (Brennan et al. 2002; Kahn et al. 2004; Meadows et al. 2007; Merikangas, Prusoff, and Weissman 1988). Regardless of whether paternal mental health independently predicts young children's behavioral outcomes, children with two mentally ill parents are most at risk (Meadows et al. 2007; Kahn et al. 2004). For example, if both parents suffer from MDD or GAD, and live together, children are particularly likely to suffer from anxious/depressed disorder (Meadows et al. 2007). Similarly, having two parents with mental health problems is associated with more conduct problems in adolescence (Dierker et al. 1999). Given the prevalence of assortative mating on psychological characteristics, a substantial minority of children face this increased risk of disadvantaged outcomes (Brennan et al. 2002; DeKlyen, Brooks-Gunn, McLanahan, and Knab 2006).

Chronic and Transitory Depression

Though a large percentage of children spend at least some part of their childhood with at least one depressed parent, there is substantial variation in the amount of time that parents are depressed, and the chronicity of depression may be an important predictor of children's outcomes (Beardslee, Versage, and Gladstone 1998; Brennan et al. 2000; Goodman and Gotlib 2002). When parental depression persists across multiple years, compared to parental depression that is short-lived, children experience greater negative

ramifications (Fergusson and Lynskey 1998; Foster et al. 2008a; Petterson and Albers 2001; Richters 1992; Teti et al. 1995). Mothers with chronic depression may experience a more persistently stressful social context than those who experience transitory depression, which may lead to less favorable internalizing and externalizing behaviors in children (Dawson et al. 2003). Some evidence suggests that chronicity is a more important moderator than other factors such as severity of depressive symptoms or timing of depression (Brennan et al. 2000; Hay, Pawlby, Waters, and Sharp 2008; Lyons-Ruth, Wolfe, and Lyubchik 2000).

On the other hand, several studies show that any exposure to maternal depression leads to more behavioral problems in children, and that children do not adjust when short-lived depression disappears or when their mothers move in and out of depressive episodes (Downey and Coyne 1990; Gotlib and Goodman 1999). For example, children of mothers who report depression when they are 18 months old, but not when they are four to six years old, still have less favorable behaviors than their counterparts with mothers who never report depression (Alpern and Lyons-Ruth 1993). A remission in maternal depression may lead to improvements in parenting or more favorable interactions with children, but these improved interactions may not translate to improved child wellbeing (Goodman, Broth, Hall, and Stowe 2008).

Variation in Association between Parental Depression and Children's Outcomes by Demographic Characteristics

Of course, depression is not randomly distributed across the population, as certain groups of the population are more vulnerable to depressive episodes (Kessler and Zhao 1999). Individuals may have differential vulnerabilities to stressful circumstances that may trigger an onset of depression, and it follows that these vulnerable groups of children may be more affected by parental depression than less vulnerable groups (Kessler 1979). However, little is known about how the consequences of parental depression for children may vary among different subgroups of the population. Though not an exhaustive list of potentially moderating variables, race, socioeconomic status, and family structure are all demographic factors that may alter the association between parental depression and children's outcomes. There is a small amount of evidence that suggests these demographic characteristics may buffer children from the negative consequences of parental depression or exacerbate the negative consequences of depression. For example, children may be protected from parental depression if they are not minorities (Belle 1982; Lyons-Ruth, Zoll, Connell, and Grunebaum 1986) or if they come from relatively affluent families (Petterson and Albers 2001). Living with married parents may also serve as a protective factor for children (Meadows et al. 2007).

Maternal Parenting Behaviors

As discussed earlier, life course theory suggests that parents' and children's lives are interdependent. Parents' psychological wellbeing may be one form of disadvantage that parents transmit to their children, and, indeed, empirical research consistently finds a strong, robust link between parental depression and children's outcomes. However, much

less is known about the pathways through which depressed parents transmit disadvantages to their children. Maternal parenting behaviors is one potential pathway through which maternal depression may be linked to children's outcomes, and I examine this possibility in Chapter 5 of this dissertation. Thus, in the following section, I review prior research that links maternal depression to three specific indicators of maternal parenting behaviors: parenting stress, neglect, and discipline. Though maternal depression undoubtedly influences many dimensions of parenting behaviors, three aspects of parenting that may be particularly affected include parenting stress, neglect, and discipline. Though these indicators are not exhaustive of all types of parenting behaviors, they provide a starting point for understanding the consequences of maternal depression for parents and children. Next, I review the literature that links these parenting behaviors to children's outcomes. I conclude this section by reviewing the relatively scarce existing literature that links depression, parenting, and children's outcomes. Taken together, existing research suggests that researchers have recently begun to examine maternal parenting behaviors as a potential mechanism linking parental depression and children's outcomes, but that there is still much to be known about this complex relationship.

Parental Depression as a Predictor of Maternal Parenting Behaviors

Theoretical perspectives suggest that depression impairs the sufferer's interpersonal relationships and functioning, and it is likely that less favorable parenting behaviors is one manifestation of these impairmens (Coyne 1976). Indeed, empirical

research finds that depressed mothers may be limited in their capacity to parent effectively (Beardslee et al. 1998; Belsky 1984; Gotlib and Goodman 1999; Lovejoy et al. 2000; Marmorstein et al. 2004; Parker et al. 1997). In fact, most depression-related behavior is relevant to specific responsibilities associated with the parenthood role (Radke-Yarrow and Klimes-Dougan 2002).

To begin with, Belsky (1984) suggests that parents' psychological resources are the most important determinant of how they engage in parenting their children. Depressed mothers, compared to their non-depressed counterparts, may be less empathetic, more aggressive, and less emotionally available and responsive to their children (Bishop and Leadbeater 1999; Feng, Shaw, Skuban, and Lane 2007; Lutenbacher 2002; Murray, Fioi-Cowley, Hooper, and Cooper 1996; Silberg and Rutter 2002; Zuravin 1989). In addition, depressed mothers have more negative interactions and fewer positive interactions with their children (Ashman and Dawson 2002; Cummings and Davies 1994; Goodman et al. 2008; Lovejoy et al. 2000). Maternal depressive symptoms are also associated with portraying one's child in a negative manner to others (Tenzer, Murray, Vaughan, and Sacco 2006).

Chronic depression may be particularly detrimental to parenting behaviors (Cox, Puckering, Pound, and Mills 1987). Even when mothers experience temporary depression, less optimal parenting behaviors may persist after depression remits (Dawson et al. 2003; Lyons-Ruth et al. 2002). Other evidence, however, suggests that the quality of mothers' interactions with their children increases when maternal depression disappears (Goodman et al. 2008; Murray et al. 2006).

Parenting stress. Not surprisingly, many parents experience stress that arises directly from the parental role (Abidin 1990; Crnic and Acevado 1995). Though there is some disagreement about how to define parenting stress, this is often conceptualized as irritating, frustrating, annoying, and distressing demands that are related to parenthood (Crnic and Acevado 1995). Parenting stress is associated with various aspects of psychological wellbeing, including depression (Abidin 1990; Belsky 1984; Belsky, Crnic, and Woodworth 1995; Crnic and Acevado 1995; Hammen 2002). It is likely that depressed parents experience more parenting stress than non-depressed parents, as some predictors of depression, such as economic hardship, may also predict parenting stress. Depression may also cause parents to be more susceptible to the demands of parenting. Of course, it is also possible that the association between depression and parenting stress is bi-directional, as high levels of parenting stress may facilitate the onset of depression. Either way, research suggests a strong, robust association between depression and stress. Parenting stress is often stable over time (Crnic, Gaze, and Hoffman 2005; Mulsow, Caldera, Pursley, Reifman, and Huston 2002), and the strength of the association between stress and depression is stronger when the stress persists (Avison and Turner 1988). Of course, many other individual-level characteristics predict parenting stress, including economic resources (Cain and Combs-Orme 2005), relationship status and quality (Cooper, McLanahan, Meadows, and Brooks-Gunn 2007; Mulsow et al. 2002), parent and child gender (McBride, Schoppe, and Rane 2002; Simon 1992; Scott and Alwin 1989), social support (Saisto et al. 2008), and child temperament (Mulsow et al. 2002; Saisto et al. 2008).

Neglect. Similar to parenting stress, child neglect is often difficult to define and measure (English, Thompson, Graham, and Briggs 2005; Hildyard and Wolfe 2002; Tyler, Allison, and Winsler 2006). Though child neglect is operationalized a host of different ways, a large body of literature links parental psychological wellbeing to child neglect. Mothers who are depressed, for example, are more likely than their non-depressed counterparts to have negative emotions toward their children and more likely to neglect their children (Culp, Culp, Soulis, and Letts 1989; Dunn et al. 2002; Egami, Ford, Greenfield, and Crum 1996; Ethier, Lacharite, and Couture 1995; Milner, Halsey, and Fultz 1995; Tyler et al. 2006). Depressed mothers are also more likely to report aggravation with their children (Lyons-Ruth et al. 2002) and less likely to feel invested in their children (Bradley, Whiteside-Mansell, Brisby, and Caldwell 1997), both which may facilitate neglectful behavior toward children. In addition to maternal depression, a host of additional risk factors, including a lack of economic resources, are predictive of neglectful parenting (Kotch, Browne, Dufort, and Winsor 1999).

Discipline. Finally, existing literature suggests that depressed mothers may discipline their children more frequently or harshly than non-depressed mothers (Cummings and Davies 1994; Kochanska, Kucynski, Radke-Yarrow, and Welsh 1987; Lyons-Ruth et al. 2002). Additionally, depressed mothers may be particularly likely to engage in inconsistent or ineffective discipline practices (Cunningham, Benness, and Siegel 1988; Forehand, Lautenschlager, Faust, and Graziano 1986; Lyons-Ruth et al. 2002; Zahn-Waxler, Iannotti, Cummings, and Denham 1990). Depressed mothers are also

more likely than their non-depressed counterparts to discipline their children by using psychological control (Cummings, Keller, and Davies 2005).

Maternal Parenting Behaviors as a Predictor of Children's Behavior

The fact that depression is associated with less favorable parenting behaviors among mothers is important in itself. However, understanding the association between maternal depression and parenting behaviors is critical because more favorable parenting behaviors are consistently linked to favorable outcomes in children. Positive parenting behaviors are associated with more favorable internalizing and externalizing behaviors from early childhood through adolescence (Amato and Fowler 2002; Koblinsky, Kuvalanka, and Randolph 2006; Simons, Whitbeck, Beaman, and Conger 1994).

Parenting stress. Mothers and fathers who report more stress related to the parenting role report less parental involvement and more impaired parent-child relationships, both of which are linked to children's outcomes (Belsky 1984; Crnic and Greenberg 1990). Additionally, parents who report high levels of parenting stress, compared to parents who report less parenting stress, have children with more behavior problems (Belsky 1984; Benzies, Harrison, and Magill-Evans 2004; Crnic and Avecedo 1995; Crnic et al. 2005; Jackson 2000; Hammen 2002). Children of parents who report more parenting stress, for example, are rated by their teachers as having more internalizing problem behaviors, more externalizing problem behaviors, and less social competence (Anthony et al. 2005).

Of course, the potential for reverse causality exists, as parents of children who exhibit more behavioral problems may have a greater propensity to report parenting stress (Anthony et al. 2005; Crnic and Avecedo 1995).

Neglect. Neglectful parenting is also associated with less favorable behavioral outcomes throughout childhood. Neglected children are more likely than their counterparts to have internalizing and externalizing behavior problems (Hildyard and Wolfe 2002; Kaplan, Pelcovitz, and Labruna 1999; Tyler et al. 2006). These children are more likely to be withdrawn, impulsive, and aggressive (Crouch and Miller 1993; Prino and Payrot 1994; Trickett and McBride-Chang 1995). Neglected children also have more impaired interactions with their peers (Hildyard and Wolfe 2002; Trickett and McBride-Chang 1995). Additionally, they are more likely to receive diagnoses of MDD, Attention Deficit Disorder (ADD), Oppositional Defiant Disorder (ODD), and substance dependence across the life course (Brown, Cohen, Johnson, and Smailes 1999; Dunn et al. 2002; Famularo, Kinscherff, and Fenton 1992; Kaufman and Charney 2001; Tyler et al. 2006).

Discipline. Finally, harsh discipline practices are associated with more behavior problems in young children (Amato and Fowler 2002; Deater-Deckard and Dodge 1997; Nix et al. 1999; McLoyd and Smith 2002). For example, harsh discipline practices are associated with more externalizing behavior problems among five-year-old children and more externalizing behavior problems among sixth graders (Criss, Pettit, Bates, Dodge, and Lapp 2002; Pettit, Bates, and Dodge 1997). Taken together, these studies suggest that maternal depression, and the harsh, inconsistent discipline practices that go along with it,

may make it difficult for children to gauge maternal expectations and adjust their behavior according to these expectations.

Maternal Parenting Behaviors as a Mediator Linking Maternal Depression to Children's Behavior

Though several researchers have suggested that parenting behaviors may mediate the association between parental depression and children's outcomes (Downey and Coyne 1990; Goodman and Gotlib 2002), there are very few empirical tests of this proposition. Of course, there are several exceptions. Kiernan and Huerta (2008), for example, take a step toward understanding the complex relationship between maternal depression, parenting, and child wellbeing, and find that three types of parenting behaviors – reading activities, mother-child relations, and discipline practices – may mediate the association between maternal depression and behavior in early childhood. Additionally, an examination of African-American families in Iowa and Georgia finds that emotional distress among caregivers leads to less favorable parenting practices that, in turn, is related to internalizing and externalizing problem behaviors among 10- and 11-year old children (Conger et al. 2002). Other research supports the idea that the relationship between maternal depression and children's outcomes is not direct, but is instead mediated through various parenting practices (Gartstein and Sheeber 2004; Miller, Cowan, Cowan, Hetherington, and Clingempeel 1993; DuRocher and Cummings 2007).

On the other hand, research finds that parenting behaviors do not completely attenuate the negative consequences of depression (Cummings et al. 2005; Harnish, Dodge, Valente, and Conduct Problems Prevention Research Group 1995). Or, it may be that the influence of parenting behaviors is not the same for all groups of children. One study, for example, finds that parenting mediates the association between maternal depression and children's behavioral problems, but only among white and Latino children (Pachter, Auinger, Palmer, and Weitzman 2006). Thus, the mechanisms through which maternal depression leads to less favorable outcomes for children may work differently for black children (also see Harnish et al. 1995).

Parental Depression and Relationship Quality

In addition to maternal parenting behaviors, relationship quality may be an important mechanism linking maternal depression to children's outcomes. Existing literature suggests that depressed mothers may have less supportive and more conflictual relationships with their children's fathers and that depression may influence the ability of either or both parents to regularly co-parent together. This weak relationship quality may, in turn, lead to behavioral problems in young children. I explore this possibility in Chapter 6 of this dissertation. In the following section, I review prior research that links maternal depression to indicators of relationship quality such as supportive behaviors, hostile behaviors, and co-parenting. Next, I review prior literature about the consequences of parents' relationship quality for children's outcomes. I conclude this section by summarizing the relatively scarce existing literature that considers relationship

quality as a potential pathway that links maternal depression to disadvantaged outcomes among children.

Parental Depression as a Predictor of Relationship Quality

Theoretical perspectives on depression suggest that depressed individuals have negative interactions with others (Coyne 1976), and thus it follows that depression is related to relationship formation and, within unions already formed, relationship quality. It may be that depressed individuals have negative interactions with their partners, and these negative interactions accumulate to create unsupportive, conflictual relationships (Downey and Coyne 1990; Whisman 2001). Depressed individuals, compared to their non-depressed counterparts, may be more likely to criticize or denigrate their partners, be physically or verbally aggressive, or have inconsistent routines that put stress on the couple relationship (Whisman 2001). Indeed, depression is associated with various aspects of relationship quality (Proulx, Helms, and Buehler 2007; Segrin, Powell, Givertz, and Brackin 2003; Whisman, Uebelacker, and Weinstock 2004; Zlotnick, Kohn, Keitner, and Grotta 2000). Data from both the Epidemiologic Catchment Area Study (ECA) and the National Comorbidity Study (NCS), both representative samples of individuals in the United States, find that depression and other psychiatric disorders are predictive of less favorable relationship quality (Whisman 1999; Whisman and Bruce 1999). Relationship quality, like parenting behaviors, is a multi-dimensional construct that is operationalized differently across studies, which makes it difficult to synthesize the existing research (Grych and Fincham 1990). Some analyses focus on positive aspects

of relationships (i.e., supportive behaviors or the amount of time spent together) and others focus on negative aspects of relationships (i.e., hostile behaviors, conflict, or distress), and research suggests that the correlates and consequences of these positive and negative dimensions may be distinct from one another (Grych and Fincham 1990; Frosch and Mangelsdorf 2001; Horwitz, McLaughlin, and White 1998).

Regardless, research suggests that both depression and depressive symptoms lead to less marital satisfaction (Papp, Goeke-Morey, and Cummings 2004), more conflict (DuRocher and Cummings 2007), and negative communication (Johnson and Jacob 1997). Data from the NCS suggests that individuals currently suffering from MDD have fewer positive interactions and more negative interactions with their current spouse or live-in partner (Zlotnick et al. 2000). Relationship quality may particularly suffer if one partner is chronically depressed (Dawson et al. 2003). Among married couples, the depression or depressive symptoms of one's spouse, in addition to one's own depression or depressive symptoms, is associated with less favorable marital quality (Beach, Katz, Kim, and Brody 2003; Whisman et al. 2004). Of course, the association between depression and relationship quality is bi-directional, as individuals who report unsupportive or conflictual relationships with their partners may become depressed as a result of these relationships (Kouros, Papp, and Cummings 2008; Dehle and Weiss 1998; Williams 2003; Kim and McHenry 2002).

Depression is linked to traditional measures of relationship quality, such as supportive or hostile behaviors, but these are not the only ways to measure relationship quality between romantic partners. It is likely that parental depression also leads to

difficulties in the co-parental relationship, an outcome that is conceptually distinct from traditional measures of relationship quality (Hayden et al. 1998; Margolin, Gordis, and John 2001; McHale et al. 2003; Schoppe-Sullivan, Mangelsdorf, Frosch, and McHale 2004). Broadly defined, co-parenting taps the degree to which parents can cooperate and support one another in the joint task of raising their children (for reviews, see Gable, Belsky, and Crnic 1992; Gable, Crnic, and Belsky 1994; McHale et al. 2003). Though distinct from traditional measures of relationship quality, there is some evidence that co-parenting is correlated with other aspects of relationship quality among parents who live together (Katz and Gottman 1996; McHale 1995; Schoppe-Sullivan et al. 2004). For mothers and fathers who live apart, though, co-parenting might be the only interactions that parents have with one another, and it is possible that the association between depression and co-parenting may work differently for these couples. Few researchers have examined how depression among one or both partners may alter the co-parental relationship, though it is reasonable to expect that depression would limits one's ability to co-parent similar to the way it may inhibit the development of supportive relationships.

Relationship Quality as a Predictor of Children's Behavior

Understanding how depression may lead to reduced relationship quality between parents is particularly important because the partner relationship has important consequences for child wellbeing. According to social learning theory, children learn how to behave from watching their parents (Bandura 1969). Thus, parents who expose their children to unsupportive or conflictual relationships may put their children at risk

for experiencing behavioral difficulties (Bandura 1969). Indeed, relationship quality between intimate partners is a strong, consistent predictor of behavior in their children (Cummings and Davies 2002; Grych and Fincham 1990; Reid and Crisafulli 1990).

To begin with, positive dimensions of partner relationship quality are associated with more favorable behavior in children. Children exposed to warm, supportive, and companionate relationships, for example, have fewer behavior problems than their counterparts (Abidin, Jenkins, and McGaughey 1992; Cowan, Cowan, and Pearson 1996; Goldberg and Easterbrooks 1984; Miller et al. 1993). An even larger body of literature links negative dimensions of partner relationship quality to behavioral problems among children (Amato, Loomis, and Booth 1995; Buehler et al. 1988; Cummings and Davies 1994; Dadds and Powell 1991; Davies and Cummings 1998; Fomby and Osborne 2008; Ingoldsby, Shaw, Owens, and Winslow 1999; Jekielek 1998; Katz and Gottman 1993; Kerig 1998; Lindahl and Malik 1999; Najman et al. 1997). Marital conflict may lead to increased hostility and decreased availability among parents, which increases the risk that children experience externalizing or internalizing problems (Goodman and Gotlib 1999). Though few studies examine both positive and negative features of relationship quality, some evidence suggests that the negative aspects of relationship quality are more strongly associated with children's behaviors than the positive aspects (Grych and Fincham 1990). In fact, conflictual relationships may be more detrimental to children's behavior than family structure transitions (Fomby and Osborne 2008; Jekielek 1998; Kelly 2000; Najman et al. 1997), and the consequences may be long-lasting (Nomura et al. 2002). On the other hand, a minority of scholars have found a weak or nonexistent association

between parents' marital quality and children's behavior (Belsky, Putnam, and Crnic 1996; Emery and O'Leary 1984).

The literature that links co-parenting to children's behavior is less voluminous, but findings suggest that frequent and supportive co-parenting can lead to positive behavior in children. In short, children seem to benefit when their mother and father work together, regardless of whether their parents are married or not. Children of parents who effectively co-parent have fewer behavioral problems (Belsky et al. 1996; Cowan and McHale 1996; McHale, Johnson, and Sinclair 1999; Schoppe, Mangelsdorf, and Frosch 2001). In fact, cooperative co-parenting may be a more important predictor of children's outcomes than traditional measures of relationship quality (Abidin and Brunner 1995; Bearss and Eyberg 1998; Frosch, Mangelsdorf, and McHale 2000; McHale and Rasmussen 1998). Effective co-parenting may also indirectly benefit children. First, it may benefit children through its influence on other aspects of partner relationship quality (Katz and Gottman 1996; McHale 1995; Schoppe-Sullivan et al. 2004). Additionally, co-parenting keeps fathers involved (Carlson, McLanahan, and Brooks-Gunn 2008; Sobolewski and King 2005), which may lead to improved child wellbeing (Cooksey and Fondell 1996; King 1994; Whitaker et al. 2006; for contradictory findings, see Baydar and Brooks-Gunn 1994; Furstenberg, Morgan, and Allison 1987).

Relationship Quality as a Mediator Linking Maternal Depression to Children's Behavior

Given that relationship quality is strongly correlated with both parental depression and children's behaviors, this contextual factor may be one potential mechanism that

underlies the negative association between parental depression and children's behaviors (Brennan et al. 2002; Downey and Coyne 1990; Goodman and Gotlib 1999). Although researchers have speculated that partner relationships may be one mechanism through which parental depression leads to detrimental outcomes for children, there are few empirical tests of this hypothesis (Downey and Coyne 1990). Some research does find that relationship quality may mediate the association between parental depression and children's outcomes (Miller et al. 1993; DuRocher and Cummings 2007). One study, for example, finds no direct relationship between parental depression and children's externalizing behavior problems in young children; instead, the quality of the relationship between the children's parents, along with parenting styles, mediates this association (Miller et al. 1993). Similarly, another study finds that supportive and hostile behaviors between married couples attenuate the association between parental depression and the mental health of 12-year-old Finnish children (Leinonen, Solantaus, and Punamaki 2003).

On the other hand, it is possible that marital conflict does not entirely mediate the relationship between parental psychological wellbeing and children's behavior (Brennan et al. 2002; Papp, Cummings, and Schermerhon 2004). One study of young children, for example, finds that one indicator of relationship quality among married couples (depressive conflict styles) only partially mediates the negative association between parental dysphoria and children's internalizing problems. Other types of relationship quality, such as constructive conflict and destructive conflict, do not mediate the association at all (DuRocher and Cummings 2003). Also, the relationship between

depressive symptoms, relationship quality, and children's outcomes may be contingent on the specific outcome (Cummings et al. 2005).

Depression and Social Support

Prior research builds a convincing case that maternal parenting behaviors and maternal reports of relationship quality with her current partner may mediate the link between maternal depression and behavioral problems in children. Mothers' networks of social support, particularly the exchanges of instrumental assistance they may receive from others, may be an additional pathway through which depressed mothers transmit disadvantages to their children. When mothers have support available from their kin, friends, and community, their children may be buffered from the negative consequences traditionally associated with maternal depression. Thus, in this section, I review the literature that links social support to both depression and children's wellbeing. I then discuss the potentially buffering effect of social support, paying particular attention to how social support may be protective for children of depressed mothers.

Depression as a Predictor of Social Support

A host of literature links depression to reductions in social support. There are several reasons to believe that depression among mothers would lead to less available support. As discussed earlier, depression often manifests itself through hostile or withdrawn interactions with others (Coyne 1976). In the same way that negative interactions may lead to low relationship quality with one's intimate partner, these

negative interactions may also inhibit positive relationships with friends and family members. If this is the case, friends and family members may limit the amount of instrumental and emotional support they provide. Additionally, depressed mothers may be less able than their non-depressed counterparts to activate their social support networks when necessary. Depressed mothers may also have a negative, distorted view of the amount of support they have available to them, which would translate into incongruence between their perceptions of available support and the actual amount of available support. Of course, the association between support and depression is likely bi-directional, and mothers who lack a strong social support system may be more susceptible to depression than those with greater support. A lack of social support, particularly in times of crisis or need, may lead to feelings of worthlessness or anxiousness that eventually spirals into depression. Indeed, empirical research suggests there is a strong, robust, and transactional association between depression and social support. Depression or depressive symptoms may erode networks of social support (Cox et al. 2008; Dawson et al. 2003; Lin, Ye, and Ensel 1999; Thoits 1984). Similarly, mothers who lack a network of social support are more likely to have mental health problems such as depression (Lin and Ensel 1984; Smith, Howard, and the Centers for the Prevention of Child Neglect 2008; Turner and Marino 1994; Turner, Sorenson, and Turner 2000). This is true among pregnant mothers (Liese, Snowden, and Ford 1989) and during the transition to parenthood (Bost et al. 2002; Horowitz and Goodman 2004; Turner, Grindstaff, and Phillips 1990). Many of these studies are based on cross-sectional data, and those that use longitudinal data rarely acknowledge the potential for reverse

causality, so it is difficult to distil a definitive causal conclusion about the relationship between depression and social support. Instead, it is likely there is a transactional relationship between depression and social support.

Social Support as a Predictor of Children's Behavior

A large body of literature links social support to wellbeing among adults. Intergenerational relationships, in particular, are important throughout the life course, with individuals giving instrumental assistance to and receiving instrumental assistance from their parents. In fact, about half of middle-aged Americans routinely engage in intergenerational support, and 10% are extensively engaged in such relationships (Hogan, Eggebeen, and Clogg 1993). Common forms of instrumental support include the exchange of emotional or instrumental (including money, housing, or child care) resources. These intergenerational family bonds are becoming more important and diverse in the 21st century and, in some cases, these relationships are more consequential for wellbeing than nuclear family ties (Bengston 2001). Indeed, individuals with higher levels of either perceived or received social support are likely to be better off financially than their counterparts with less support. Among low-income families, greater perceptions of available social support is associated with less perceived economic hardship and a reduced likelihood of living in poverty (Henly, Danziger, and Offer 2005). Additionally, single mothers who perceive that they have generous material and emotional support are more likely to be employed and less likely to rely on welfare than their counterparts with less support (Harknett 2006). Especially for low-income families,

social support serves either a coping or mobility function; coping support allows families to cope with everyday life stressors, and mobility support gives families the opportunity to get ahead (Briggs 1988). In addition to economic wellbeing, greater social support is also predictive of more favorable parenting behaviors (Jackson, Gyamfi, Brooks-Gunn, and Blake 1998; Turner and Avison 1985).

Less research has examined the consequences of parental social support for children's outcomes, though it stands to reason that children may suffer when parents lack assistance from friends and family members. Indeed, recent research on two representative samples of low-income families finds that greater perceptions of social support among mothers is associated with more favorable internalizing, externalizing, and prosocial behavior among young children (Ryan, Kalil, and Leininger 2009). This is consistent with prior research using smaller, non-representative samples (Burchinal, Follmer, and Bryant 1996; Jackson, Brooks-Gunn, Huang, and Glassman 2000; McLoyd, Jayaratne, Ceballo, and Borquez 1994; Zelkowitz 1987). There is also evidence that the social support a mother receives can confer health benefits to her children, and it stands to reason that these benefits would also extend to behavioral outcomes. For example, mothers with more kin support are less likely to have children born low birth weight (Sherraden and Barrera 1997). Additionally, higher levels of financial and emotional support are associated with healthier children among Mexican families and Mexican immigrants to the United States (Kana'iaupuni, Donato, Thompson-Colon, and Stainback 2005).

Social Support as a Moderator Linking Maternal Depression to Children's Behavior

As discussed above, empirical research supports the idea that social support can directly influence the wellbeing of adults and children. Social support may also buffer individuals from the negative ramifications associated with stressful life events such as a job loss or death of a parent (Baron and Kenny 1986; Cohen and Wills 1985; House, Umberson and Landis 1988). Having a friend or family member willing and able to provide instrumental assistance after a stressful life event may protect an individual from economic hardship or emotional distress. Along that same line of reasoning, depressed mothers with available instrumental assistance may be able to buffer their children from the negative consequences traditionally associated with their depression. When a mother is depressed, having a friend or family member to watch her children or assist with daily parenting tasks may protect children from experiencing additional disadvantages. The instrumental support, for example, may make the mother feel that her struggles are manageable, which may lead to more positive interactions with her children and, thus, better outcomes in children. It is also possible that children who recognize a strong network of friends and family members surrounding their mother feel more secure than their counterparts, which translates to more favorable behavior.

A large body of empirical research supports the idea that social support may serve as a buffer against stressful life events (Ensel and Lin 1991; House et al. 1988; Lin and Ensel 1989; Thoits 1995). Specifically, social support may buffer against economic strain (Brown, Gary, Greene, and Milburn 1992), children's behavior problems (Suarez and Baker 1997), depressive symptoms (Jackson 1992), and perceived occupational stress

(House and Wells 1978; LaRocco, House, and French 1980). Few studies, however, examine how social support may buffer children from the negative consequences of a stressor such as maternal depression (Cummings and Davies 1994). One exception exists: In an examination of 56 first-generation Latino mothers, researchers found that social support moderates the association between maternal depression and children's internalizing behaviors (Dennis, Parker, Blacher, and Borthwick-Duffy 2003).

Additional Correlates of Children's Behavior

Taken together, existing research finds that parental depression, particularly maternal depression, may both directly and indirectly influence the behavioral outcomes of young children. However, behavioral outcomes in early childhood are also influenced by a host of additional individual- and family-level characteristics. To begin with, demographic factors such as race and immigrant status are correlated with children's behavioral outcomes. Minority children, compared to their white counterparts, have less favorable behavioral outcomes when they enter kindergarten (Crosnoe 2006; Lee and Burkam 2002). Also, immigrant children may have less favorable behavior than native-born children (Crosnoe 2005; Harker 2001).

In addition to demographic characteristics, socioeconomic status is one of the most stable, consistent predictors of children's behavior (Gerard and Buehler 1999). Family income is inversely associated with young children's behavioral outcomes (Duncan, Brooks-Gunn, and Klebanov 1994; Strohschein 2005; Yeung, Linver, and Brooks-Gunn 2002). In fact, increases in income are associated with more favorable

behavior in young children (Strohschein 2005). Parents' educational attainment, independent of income, is also highly predictive of children's behavior, with children of more highly educated parents having behaviors that are typically rewarded by teachers (Lee and Burkam 2002). Demographic and socioeconomic factors are important predictors of children's behavior, but family structure characteristics are also independently associated with children's outcomes. By and large, children in single-parent families, compared to their counterparts with married parents, have worse behavioral outcomes (Carlson and Corcoran 2001; Sigle-Rushton and McLanahan 2004). Though marriage is generally seen as being beneficial to children, cohabitation can also be protective for children. Among children ages six to 11, for example, children with married and cohabiting parents have similar behavioral outcomes. Cohabitation, however, may be associated with less school engagement among young children (Brown 2004). Additional household characteristics may be predictive of children's behavior. The addition of a sibling into the household may lead to more behavior problems (Baydar, Hyle, and Brooks-Gunn 1997). Those with siblings generally have more favorable behavior than those without siblings, as children may learn important social interaction skills from their siblings (Downey and Condron 2004). Additionally, there is some evidence to suggest that having a grandparent in the household may be a protective factor for children (Achenbach, Howell, Quay, Conners, and Bates 1991). Maternal and paternal health behaviors are also independently associated with children's behavior. Prenatal smoking, for example, is associated with more behavioral problems among two- and five-year-old children (Robinson et al. 2008).

Finally, and not surprisingly, a host of child-level characteristics are predictive of children's behavior. To begin with, male children generally have more behavior problems, particularly externalizing behavior problems, than female children (Robinson et al. 2008). Children born low birth weight also have less favorable behavior (Osborne and Berger 2009). Additionally, child temperament is a strong correlate of behavior in young children. Children with more difficult temperaments have less favorable behavior, and there is some evidence that suggests this relationship is particular strong for externalizing behaviors (Caspi, Henry, McGee, Moffitt, and Silva 1995; Tschann, Johnston, Kline, and Wallerstein 1989; Weiss, Dodge, Bates, and Pettit 1992).

Limitations to Existing Literature

Thus, though there is a strong theoretical basis for linking parental depression to children's outcomes, as well as a host of empirical evidence to support the theoretical framework, there are several important limitations to this growing body of literature. To begin with, researchers know little about how children are differentially influenced by chronic and transitory depression. Additionally, the majority of existing research is based on small, non-representative samples that are limited in their generalizability (Downey and Coyne 1990). Many samples are limited to clinical populations or non-clinical groups that are homogenous with respect to race or socioeconomic status (for exceptions, see Meadows et al. 2007; Kiernan and Huerta 2008). Minority children and children in economically disadvantaged families already face disadvantaged outcomes compared to their counterparts (Duncan et al. 1994; Lee and Burkam 2002; Strohschein 2005), and it

is particularly important to understand how parental depression may differentially influence outcomes among children of different groups. Indeed, research suggests cumulative disadvantages may be particularly detrimental to outcomes throughout the life course (Appleyard, Egeland, van Dulmen, and Sroufe 2004; Whitaker et al. 2006). Along this same line, most examinations of parental depression and children's outcomes are limited to married couples. This is an important omission given the substantial demographic changes of the past five decades. Marriage has become increasingly optional and more uncertain, and the prevalence of cohabitation and nonmarital childbearing mean that substantial numbers of children live with unmarried parents (Bumpass and Lu 2000; Ellwood and Jencks 2004), and these children generally have less favorable behavioral outcomes than their counterparts with married parents (Sigle-Rushton and McLanahan 2004).

Finally, prior research is limited because we know very little about the mechanisms through which depression influences children's cognitive and behavioral functioning (Downey and Coyne 1990; Goodman and Gotlib 2002; Gotlib and Lee 1996; Kane and Garber 2004). Since several noteworthy scholars have deemed this a noteworthy direction for research (Goodman and Gotlib 2002; Gotlib and Lee 1996), researchers have begun to speculate about potential mechanisms and to test hypotheses regarding these mechanisms. Genetic factors undoubtedly facilitate the intergenerational transmission of impaired psychological wellbeing. Children may inherit depression, as well as characteristics associated with the development and maintenance of the condition, from their parents (Downey and Coyne 1990; Goodman and Gotlib 1999). But

environmental factors, such as maternal parenting behaviors or relationship quality with one's partner, may also explain at least part of the relationship between parental depression and children's behavior (Downey and Coyne 1990; Goodman and Gotlib 2002). Despite speculation about these mechanisms, however, there is relatively little empirical research that examines the environmental factors through which parental depression matters for children and, additionally, how social contexts may ameliorate some of the disadvantages faced by children of depressed parents.

Recently, the relationship between parental depression and child wellbeing has received growing and considerable attention in the literature. In the following chapters, I extend this research by examining the damaging consequences of parental depression among a sample of children born to a recent cohort of mostly unmarried mothers. The analyses also pay particular attention to the pathways that link depression to children's outcomes. In the first empirical chapter, Chapter 4, I establish a link between maternal depression and behavioral problems among a cohort of children who are, on average, 36 months old. In this chapter, I also examine variation in the association between depression and children's outcomes by race, socioeconomic status, and family structure. Then, I consider how maternal parenting behaviors (Chapter 5), maternal reports of relationship quality with her current partner (Chapter 6), and maternal social support (Chapter 7) may mediate or moderate the association between maternal depression and children's outcomes.

CHAPTER THREE:

DATA AND METHODS

As illustrated in the prior chapter, both sociologists and psychologists have increasingly devoted a great deal of attention linking parental depression, particularly maternal depression, to children's outcomes throughout the life course. By and large, parental depression is one way through which parents can transmit disadvantages to their children. However, as discussed in Chapter 2, most existing studies about the consequences of parental depression for children suffer from several limitations that impede researchers from having a complete, nuanced understanding of this relationship. First, we know little about how chronic parental depression and transitory parental depression may differentially be related to child wellbeing. Additionally, we know much more about how parental depression affects older children and adolescents than younger children, and we know little about how the consequences of depression vary across race, socioeconomic status, or relationship status of the parents. Finally, the pathways that link this intergenerational transfer of disadvantage are not well understood. Most of these limitations exist because, until recently, few data sets were available to appropriately address these complexities. Fortunately, the Fragile Families and Child Wellbeing survey (Fragile Families) is one data source that can help advance our understanding of how parental depression transmits disadvantages to children. In this chapter, I first describe the Fragile Families data and discuss the strengths and weaknesses of using these data to answer the research questions in this dissertation. I then define how the dependent,

independent, and control variables are measured throughout the subsequent chapters. Finally, I describe the analytic samples used in answering my research questions and provide descriptive characteristics of mothers, fathers, and children in the samples.

Data Source

Throughout this dissertation, I use data from the Fragile Families survey, a longitudinal study of nearly 5,000 new and mostly unmarried parents in 20 U.S. cities. The parents were chosen from cities that were stratified by labor market conditions, welfare generosity, and child support policies.[1] Though nearly one-quarter (24%) of parents were married at baseline, when their children were born, unmarried parents were oversampled. Because unmarried parents are not randomly distributed across the population, this sample over-represents minorities, low-income parents, parents without high school diplomas, and non-residential fathers.

Mothers completed a 30- to 40-minute in-person interview at the hospital after the birth of their child, between February 1998 and September 2000. Fathers were interviewed as soon as possible after the child's birth.[2] Mothers and fathers were interviewed by telephone when their child was approximately 12, 30, and 60 months

[1] Cities included are as follows: Austin, TX; Baltimore, MD; Boston, MA; Chicago, IL; Corpus Christi, TX; Detroit, MI; Indianapolis, IN; Jacksonville, FL; Milwaukee, WI; Nashville, TN; Newark, NJ; New York, NY; Norfolk, VA; Oakland, CA; Philadelphia, PA; Pittsburgh, PA; Richmond, VA; San Antonio, TX; San Jose, CA; and Toledo, OH. See Reichman, Teitler, Garfinkel, and McLanahan (2001) for further information about the study design.

[2] About 77% of fathers interviewed at baseline were interviewed in the hospital. The others were interviewed by telephone, usually less than two weeks after the child's birth (Bendheim-Thoman Center for Research on Child Wellbeing 2008a).

old.[3] Response rates varied by marital status and gender, but were still relatively high. At baseline, 82% of married and 87% of unmarried mothers completed the survey, as well as 89% of married and 75% of unmarried fathers. Of those who completed the baseline survey, the following percentages of parents completed the 12-month survey: 91% of married mothers, 90% of unmarried mothers, 82% of married fathers, and 71% of unmarried fathers. The following percentages of parents completed the 30-month survey: 89% of married mothers, 88% of unmarried mothers, 82% of married fathers, and 69% of unmarried fathers. Finally, 86% of married mothers, 87% of unmarried mothers, 78% of married fathers, and 67% of unmarried fathers completed the 60-month survey (Bendheim-Thoman Center for Research on Child Wellbeing 2008a).

Additionally, a subsample of families participated in two waves of the In-Home Longitudinal Study of Pre-School Aged Children (In-Home). The first wave of the In-Home survey took place when children were, on average, about 36 months old, and the second wave took place when children were about 60 months old. At both waves, the In-Home survey includes a parent survey questionnaire and an activity booklet. In the parent survey, the child's caregiver (in 96% of observations, the child's mother) answered questions about family functioning and child well-being. The activity booklet includes anthropometric measures of the mother and child, PPVT scores, child care information, and observations about the child's home environment. Data for the 36-month In-Home survey were mostly collected in 2002 and 2003, and data for the 60-month In-Home survey were mostly collected in 2005 and 2006 (Bendheim-Thoman Center for Research

[3] Researchers are currently in the field collecting data for a fifth wave, where the children are about nine years old. These data are expected to be released in 2010 or 2011 (Bendheim-Thoman Center for Research on Child Wellbeing 2008a).

on Child Wellbeing 2008b, 2009). About 78% of families participated in the 36-month In-Home survey and 61% participated in the 60-month In-Home survey (Bendheim-Thoman Center for Research on Child Wellbeing 2008b, 2009).

As stated at the beginning of this chapter, data from the Fragile Families survey are well-suited to answer my research questions about the consequences of parental depression for young children. To begin with, these data include a nationally representative sample of nonmarital births, a group of families neglected in the literature on parental depression and children's outcomes. Children born to unmarried parents now account for nearly 40% of all children born in the United States, and researchers are only beginning to examine how this diverse group of children fares (Hamilton, Martin, and Ventura 2006). In particular, there are very few examinations of the consequences of parental depression for children of unmarried parents, a group of children at risk for disadvantaged outcomes throughout the life course (Sigle-Rushton and McLanahan 2004). Additionally, Fragile Families is one of the only representative data sources that include data from mothers and fathers, as well as data on children's wellbeing. Having information on both maternal and paternal depression is useful, both because of the prevalence of assortative mating on psychological characteristics (Butterworth and Rodgers 2006; DeKlyen, Brooks-Gunn, McLanahan, and Knab 2006) and because fathers are often neglected in the child wellbeing literature (Phares, Fields, Kamboukos, and Lopez 2005). Researchers also asked respondents many questions that make it possible to control for a host of exogenous and endogenous characteristics that might alter the relationship between parental depression and children's developmental outcomes.

Though I cannot draw causal conclusions from my analyses, the longitudinal data allow me to advance our understanding of how parents transmit disadvantages to their young children, as much existing literature is based on cross-sectional samples of mothers and their children. Specifically, I am able to consider how chronic parental depression and transitory parental depression may differentially influence children, as well as how the pathways through which depression matters for children may depend on whether or not the depression persists across multiple years.

There are several important limitations to the Fragile Families data. First, these data are only representative of new parents in urban areas and, thus, cannot be generalized to other groups of individuals such as parents in rural areas or parents with older children. As discussed earlier, this may be more of a strength than a weakness, as little research examines the association between parental depression and child wellbeing among children of unmarried parents, an increasing demographic group in the United States. Regardless, readers should keep in mind the generalizability of these findings.

Attrition, particularly among fathers, is another important limitation to these data. Parents who completed all waves of the survey are likely to be systematically different from those who did not complete all waves of the survey. Though there is little information regarding fathers who did not participate in the baseline survey, data from the child's mother indicate that these fathers are systematically different from those who did complete the baseline survey. For example, at the child's birth, fathers not interviewed at baseline are less likely to be in a married or cohabiting relationship with the mother, and more likely to be in a non-cohabiting romantic relationship or no

relationship ($p < 0.001$ for all four relationship statuses). Additionally, according to mothers' reports, fathers not interviewed at baseline are less likely to be white ($p < 0.001$), more likely to be black ($p < 0.001$), and less likely to have a high school diploma ($p < 0.001$).

More information is available for fathers who did complete the baseline survey but not the subsequent follow-up surveys. Attrition analyses find that fathers who participated in the baseline interview but not the 12-month follow-up interview are generally more disadvantaged than those who participated in both interviews. These fathers are less likely to be white ($p < 0.001$) and more likely to be black ($p < 0.001$). Additionally, they are more likely to have less than a high school diploma ($p < 0.001$), have lower household incomes ($p < 0.001$), and less likely to be homeowners ($p < 0.001$). Important to the analyses in this dissertation, however, fathers who did not complete the 12-month follow-up had similar levels of depressive symptoms at baseline as those who did complete the 12-month follow-up. Furthermore, attrition among fathers is less consequential for this dissertation because the majority of my analyses focus on mothers' characteristics.

Finally, these data are limited because children's behavioral outcomes are reported by their mothers. Using maternal reports of children's behavior may be particularly problematic when mothers are depressed, as depressed mothers may be more likely to have distorted, negative beliefs about their children's behavior (Chi and Hinshaw 2002; Chilcoat and Breslau 1997; Youngstrom, Izard, and Ackerman 1999). Other research, though, suggests that depressed mothers are indeed accurate reporters of

their children's behavior (Achenbach, McConaughy, and Howell 1987; Richters 1992) or that depressed mothers may only slightly overinflate their children's behavior problems (Turney 2009). Unfortunately, in these data, mothers are the only reporters of children's behavior, so it is impossible to examine the validity of these reports. A subsample of observations (about 64% who completed the 36-month In-Home survey) includes interviewer ratings of children's temperament and cooperation, and, in Chapter 4, I examine the correlation between mother and interviewer reports.

Several other data sources exist that would allow me to examine the relationship between parental depression and children's developmental outcomes at the beginning of the life course. In particular, the Early Childhood Longitudinal Study-Birth Cohort (ECLS-B) and the Early Childhood Longitudinal Study-Kindergarten Cohort (ECLS-K) are two data sources that would allow for such an examination.[4] The ECLS-B, however, include inconsistent information about maternal depression and limited information about paternal depression.[5] Also, in these data, attrition among fathers is more common than in

[4] Both the ECLS-B and the ECLS-K surveys were conducted by the National Center for Education Statistics (NCES). The ECLS-B is a nationally representative longitudinal survey that follows a birth cohort of nearly 11,000 children born in 2001. The ECLS-B follows children from birth through kindergarten with data collection occurring when the child is 9 months old, 2 years old, 4 years old, and at kindergarten entry (NCES 2007). The ECLS-K follows a nationally representative cohort of more than 17,000 kindergartners in 1998-99. Data were collected from children, parents, and schools at seven points in time: the beginning of kindergarten, the end of kindergarten, the beginning of first grade, the end of first grade, third grade, fifth grade, and eighth grade (NCES 2006).

[5] In the ECLS-B, information about maternal depression was collected inconsistently across waves, which makes it difficult to conduct longitudinal analyses. Mothers were administered the Center for Epidemiologic Studies Depression Scale (CES-D), a dimensional measure of depressive symptoms, in the 9-month and 4-year waves and the Composite International Diagnostic Interview Short Form (CIDI-SF), a dichotomous measure indicating the presence or absence of Major Depressive Disorder (MDD), in the 2-year wave. Additionally, resident fathers were interviewed at the 9-month wave, the 2-year wave, and the 4-year wave, and nonresident fathers were interviewed at the 9-month wave and the 2-year wave. However, both resident and non-resident fathers were only asked about depressive symptoms at the 9-month wave (NCES 2007).

the Fragile Families survey.[6] On the other hand, the ECLS-K include no information about paternal depression (except for the fewer than 5% of observations in which the child's father is the survey respondent, though in these cases there is no information about maternal depression). Another strength to Fragile Families, compared to the ECLS-B or ECLS-K, is that the measures of children's behavioral outcomes come from the Child Behavior Checklist 2-3 (CBCL), which makes it possible to use reliable, valid scales that are common in examining children's behavior. The measures of children's behavior in the ECLS-B and the ECLS-K, on the other hand, do not come from established scales and were instead developed specifically for these surveys. Finally, the Fragile Families data are better suited to answer the research questions in this dissertation because they include a diverse set of variables that allow me to look at potential mechanisms underlying the relationship between parental depression and children's outcomes, such as maternal parenting behaviors or relationship quality between partners. Thus, the benefits of Fragile Families outweigh the limitations.

Measures

Children's Developmental Outcomes

Children's behavioral outcomes include the following: anxious/depressed behaviors, withdrawn behaviors, Attention Deficit Hyperactivity Disorder (ADHD) behaviors, aggressive behaviors, and Oppositional Defiant Disorder (ODD) behaviors.

[6] Of those observations in which the child's mother was interviewed at the 9-month wave (74% of the original sample), 76% of resident fathers and 50% of nonresident fathers completed the survey. Of those observations with a complete mother interview at the 2-year wave, only 78% of resident fathers and 40% of nonresident fathers completed the survey. Finally, of those observations with a complete mother interview at the 4-year wave, 88% of resident fathers completed the survey (NCES 2007).

Anxious/depressed, withdrawn, and aggressive behaviors are subscales from the CBCL, which is established to use for children under the age of five (Achenbach 1992; Achenbach and Rescorla 2000). The measures of ADHD and ODD behaviors are developed from clinical scales. During the In-Home survey, caregivers (in 99% of cases, the child's biological mother) were given a list of behaviors and asked to rate their child's behavior (0 = *not true*, 1 = *somewhat or sometimes true*, 2 = *very true or often true*).

To begin with, the anxious/depressed behaviors scale contains eight items: clings to adults or is too dependent; feelings are easily hurt; gets too upset when separated from parents; looks unhappy without good reason; has nervous movements or is high-strung or tense; is self-conscious or easily embarrassed; too fearful or anxious; and unhappy, sad, or depressed ($\alpha = 0.628$).[7] The following eight questions comprise the withdrawn behaviors scale: acts too young for age; avoids looking others in the eye; does not answer when spoken to; refuses to participate in games or activities; seems unresponsive to affection; shows little attention toward people; shows little interest in things around him/her; withdrawn or does not get involved with others ($\alpha = 0.673$). The ADHD behaviors scale includes the following six items: cannot concentrate or cannot pay attention for long; cannot sit still, is restless or hyperactive; cannot stand waiting and wants everything now; demands must be met immediately; gets into everything; and quickly shifts from one activity to another ($\alpha = 0.723$). The aggressive behaviors scale includes the following 19 items: cannot concentrate or pay attention for long; cannot

[7] Among all five behavioral outcomes, the inter-correlation between items is virtually identical for the full sample, Analytic Sample A, and Analytic Sample B (as described later in this chapter). I report the alpha reliability (α) for Analytic Sample B, described in detail below, as that is the sample used throughout the majority of analyses.

stand waiting, wants everything now; is defiant; demands must be met immediately; destroys things belonging to his/her family or other children; is disobedient; does not feel guilty after misbehaving; is easily frustrated; gets in many fights; has angry moods; hits others; physically attacks people; punishment does not change his/her behavior; screams a lot; is selfish or will not share; is stubborn, sullen, or irritable; has temper tantrums or a hot temper; is uncooperative; and wants a lot of attention ($\alpha = 0.881$). Finally, the ODD behaviors scale, which is a subset of the aggressive behaviors scale, includes the following six items: is defiant; is disobedient; has angry moods; is stubborn, sullen, or irritable; has temper tantrums or a hot temper; and is uncooperative ($\alpha = 0.772$).

For consistency across outcomes, I take the average of responses for each scale and standardize each to have a mean of 0 and a standard deviation of 1. This is consistent with much prior Fragile Families research using the CBCL measures (Ryan, Kalil, and Leininger 2009; Osborne and Berger 2009; Osborne and McLanahan 2007). Higher scores indicate worse behavior. I examine all five subscales throughout this dissertation, as some research suggests that parental depression may be differentially associated with internalizing (in the case of the CBCL measures, anxious/depressed behaviors and withdrawn behaviors) and externalizing behaviors (ADHD behaviors, aggressive behaviors, and ODD behaviors) in children (Goodman and Gotlib 2002; Downey and Coyne 1990).

Children's cognitive development is measured with the Peabody Picture Vocabulary Test-Third Edition (PPVT-III), which measures children's verbal ability and was administered to children during the In-Home survey. The PPVT is highly correlated

with standardized measures of intelligence such as the Wechsler Intelligence Scale-Third Edition (Dunn and Dunn 1997). About 7% of children who were administered a cognitive test were given the Spanish version of the PPVT (the TVIP). I do not include these children in my analyses of the cognitive data, as the English and Spanish tests are not comparable.

Parental Depression

DSM-IV diagnoses of major depressive episodes come from parent responses to the Composite International Diagnostic Interview Short Form (CIDI-SF) Version 1.0 November 1998 (Kessler, Andrews, Mroczek, Ustun, and Wittchen 1998). Mothers and fathers were asked if, at some time during the past year, they had feelings of depression or were unable to enjoy things that were normally pleasurable. Those who experienced one of these two conditions for at least a two-week period were asked additional questions (about losing interest in things, feeling tired, experiencing a change in weight of at least 10 pounds, having trouble sleeping, having trouble concentrating, feeling worthless, or thinking about death), and those who answered affirmatively to three or more of these questions are considered depressed. These are not lifetime measures but instead refer to depression experienced in the previous year (1 = *presence of Major Depressive Disorder,* 0 = *absence of Major Depressive Disorder*).[8] Thus, depression

[8] In studies of parental depression and children's outcomes, depression is generally measured one of two ways: as a dichotomous variable, in which each individual either fits or does not fit a diagnostic criterion for depression, or as a continuous variable, in which each individual falls on a continuum of depressive symptoms (Mirowsky and Ross 2002). Dichotomous measures of depression are limited in that they may mask some of the variation in depressive symptoms that individuals face (Mirowsky and Ross 2002). For example, it is likely that individuals who fall just below the threshold for meeting a diagnostic criterion of depression experience similar impairments as those who do meet the diagnostic criteria. Similarly, there is

measured at the 12-month wave refers to depression since the child's birth, and depression measured at the 30-month wave refers to depression that occurred, on average, when the child was between 18 and 30 months old. Although limitations to the CIDI-SF exist (Link 2002), most researchers agree it is an acceptable measurement tool to diagnose mental illness (Aalto-Setala et al. 2002).[9] In Chapter 4, some analyses consider the depression of both parents, represented by a series of mutually exclusive and exhaustive variables: both parents depressed; only mother depressed; only father depressed; and both parents not depressed (reference category).

Figures 3.1 and 3.2, respectively, show the frequency of depression among parents at the 12-month and 30-month wave.[10] At the 12-month wave, nearly 23% of children have at least one parent who meets the criteria for Major Depressive Disorder (MDD) in the past year and about 2% of children have two parents with MDD. About 13% of children have a depressed mother but not a depressed father, and about 9% of children have a depressed father but not a depressed mother.

[Insert Figure 3.1 here.]

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likely heterogeneity in the experiences of those who meet the diagnostic criterion (Kessler, Zhao, Blazer, and Swartz 1997).

[9] The severity of maternal depression is positively associated with behavior problems in children (Beardslee, Versage, and Gladstone 1998; Brennan et al. 2000; Goodman and Gotlib 2002). Thus, in supplemental analyses throughout this dissertation, I substitute this dichotomous indicator of depression with a variable that indicates the probability of caseness. The probability of caseness indicates the probability the respondent would have been diagnosed with MDD if she completed the Long-Form Composite International Diagnostic Interview (CIDI). Individuals who did not answer affirmatively to one of the two stem questions (about feeling depressed or losing interest in normally pleasurable activities for a period of at least two weeks) – about 83% of mothers at the 12-month wave – receive a probability of caseness just above zero (0.0001). The other possible values of this variable are as follows: 0.057, 0.235, 0.554, 0.813, 0.890, and 0.908. Throughout each of the chapters, I find that using this measure instead of the dichotomous indicator of depression does not substantively change the findings.

[10] The percentages in Figures 3.1 through 3.4 are based on observations in Analytic Sample A (as described later in this chapter). Importantly, there are no differences in the prevalence of maternal and paternal depression between the full sample and Analytic Sample A.

Both mothers and father are more likely to report MDD at the 30-month wave than at the 12-month wave. When children are about two and a half years old, about 30% of them have at least one parent who reports depression. More specifically, 4% of them have a depressed mother and a depressed father, 17% have only a depressed mother, and 9% have only a depressed father. Given the prevalence of post-partum depression, it is intriguing that parents are more likely to report depression when their children are older than in the year following the child's birth. Perhaps there is a transactional relationship between parents and their young children (McBride, Schoppe, and Rane 2002). Children may be especially temperamental between the ages of two and three, and this may lead to increased depression among parents. Or, it may be that parents, particularly mothers, have less available support from their networks as children age, which facilitates an increased risk of depression (Munch, McPherson, and Smith-Lovin 1997).

[Insert Figure 3.2 here.]

Additionally, I create a series of mutually exclusive and exhaustive variables that measure maternal and paternal depression over time: chronic depression (parent reports depression in both the 12- and 30-month waves); depression develops (parent does not report depression in the 12-month wave but reports depression in the 30-month wave); depression remits (parent does not report depression in the 12-month wave but reports depression in the 30-month wave); and no depression (parent does not report depression the 12-month or 30-month waves, which is the reference category). According to Figures 3.3 and 3.4, about 8% of mothers and 5% of fathers experience chronic depression. About

13% of mothers and 8% of fathers develop depression between waves, and 7% of mothers and 6% have depression that remits between waves.

[Insert Figure 3.3 here.]

[Insert Figure 3.4 here.]

Taken together, these descriptives suggest that depression is an important problem for these families. The prevalence of depression among parents in the Fragile Families sample is slightly higher than that of the general population; these discrepancies may be because the sample over-represents nonmarital births and, therefore, economically disadvantaged parents who may be more susceptible to episodes of depression (Kessler and Zhao 1999). Additionally, new mothers and fathers may also be more susceptible to post-partum depression (Beck 2002; Cummings and Davies 1994). The greater numbers of depressed mothers, compared to depressed fathers, is consistent with prior research that finds gender differences in depression (Dohrenwend and Dohrenwend 1976; Kessler, McGonagle, Swartz, Blazer, and Nelson 1994).

Maternal Parenting Behaviors

In Chapter 5, the main analyses include five indicators of maternal parenting behaviors that may be related to both maternal depression and children's outcomes: parenting stress, neglect, psychological aggression, physical assault, and engagement. I examine maternal parenting behaviors, as opposed to both maternal and paternal parenting behaviors, as children nearly universally live with their mother. On the other hand, only 57% of children in the sample lived with their father at the 12-month wave

and 52% lived with their father at the 30-month wave. Additionally, attrition is more common among fathers, and most measures of parenting behaviors come from the In-Home survey administered to only mothers. Fathers play an important role in children's development (Phares and Compas 1992), though a full examination of paternal parenting behaviors is beyond the scope of this dissertation and an important direction for future research.

To begin with, the summary measure of parenting stress comprises responses to the following items asked during the 30-month interview (1 = *strongly disagree*, 2 = *disagree*, 3 = *agree*, 4 = *strongly agree*): being a parent is harder than I thought it would be; I feel trapped by my responsibilities as a parent; taking care of my children is much more work than pleasure; and I often feel tired, worn out, or exhausted from raising a family ($\alpha = 0.633$). These questions are borrowed from the Child Development Supplement-Parenting (CDS-P) of the Panel Study of Income Dynamics (PSID). The final measure of parenting stress takes an average of responses to these four questions and ranges from 1 to 4. Higher values indicate higher levels of parenting stress.

In the In-Home survey, mothers were asked a series of questions from the Parent-Child Conflict Tactics Scales (CTSPC) about neglect (Straus 1990; Straus, Hamby, Finkelhor, Moore, and Runyan 1998). To begin with, mothers were asked to report how often, in the past year, they did the following: had to leave child home alone, even when you thought some adult should be with him or her; were so caught up with your own problems that you were not able to show or tell child that you loved him or her; were not able to make sure child got the food he or she needed; were not able to make sure child

got to a doctor or hospital when he or she needed it; and were so drunk or high that you had a problem taking care of your child ($\alpha = 0.454$). In most analyses, I use yearly prevalence measures of neglect (1 = *happened in the past year*, 0 = *did not happen in the past year*), as recommended by the Bendheim-Thoman Center for Research on Child Wellbeing (2008b). In this case, the final measure of neglect is an average of these five dummy variables that ranges from 0 to 1. Higher values indicate more neglectful parenting behaviors.[11]

Additionally, mothers were asked a variety of questions from the CTSPC about how they discipline their child, and these questions comprise two indicators of discipline: psychological aggression and physical assault. Psychological aggression includes mothers' responses to the following: shouted, yelled, or screamed at child; threatened to hit or spank child but didn't actually do it; swore or cursed at child; called child dumb or lazy or some other name like that; and said you would send child away or kick child out of the house ($\alpha = 0.482$). Physical assault includes mothers' responses to the following: spanked child on the bottom with bare hand; hit child on the bottom with something like a belt; slapped child on the hand, arm, or leg; pinched child; and shook child ($\alpha = 0.532$). Similar to the measure of neglect, in most analyses, I use prevalence measures for each of the questions (1 = *happened in past year*, 0 = *did not happen in past year*) and take an average of mothers' responses to comprise the psychological aggression and physical

[11] In supplemental analyses, I examine the chronicity of neglect by assigning weights to values in accordance with the frequencies indicated by the response categories (0 = *this has never happened or this has happened before, but not in the past year*; 1 = *once*; 2 = *twice*; 4 = *three to five times*; 8 = *six to 10 times*; 15 = *11 to 20 times*; 25 = *more than 20 times*). The final measure of chronicity of neglect is an average of mothers' responses to the five measures of neglect. Higher values indicate more neglectful parenting behaviors.

assault variables. Higher values indicate greater levels of psychological aggression and physical discipline.[12]

Finally, mothers were asked about their engagement with their child, measured by the number of days per week they participated in various activities with their child. At the 30-month wave, mothers were asked how many days per week they did each of the following (values range from 0 to 7): sang songs or nursery rhymes; hugged or showed physical affection; told child you love him or her; let child help with simple household chores; played imaginary games; read stories; told stories; played inside with toys such as blocks or legos; told child you appreciated something he or she did; took child to visit relatives; went to a restaurant or out to eat; assisted child with eating; put child to bed (α = 0.678). The final engagement measure is an average of responses; higher values indicate greater levels of engagement.

Relationship Quality with Current Partner

In Chapter 6, the main analyses include four measures of relationship quality between the child's mother and her current partner: supportive behaviors, hostile behaviors, shared responsibility in parenting, and cooperation in parenting. Mothers were asked a series of questions about their relationship with the child's biological father and, if appropriate, their new partner. Mothers were asked about relationship quality at all waves of data collection, but most analyses use measures from the 30-month wave.[13] For

[12] In supplemental analyses, I examine the chronicity of psychological aggression and physical discipline (similar to the chronicity of neglect). Higher values indicate greater levels of psychological aggression and physical discipline.

[13] Shared responsibility in parenting and cooperation in parenting were not ascertained at the baseline wave.

all supportive behaviors and hostile behaviors, if the child's biological mother and father are in a romantic relationship at the 30-month wave of data collection, I use the mother's responses about the biological father. If the child's biological mother and father are not in a relationship, but the mother has a new partner, I use the mother's responses about her new partner. If the child's biological mother and father are not in a relationship, and the mother does not have a new partner, her responses are coded as 0. For shared responsibility in parenting and cooperation in parenting, I use mother's responses about the biological father unless she is in a new relationship, in which case I use her responses about her new partner. The main analyses use mothers' reports of relationship quality, and supplemental analyses include fathers' reports of supportive behaviors and hostile behaviors.

The following five items comprise the measure of supportive behaviors (0 = *no partner*, 1 = *never*, 2 = *sometimes*, 3 = *often*): he/she is fair and willing to compromise when you have a disagreement; he/she expresses affection or love for you; he/she encourages or helps you to do things that were important to you; he/she listens when you need someone to talk to; and he/she understands your hurts and joys (α = 0.980 at the 12-month wave, α = 0.983 at the 30-month wave). The final measure of supportive behaviors with one's current partner is an average of responses to the five questions, and higher values indicate greater supportive behaviors. The following four items comprise the measure of hostile behaviors (0 = *no partner*, 1 = *never*, 2 = *sometimes*, 3 = *often*): he/she insults or criticizes your ideas; he/she tries to keep you from seeing friends or family; he/she tries to prevent you from going to work or school; and he/she withholds

money or tries to take your money (α = 0.903 at the 12-month wave, α = 0.925 at the 30-month wave). The final measure of hostile behaviors with one's current partner is an average of responses to the four questions, and higher values indicate more hostile behaviors.

Consistent with past research (Carlson, McLanahan, and Brooks-Gunn 2008; Carlson and Furstenberg 2007), I use two measures of co-parenting: shared responsibility in parenting and cooperation in parenting. First, mothers were asked how often their current partner assisted with the following (1 = *never*, 2 = *rarely*, 3 = *sometimes*, 4 = *often*): looking after child when you need to do things; running errands for you like picking up things from the store; fixing things around your home, painting, or helping make it look nicer in other ways; and taking child places he or she needs to go, such as to daycare or the doctor (α = 0.958 at the 12-month wave, α = 0.964 at the 30-month wave). This final measure of shared responsibility is an average of mothers' responses to the four questions; thus, higher values are associated with greater levels of shared responsibility. Second, mothers were asked to respond to the following six statements about their current partner (1 = *never*, 2 = *rarely*, 3 = *sometimes true*, 4 = *always*): when father is with child, he acts like the father you want for your child; you can trust father to take good care of child; he respects the schedules and rules you make for child; he supports you in the way you want to raise child; you and father talk about problems that come up with raising child; and you can count on father to help when you need someone to look after child for a few hours (α = 0.990 at the 12-month wave, α = 0.988 at the 30-month wave). This

final measure, cooperation in parenting, is an average of mothers' responses to the six questions; thus, higher values are associated with greater levels of cooperation.

Social Support

In Chapter 7, the main analyses include four indicators of social support: perceptions of instrumental support, perceptions of neighborhood support, receipt of financial support, and co-residence with a grandmother or grandfather. To begin with, at both the 12-month and 30-month waves, mothers were asked if they could count on someone, during the next year, for the following (1 = *perceived instrumental support*, 0 = *no instrumental support*): a $200 loan; a $1,000 loan; help with babysitting or child care; a place to live; a $1,000 cosign on a bank loan; and a $5,000 cosign on a bank loan (α = 0.803 at the 12-month wave, α = 0.809 at the 30-month wave). The final measure of perceived instrumental support is an average of responses to the six questions, and higher values indicate greater available support.

Additionally, during the In-Home survey, mothers were asked to respond to the following five questions about their neighborhoods (1 = *strongly disagree*, 5 = *strongly agree*): people around here are willing to help their neighbors; this is a close-knit neighborhood; people in this neighborhood can be trusted; people in this neighborhood generally get along with each other; and people in this neighborhood do not share the same values (α = 0.805). The last two questions are reverse coded. The final indicator of perceptions of neighborhood support is an average of responses to the five questions, and higher values indicate greater perceptions of neighborhood support.

The final two measures of social support are indicators of actual support received. The first is a dichotomous variable indicating if the mother received financial assistance in the past year (1 = *received financial assistance*, 0 = *did not receive financial assistance*). The second is a dichotomous variable indicating if the mother shares a residence with at least one of the child's grandparents (1 = *co-residence with a grandparent*, 0 = *no co-residence with a grandparent*). Mothers provided information about these two forms of support at all waves, though most analyses use indicators of support from the 30-month wave.

Covariates

The multivariate analyses control for various maternal demographic, socioeconomic, household, and health characteristics that prior research has shown to be associated with depression or children's outcomes.[14] To begin with, mother's race is represented by a series of dummy variables: white (reference category in the multivariate analyses), black, Hispanic, and other race. Additionally, mother's immigrant status is a dummy variable indicating if the respondent was born outside of the United States (1 = *foreign-born*, 0 = *native-born*). I control for mother's age, which is a continuous variable measured at baseline, and I include a squared term in the multivariate analyses to account for the nonlinear association between age and depression (Kessler and Zhao 1999).

[14] In all multivariate analyses, mothers' characteristics are used as control variables. This is done for substantive and practical reasons. First, nearly all children live with their mothers. At baseline, only 69% of children in Analytic Sample A and 59% in Analytic Sample B lived with their father. At the 12-month wave, the wave from which many of the variables come, only 66% of children in Analytic Sample A and 56% of children in Analytic Sample B lived with their fathers. Second, response rates for mothers were much higher than response rates for fathers, and using mothers' responses means less missing data. Supplemental analyses that control for both mothers' and fathers' characteristics do not substantively change the results.

Finally, mothers were asked how often they attended religious services, which is represented by a series of dummy variables measured at baseline: at least once a week (reference category), several times a month, several times a year or hardly ever, and never.

Socioeconomic characteristics such as education and income are related to both depression and children's outcomes. Mother's education is represented by a series of dummy variables measured at baseline: less than high school diploma (reference category), high school diploma (includes parents with a GED), some college, and college degree or higher. I use a logged measure of household income for mothers from the 12-month wave, as well as a dummy variable from that same wave indicating whether the respondent was employed in the past week (1 = *employed*, 0 = *not employed*). Finally, as a proxy for wealth, I include a dummy variable for homeownership, which comes from the baseline wave (1 = *homeowner*, 0 = *not a homeowner*).

Additionally, I include several controls for family structure. The mother's relationship to her child's biological father is represented by a series of dummy variables: married (reference category), cohabiting, romantically involved but not living together, and not in a relationship. With the exception of the multivariate analyses presented in Chapter 6, I use indicators of relationship status from the baseline wave. In Chapter 6, I use mother's relationship status at the 30-month wave, which is represented by the following dummy variables: partner is biological father (reference category), partner is social father, and no partner. In all chapters, number of children in the household is a continuous variable that ranges from 0 to 10. The presence of a grandmother in the

household is represented by a dummy variable (1 = *grandmother in household*, 0 = *no grandmother in household*).[15] Finally, I include a dummy variable indicating if mothers lived with both of their biological parents at age 15 (1 = *lived with both biological parents*, 0 = *did not live with both biological parents*).

To better isolate the link between parental depression and relationship quality at the 30-month wave, and to control for the possibility for reverse causality, some analyses in Chapter 6 also control for two measures of baseline relationship quality: companionship and disagreement.[16] First, at baseline, mothers were asked if, in the past month, they did the following with their partner (1 = *yes*, 0 = *no*): visited with friends; went out to a movie, sporting event, or some other entertainment; ate out in a restaurant; and helped each other solve a problem. The final measure of companionship is an average of answers to these four items; higher values represent more companionship (α = 0.714). Second, mothers were asked how often they had disagreements about the following (1 = *never*, 2 = *sometimes*, 3 = *often*): money; spending time together; sex; the pregnancy; drinking or drug use; and being faithful. The final measure of disagreement is an average of answers to these six items; higher values represent more disagreement (α = 0.621).

[15] Grandmother in household is a control variable in all analyses except for those in Chapter 7. In this chapter, co-residence with a grandparent is a key independent variable.

[16] For all three measures of baseline relationship quality, couples not together at the time of the interview were asked to report on the last month of their relationship.

The multivariate analyses also include several controls for the mother's health status.[17] A dummy variable indicates whether or not the mother smoked during her pregnancy (1 = *prenatal smoking*, 0 = *no prenatal smoking*). Additionally, to account for the potential intergenerational transmission of psychological well-being (Cummings and Davies 1994; Goodman and Gotlib 1999; Silberg and Rutter 2002), I include dummy variables indicating whether or not at least one of the mother's and father's biological parents experienced a two-week period of feeling depressed, down in the dumps, or blue (1 = *biological mother or father experienced depression*, 0 = *biological mother or father did not experience depression*).

Furthermore, the multivariate analyses also control for various child characteristics that might affect the family system (Cummings and Davies 1994). Child gender is represented with a dummy variable (1 = *male*, 0 = *female*). Additionally, I include a dummy variable indicating whether the child was born low birth weight (1 = *child born low birth weight*, 0 = *child not born low birth weight*). Age of child at the In-Home survey is a continuous variable measured in months. Finally, child temperament is a subscale taken from the emotionality and shyness dimensions of the Emotionality, Activity, and Sociability Temperament Survey for Children (Buss and Plomin 1984). At the 12-month wave, mothers were asked to respond to the following about their child (1 = *not like my child at all*, 2 = *a little like my child*, 3 = *somewhat like my child*, 4 = *a lot like my child*, 5 = *very much like my child*): child tends to be shy (reverse coded), child often fusses and cries (reverse coded), child is very sociable, child gets upset easily (reverse

[17] Because self-rated health status is highly correlated with maternal reports of MDD, I do not include a control for self-rated health. Results of most multivariate analyses are similar when self-rated health is included in the models.

coded), child reacts strongly when upset (reverse coded), and child is very friendly with strangers. Higher scores indicate better temperament ($\alpha = 0.520$). Including this variable in my analyses helps to control for potential reverse causality between parental depression and children's outcomes (i.e., children with less favorable behavior may trigger an onset of depression in parents).[18]

Analytic Sample

I use the first three waves of the Fragile Families survey, as well as the 36-month In-Home survey, in my analyses.[19] I use two different samples throughout this dissertation. The first sample, Analytic Sample A, includes 1,989 observations. For Analytic Sample A, I first excluded the 1,610 observations that did not participate in the In-Home survey. I then excluded the additional 808 observations in which the mother and father did not participate in the 12-month wave, as the key independent variables and many covariates come from this wave. Finally, I excluded the 3 observations missing data on maternal or paternal depression at the 12-month wave, and an additional 488 observations missing data on children's behavioral outcomes.[20]

Most of the multivariate analyses, however, use Analytic Sample B, which includes 2,529 observations. Unlike Analytic Sample A, Analytic Sample B does not rely

[18] Ideally, in my analyses predicting children's behavioral outcomes, I would be able to include a lagged measure of the CBCL measures. I cannot do this, though, as the CBCL measures are not available at this earlier wave. Thus, I control for maternal reports of children's temperament at the 12-month wave.
[19] Ideally, I would be able to use data from both the 36-month and 60-month In-Home surveys to examine change over time in children's behavior. However, though 78% of families participated in the 36-month In-Home survey and 61% participated in the 60-month In-Home survey, only 50% participated in both of these surveys. Because using both waves would result in a reduced sample size, I only use data from the 36-month In-Home survey.
[20] Respondents were not asked about their children's behavior in the two cities where the In-Home survey was piloted (Oakland and Austin).

as heavily on information from the fathers. The analyses that use this analytic sample, for example, mostly consider the consequences of maternal depression for children, as opposed to considering the consequences of both maternal and paternal depression. Similar to Analytic Sample A, I first excluded the 1,610 observations that did not participate in the In-Home survey. I then excluded the 135 observations in which the mother did not complete the 12-month wave, an additional 1 observation missing data on maternal depression at the 12-month wave, and an additional 623 observations missing data on children's behavioral outcomes.[21]

In all multivariate analyses, few observations are missing control variables, and I impute these missing values using a regression-based approach in Stata. Subsequent analyses with these data will use multiple imputation to handle missing data. My analyses rely heavily on observations with a complete In-Home survey, which is a subsample of observations in the Fragile Families survey for which there is no appropriate sample weight. Thus, I do not use sample weights in my analyses.

Sample Characteristics

Table 3.1 contains descriptive statistics of the main dependent and independent variables of interest, as well as the covariates, for the full sample of parents and children. Table 3.2 contains descriptive statistics for observations in Analytic Sample A, and Table 3.3 contains descriptive statistics for observations in Analytic Sample B. As the majority

[21] Similar as in Analytic Sample A, the majority of observations missing data on children's behavioral outcomes are missing this information because the questions were not asked of mothers in two cities.

of analyses rely on observations from Analytic Sample B, I refer to this table when discussing the descriptive characteristics of the parents and children.

[Table 3.1 here.]

[Table 3.2 here.]

[Table 3.3 here.]

In terms of demographic characteristics, a substantial proportion of sample members are minorities. More than half (51% of mothers and 53% of fathers) are black, and more than one-fifth (23% of mothers and fathers) are Hispanic. About 23% of mothers and 21% of fathers are white. About 12% of mothers and fathers were not born in the United States. When their children were born, mothers were, on average, 25 years old, and fathers were 28 years old.

The majority of parents have not received education beyond high school. About 28% of mothers and 29% of fathers do not have a high school diploma, and 28% of mothers and 35% of fathers have a high school diploma but no additional schooling. Slightly more than one-tenth of parents (12% of mothers and 11% of fathers) have a college degree or higher. When their children are about 12 months old, more than half (54%) of mothers and three-quarters (78%) of fathers report either full- or part-time employment. About two-fifths of the parents are homeowners (37% of mothers and 42% of fathers).

At baseline, nearly 60% of the children's biological parents were living together in married or cohabiting relationships (24% were married and 35% were cohabiting). About 12% of parents were not in a relationship with one another when their child was

born. Additionally, when their children were 12 months old, nearly one-fifth of respondents (19% of mothers and 17% of fathers) lived with their mother or partner's mother. Mothers reported, on average and including the focal child, 2.3 children and fathers reported 1.8 children. About 32% of mothers and 29% of fathers report that at least one of their parents experienced depression.

It is important to keep the analytic sample in mind when interpreting the findings. In Table 3.4, I use two-tailed t-tests to compare the descriptive statistics of the full sample, Analytic Sample A, and Analytic Sample B. This table shows that the analytic sample is generally more advantaged than the full sample, which means that the multivariate estimates are going to be conservative estimates of the population.[22] Both mothers and fathers in Analytic Sample B, for example, are more likely to have education beyond high school ($p < 0.001$ for mothers, $p < 0.05$ for fathers). Though the differences in household income between the full sample and Analytic B are not statistically significant, both mothers and fathers in Analytic Sample B are more likely to be homeowners ($p < 0.01$ for mothers and fathers). Parents in the analytic sample are also more likely to be white ($p < 0.05$ for mothers and fathers), less likely to be black ($p < 0.05$ for mothers, $p < 0.01$ for fathers), and less likely to be Hispanic ($p < 0.001$ for mothers and fathers). Surprisingly, when comparing the full sample to Analytic Sample B, there are no statistically significant differences in the relationship status of the parents at baseline. Children in Analytic Sample B have more withdrawn behavior ($p < 0.05$), but the two groups of children are similar on other outcomes. Importantly, mothers and

[22] The characteristics of Analytic Sample B, which I use throughout most of my analyses, are more similar to the characteristics of the full sample than those of Analytic Sample A.

fathers in Analytic Sample B are equally likely to report depression at both waves as those in the full sample.

[Table 3.4 about here.]

CHAPTER FOUR:
THE CONSEQUENCES OF PARENTAL DEPRESSION DURING EARLY CHILDHOOD

A substantial number of families and children are affected by depression (Kessler et al. 1994). Nationally, as many as 10% of individuals suffer from major depressive disorder (MDD) each year, and lifetime prevalence rates are about 17% (Kessler and Zhao 1999). Even larger numbers of individuals do not meet the clinical threshold for depression, but instead exhibit symptoms of depression that may be equally impairing. The family is an important institution through which depression gets played out, as depressed individuals are often characterized as having challenged interpersonal relationships and negative interactions with others that can facilitate the maintenance of depressive symptoms (Coyne 1976).

Parents who are depressed, particularly new parents, may face substantial challenges associated with motherhood and fatherhood. Depressed parents, for example, may lack motivation to engage with their children, may be withdrawn in their interactions with their children, or face economic instability resulting from an inability to find and sustain gainful employment. These parents may also be unable to sustain romantic relationships or fend off destructive partnerships, which may lead to frequent changes in the household roster that may create an unsettling household environment that places children at risk. Indeed, a large body of literature finds that children of depressed parents, particularly depressed mothers, experience some impairments as a result of this mental health condition. Most relevant to this dissertation, a large body of empirical research

finds that children of depressed parents have less favorable behavioral outcomes at the beginning of the life course. Children of depressed parents, compared to their counterparts with non-depressed parents, have more internalizing and externalizing problems in early childhood (Dodge 1990; Downey and Coyne 1990; Goodman and Gotlib 2002; Meadows, McLanahan, and Brooks-Gunn 2007; Kiernan and Huerta 2008). It is particular important to understand the predictors of children's behaviors prior to kindergarten, as these behaviors have lasting consequences for economic, psychological, and social wellbeing throughout childhood, adolescence, and adulthood (Entwisle and Alexander 1989; McLeod and Kaiser 2004).

Though there is a robust, consistent body of literature that links parental depression to young children's outcomes, this literature suffers from several important limitations. To begin with, most examinations are based on cross-sectional data that does not capture the dynamic nature of depression. Additionally, much of this research is limited to small, homogenous samples that most often consist of white, married mothers and their children. Thus, we know much less about the consequences of parental depression for minority children, children from economically disadvantaged families, and children with unmarried parents. We also know very little about how the consequences of parental depression may vary among different subgroups of the population. Understanding how these subgroups of the population fare is important for at least two reasons. First, minority children and children with unmarried parents are both increasing demographic groups in the United States (O'Hare 2005). Children born to unmarried parents, for example, now account for nearly 40% of all children born in the United

States, and researchers are only beginning to examine the life trajectories of these children (Hamilton, Martin, and Ventura 2006). Second, these children are an exceptionally vulnerable population, as they, on average, experience disadvantaged behavioral and cognitive outcomes prior to kindergarten (Lee and Burkam 2002; Sigle-Rushton and McLanahan 2004).

Research Questions

In this chapter, I explore the association between parental depression in early childhood and children's outcomes when they are approximately 36 months old. Specifically, I examine three research questions. First, to what extent is parental Major Depressive Disorder (MDD) associated with children's developmental outcomes at the beginning of the life course? Based on past literature, I hypothesize that children of depressed parents have less favorable behavioral and cognitive outcomes than those without depressed parents, and that maternal depression is a more important predictor of children's outcomes than paternal depression.

Second, how are changes in parental depression during the first three years of children's lives associated with developmental outcomes? There are few longitudinal studies of representative, nonclinical samples of children and their parents, but some research suggests that children of chronically depressed parents will have worse outcomes in early childhood than children of parents who experience transitory depression or children of parents who are never depressed. I also expect that the

consequences of parental depression are long-lasting; thus, children's behavior will still suffer when their parents have short-lived depression.

Finally, does the association between parental depression and children's developmental outcomes vary by race, socioeconomic status, and parents' relationship status? It is likely that when children experience other disadvantages, such as being born to unmarried parents or parents with few economic resources, the negative consequences of depression are greater than when children are relatively advantaged. Marriage may be a protective factor that renders parents the ability to buffer their children symptoms of their depression. Similarly, economic resources may give parents the opportunity to seek treatment for themselves or send their children to higher-quality child care centers that would ameliorate some disadvantage. Thus, I hypothesize that the consequences of parental depression for children's behavioral outcomes are stronger for minorities than for whites, stronger for those of lower socioeconomic status compared with those of higher socioeconomic status, and stronger for children of unmarried parents than for children of married parents.

Analytic Plan

In this chapter, I first present descriptive statistics to explore the bivariate association between parental depression and children's developmental outcomes. I compare the means of children's behavioral and cognitive outcomes when they are 36 months old by parental depression when the children about are 12 months old.[23] I

[23] Importantly, children's behavioral outcomes are reported by their mother, and some research demonstrates that depressed mothers distorted, negative beliefs about their children's behavior (Chi and

compare children of two depressed parents, children of depressed mothers, and children of depressed fathers to children with two non-depressed parents. I use two-tailed T-tests to determine the statistical significance of the difference of the means between the groups. I also compare the means of children's outcomes when they are 36 months old by parental depression when the children are about 30 months old.

Next, I proceed to the multivariate analyses. In the first set of multivariate analyses, in Table 4.3, I use ordinary least squared (OLS) regression models to predict the following outcomes: anxious/depressed behaviors, withdrawn behaviors, Attention Deficit Hyperactivity Disorder (ADHD) behaviors, aggressive behaviors, and Oppositional Defiant Disorder (ODD) behaviors. Previewing the results slightly, there is no bivariate relationship between parental depression and children's cognitive outcomes; thus, the subsequent analyses in chapter and throughout this dissertation only examine children's behavioral outcomes. In these regression models, the main independent variables are a series of mutually exclusive, exhaustive dummy variables taken from the 12-month survey: both parents depressed, only mother depressed, only father depressed, and neither parent depressed (reference category).[24] The first set of models predicting

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Hinshaw 2002). Others, however, suggest that depressed mothers are accurate reporters of their children's behavior (Richters 1992), and other research using Fragile Families data supports this finding. After interviewers conducted the In-Home study, they were asked to record the following about children's behavior during the interview: the degree to which the child displayed positive emotion, the degree to which the child displayed negative emotion, the child's cooperation during the administration of the PPVT, and the child's cooperation when getting weighed and measured. There is no association between maternal depression and these outcome variables, even at the bivariate level. Readers should interpret these findings carefully, as these outcome variables are only available for 64% of observations in my analytic sample and are not standard measures of child development.

[24] In the main analyses of this chapter, parental depression is measured at the 12-month survey. I use this measure, instead of a measure from the 30-month survey, for two reasons. First, and most importantly, this allows me to establish time ordering between the independent and dependent variables. In some cases, the 30-month survey was conducted after the 36-month In-Home survey, in which case children's outcomes would be measured prior to parental depression. Additionally, attrition, particularly among fathers, was

children's outcomes only includes the dummy variables for parental depression, and these variables are included in all subsequent models. The second set of models adds the following individual-level characteristics: mother's race, mother's immigrant status, mother's age, mother's age squared, mother's frequency of attendance at religious services, if the mother lived with both biological parents at age 15, mother's education, the log of mother's household income, mother's employment status, mother's homeowner status, parents' relationship status at birth, mother's co-residence with a grandmother, the number of children in the household (including the focal child), paternal depression, mother's reports of parental depression, father's reports of parental depression, prenatal smoking, child gender, child born low birth weight, age of child, and the mother's report of the child's temperament at the 12-month wave. Beginning in Table 4.4, I shift the focus from parental depression to maternal depression. In this table, I use OLS regression models to examine the association between maternal depression and children's behavioral outcomes. The first set of models examines the bivariate association between maternal depression and the following outcomes when children are, on average, 36 months old: anxious/depressed behaviors, withdrawn behaviors, ADHD behaviors, aggressive behaviors, and ODD behaviors. The second set of models includes all covariates from Table 4.3, as well as a control for paternal depression.

Tables 4.5 through 4.7 answer the second research question about the consequences of parental depression over time. Again, I use OLS regression, and children's behavioral outcomes are the dependent variables. In Tables 4.5 and 4.6, the

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higher at the 30-month survey, so using data from the 12-month survey allows me to preserve as many cases as possible. In supplemental analyses, I present findings that use an indicator of parental depression at the 30-month survey.

main independent variables are a series of mutually exclusive, exhaustive dummy variables: chronic maternal depression (mother depressed at both the 12-month and 30-month waves), maternal depression develops over time (mother not depressed at the 12-month wave but depressed at the 30-month wave), maternal depression remits over time (mother depressed at the 12-month wave but not depressed at the 30-month wave), no maternal depression (mother not depressed at the 12-month and 30-month waves, which is the reference category). In Table 4.7, the main independent variables are a series of mutually exclusive dummy variables indicating paternal depression over time. In all three of these tables, the first set of models only includes the main independent variables. The second set of models includes all covariates used in the prior multivariate analyses, as well as a control variable for the other parent's depression at the 12-month wave.

Finally, I answer the third research question in Tables 4.8 through 4.11. In all of these tables, children's behavioral outcomes are the dependent variables. The first set of models includes the main independent variable, maternal depression at the 12-month wave, and all covariates. The second set of models in Table 4.8 includes the following interaction terms between maternal depression and maternal race: depression * white (reference category), depression * black, depression * Hispanic, and depression * other race. The second set of models in the subsequent tables includes interaction terms between maternal depression and maternal education, maternal depression and maternal household income, or maternal depression and parents' baseline relationship status.

The bivariate analyses and the first set of multivariate analyses (Tables 4.1 through 4.3) are based on Analytic Sample A (as described in Chapter 3). The subsequent

analyses use Analytic Sample B.[25] In all multivariate analyses, few observations are missing control variables, and I impute these missing values using a regression-based approach in Stata.[26]

Bivariate Association between Parental Major Depressive Disorder (MDD) and Children's Developmental Outcomes

The bivariate results presented in Table 4.1 suggest that children have less favorable behavioral outcomes when their parents, particularly their mothers, are depressed when children are about 12 months old. In this and subsequent tables, higher values of behavioral outcomes correspond to less favorable behavior. Children suffer the most when both parents are depressed; these children, compared to children of two non-depressed parents, score significantly worse on all five behavioral outcomes. Children's behavioral outcomes are also less favorable when only their mother is depressed, compared to when neither parent is depressed. The exception here is that children do not exhibit statistically different withdrawn behaviors when their mother is depressed. When fathers but not mothers are depressed, children have less favorable anxious/depressed, aggressive, and ODD behaviors than their counterparts with two non-depressed parents, though these associations are less strong. Contrary to expectations, there is no association

[25] The one exception to this is Tables 4.5b and 4.5c. To examine the consequences of paternal depression at both the 12-month and 30-month waves, I only use observations with no missing data on paternal depression at both points in time. This reduces the sample size to 1,803, and I run models for both mothers and fathers using this reduced sample size.

[26] In the analyses that use Analytic Sample B, a substantial percentage of observations (21%) are missing data on paternal depression. The analyses presented impute these missing values with a regression-based approach in Stata, but subsequent analyses will use multiple imputation.

between parental depression when children are 12 months old and children's cognitive outcomes when they are about 36 months old.[27]

[Table 4.1 about here.]

Results from Table 4.2, which considers the consequences of parental depression when children are slightly older (30 months old, on average), are consistent with the findings when depression is measured at an earlier point in time. In this table, the consequences of having two depressed parents are less severe, compared to when depression is measured at the 12-month wave. However, the consequences of having a depressed mother are more severe, as the strength and magnitude of these coefficients is larger. One explanation for this may be that, by the 30-month wave of data collection, fewer children are living with their fathers. Among those children who do not live with their fathers, they may see their fathers with less regularity. As children spend less time with fathers, they may spend more time with mothers, which may heighten the consequences of maternal depression. Additionally, maternal depression at the 30-month wave is associated with less favorable withdrawn behaviors. Similar to Table 4.1, having only a depressed father is less consequential than having only a depressed mother. Paternal depression is only associated with aggressive and ODD behaviors. On the other hand, having a depressed father, compared to having two non-depressed parents, is associated with slightly lower cognitive outcomes. Children with two depressed parents or a depressed mother, however, have similar cognitive outcomes as their counterparts with two non-depressed parents.

[27] See Appendix 4.1 to see how each of the individual items of the five subscales is associated with parental depression.

[Table 4.2 about here.]

Multivariate Analyses Predicting Children's Behavioral Outcomes, by Parental Major Depressive Disorder (MDD)

The prior bivariate associations between parental depression and children's outcomes are limited because these analyses do not account for the possibility that these differences are simply artifacts of other variation between these families, such as socioeconomic status or family structure. Thus, Table 4.3 presents multivariate analyses that estimate the relationship between parental depression and children's outcomes and control for many factors that might influence both depression and children's behavior.[28] Because Tables 4.1 and 4.2 show virtually no relationship between parental depression and PPVT scores, the following analyses in this chapter and subsequent chapters focus solely on behavioral outcomes.

Turning to the panel that predicts anxious/depressed behaviors, the first model estimates the bivariate relationship between parental depression and anxious/depressed behaviors. This demonstrates a story consistent with the one shown in Table 4.1; children with two depressed parents or a depressed mother have more anxious/depressed behaviors than their counterparts with two non-depressed parents. When all covariates are included in Model 2, the magnitude and strength of the coefficients for parental depression attenuates, and the model fit improves (the R-squared increases from 0.020 to 0.171). Children with two depressed parents, compared to children with two non-

[28] For the sake of parsimony, I only present coefficients for the main variables of interest; full models predicting children's behaviors can be found in Appendices 4.2 through 4.6.

depressed parents, score 0.421 points worse on the anxious/depressed behaviors scale. When children have a depressed mother, they score 0.136 points worse than their counterparts with two non-depressed parents. In interpreting these coefficients, keep in mind that children's behavioral outcomes are scaled to have a mean of 0 and a standard deviation of 1.

[Table 4.3 about here.]

The pattern is generally consistent for the other four outcomes. The inclusion of other variables, such as demographic or socioeconomic characteristics, attenuates the association between parental depression and children's behavior, though not completely. Children with two depressed parents or a depressed mother have less favorable outcomes than their counterparts with two non-depressed parents. One exception exists: Children only have less favorable withdrawn behaviors if they have two depressed parents and not when only a mother is depressed, and this coefficient is smaller in this model than in models predicting other outcomes. Though parental depression appears to be slightly more consequential for ADHD and aggressive behaviors than the other three behavioral outcomes, the magnitude and strength of the parental depression coefficients are relatively consistent across outcomes.

Alternative Model Specifications

These findings are also robust to alternative model specifications. Results are similar when I include controls for mother's and father's generalized anxiety disorder (GAD) and substance abuse, two conditions often comorbid with depression (Kessler et

al. 1994; Merikangas et al. 1998) and associated with children's outcomes (Osborne and Berger 2009). DSM-IV diagnoses of GAD come from responses to the CIDI-SF Version 1.0 November 1998 (Kessler, Andrews, Mroczek, Ustun, and Wittchen 1998). Mothers and fathers meet the criteria for GAD in the past year if they felt worried, tense, or anxious for six months or more and if they met three of the following seven conditions: restless; keyed up or on edge; easily tired; difficulty keeping your mind on what you are doing; more irritable than usual; tense, sore, or aching muscles; or trouble falling asleep or staying asleep. These are not lifetime measures but instead refer to anxiety experienced in the previous year (1 = *presence of GAD,* 0 = *absence of GAD*). Additionally, parents were asked if drinking or drug use interfered with their personal relationships, and I include a dummy variable that indicates if the parent reported a substance use problem (1 = *substance use problem,* 0 = *substance use problem*). Both GAD and substance use are measured at the 12-month wave.

When maternal and paternal GAD and substance use problems are included in the models, the magnitude of the coefficients for having two depressed parents or having a depressed mother decrease slightly but retain statistical significance (tables available upon request). There is one exception. For anxious/depressed behaviors, the coefficient for having a depressed mother falls from statistical significance (0.136, $p < 0.05$ to 0.127, *n.s.*). Interestingly, maternal and paternal GAD are not independently associated with children's behavioral outcomes. On other hand, father's but not mother's substance use problems are predictive of children's outcomes. Contrary to expectations, children with fathers who report substance abuse have more favorable aggressive and ODD behaviors

(-0.425, $p < 0.01$; -0.412, $p < 0.01$). It may be that in families where fathers are co-resident with their children, substance abusing fathers are withdrawn from their children and, thus, these children develop relatively healthy behaviors. As GAD and substance abuse problems may be manifestations of depression, I omit these variables from subsequent models throughout this dissertation.

Additional Predictors of Children's Behavioral Outcomes

Additional covariates are generally consistent with prior literature. Holding constant a host of individual-level factors, children of black mothers, compared with children of white mothers, have more favorable ODD behaviors, and children of Hispanic mothers have less favorable anxious/depressed behaviors. Children with immigrant mothers have more withdrawn behaviors than their counterparts with native-born mothers. Interestingly, when mothers report never attending religious services, compared with when mothers report attending religious services at least once a week, children have more withdrawn and ADHD behaviors. It may be that religious attendance serves as a form of social support for mothers, which translates into more favorable behaviors among children.

Mother's socioeconomic status is more strongly associated with children's internalizing behaviors than externalizing behaviors. Both maternal education and household income are positively correlated with better anxious/depressed and withdrawn behaviors among children. Household income is also correlated with more favorable aggressive behaviors. Two other indicators of socioeconomic status, employment and homeownership, are not associated with children's behaviors in the full models.

Parents' relationship status at birth is most strongly related to anxious/depressed behaviors. Children of cohabiting, romantically involved but not living together, and not romantically involved parents, compared to children of married parents, have more anxious/depressed behaviors. Consistent with prior literature, children of parents not romantically involved at the birth have more behavioral problems than their counterparts with married parents.

One of the strongest and most consistent predictors of children's behavioral outcomes is depression in a maternal grandparent. When a mother reports that at least one of her parents experienced an episode of depression, children have less favorable outcomes, even after controlling for a host of additional individual-level factors. This persists across all behavioral outcomes. Also, depression in a paternal grandparent is associated with less favorable anxious/depressed and ODD behaviors. Depression among maternal grandparents is more strongly associated with behaviors than depression among paternal grandparents, which lends support for a sociological explanation rather than a biological one. It is possible that children spend more time with their maternal grandparents, which may facilitate the intergenerational transmission of wellbeing, and this is an important direction for further research.

Finally, some characteristics of the child are associated with behavioral outcomes. Consistent with expectations, male children have more ADHD, aggressive, and ODD behaviors. Also, when mothers report their children to have more favorable temperament at the 12-month wave, they are more likely to report favorable behaviors in their children during the 36-month In-Home survey. On the other hand, children's age and children's

birth weight status are not associated with behavior once other factors are taken into account.

Multivariate Analyses Predicting Children's Behavioral Outcomes, by Maternal Major Depressive Disorder (MDD)

As discussed in Chapter 3, the majority of the following analyses, in this chapter and throughout this dissertation, pay considerably more attention to maternal depression than paternal depression. This is for several reasons. First, though nearly all children in this sample live with their mothers, many of them do not live with their fathers. Additionally, results presented in Table 4.3 show that paternal depression is of substantive importance for children's behavioral outcomes, but that paternal depression is not as important as maternal depression. Finally, as discussed in Chapter 3, attrition among fathers, particularly nonresident fathers, is much higher than attrition among mothers. By restricting the sample to observations with complete data on both maternal and paternal depression, compared to those observations with complete data on only maternal depression, I would lose an additional 540 observations (21% of the sample). Prior research suggests that depression may be predictive of attrition over time, with depressed fathers being more difficult to locate than their non-depressed counterparts (Eaton, Anthony, Tepper, and Dryman 1992).[29]

Thus, in Table 4.4, the main independent variable of interest is maternal depression at the 12-month wave. The first set of models looks at the bivariate

[29] However, descriptive analyses of the Fragile Families data found that about 10% of fathers interviewed at the 30-month wave and 12% of fathers not interviewed at the 30-month wave reported depression in the 12-month wave, and the differences between the groups are not statistically significant.

association between maternal depression and children's outcomes, and the second set of models includes all covariates from the models presented in Table 4.3, as well as a control for paternal depression at the 12-month wave. Results are consistent with prior tables. Even after controlling for a host of variables that may be associated with maternal depression or children's outcomes, maternal depression is associated with less favorable behavioral outcomes among children. This persists for four of the five outcomes: anxious/depressed, ADHD, aggressive, and ODD behaviors. Additionally, paternal depression is independently associated with aggressive and ODD behaviors. The inclusion of the covariates in the second set of models most substantially reduces the maternal depression coefficient for withdrawn behaviors (by 69%) and least substantially reduces the maternal depression coefficient for ADHD behaviors (by 39%). Thus, contextual factors matter least in predicting children's ADHD behaviors, which is consistent with prior research suggesting the importance of genetics in transmitting these behaviors (Sprich et al. 2000). Both before and after the addition of the covariates, maternal depression is most strongly associated with ADHD behaviors and least strongly associated with withdrawn behaviors.

[Table 4.4 about here.]

Alternative Model Specifications

In a series of additional analyses (presented in Appendices 4.7 through 4.12), I examine the robustness of these findings. To begin with, some scholars suggest that it might be more appropriate to examine how maternal depression is associated with a

clinical indicator of behavioral problems in children as opposed to the continuous measure used in the prior analyses (Achenbach and Rescorla 2000; Meadows et al. 2007). Thus, I substitute the continuous measure of children's behavioral outcomes with a dichotomous measure that indicates whether the child displays behavioral problems at or above the 90^{th} percentile in the population of children (with the cutoff point being T-scores of greater than or equal to 63). This represents a borderline clinical range (Achenbach and Rescorla 2000). About 13% of children in the sample fall into this category for anxious/depressed behaviors, 12% for withdrawn behaviors, 10% for ADHD behaviors, 11% for aggressive behaviors, and 9% for ODD behaviors. In Appendix 4.7, I present logistic regression models that display results consistent with those presented in Table 4.4. Even after covariates are taken into account, having a depressed mother is a strong and consistent risk factor for children. Children with a depressed mother are 1.412 times as likely as their counterparts without a depressed mother to fall into this borderline clinical range of anxious/depressed behavioral problems ($p < 0.05$). Similarly, children with a depressed mother are 1.700 times as likely to fall into this range for ADHD behaviors ($p < 0.01$), 1.636 times as likely for aggressive behaviors ($p < 0.01$), and 1.788 times as likely for ODD behaviors ($p < 0.01$). Similar to prior models, maternal depression is not associated with withdrawn behaviors (OR = 1.079, *n.s.*). Paternal depression is not associated with aggressive or ODD outcomes, which is contradictory to the findings presented in Table 4.4 and suggests that paternal depression is not consequential for predicting the likelihood that children have a serious behavioral

problem. This is generally consistent with the overall finding that paternal depression is less influential than maternal depression in predicting children's outcomes.

Second, in Appendix 4.8, I use an alternative scoring version of MDD (Bendheim-Thoman Center for Research on Child Wellbeing 2008a). Throughout this dissertation, I consider a respondent depressed if she reported feelings of depression or losing interest in normally pleasurable activities and answered affirmatively to having at least three of seven additional symptoms. With the more conservative measure of depression used in these alternative analyses, a respondent is considered depressed if she answered affirmatively to at least four additional symptoms. About 13% of mothers in the sample fall into this category at the 12-month wave, compared to about 16% who fit the more liberal scoring version. Findings are robust to this model specification. Maternal depression is associated with anxious/depressed, ADHD, aggressive, and ODD behaviors, and the strength of the maternal depression coefficients are generally consistent with those presented in Table 4.4. There is one minor exception: When the more conservative measure of depression is used, maternal depression is more strongly associated with aggressive behaviors among children (0.179, $p < 0.01$).

Third, I replace the dichotomous measure of maternal depression with a categorical variable that indicates probability of caseness, which indicates the probability the respondent would have been diagnosed as having experienced a Major Depressive Episode (MDE) if she completed the Long-Form Composite International Diagnostic Interview (CIDI). As detailed in Chapter 3, individuals who did not answer affirmatively to the two stem questions (about feeling depressed or losing interest in normally

pleasurable activities for a period of at least two weeks) receive a probability of caseness just greater than zero (0.0001). Thus, this variable is highly skewed, which is why most analyses use the dichotomous indicator of depression. Caution should also be used when interpreting these findings because the probability was derived from a single source and has not been validated (Kessler et al. 1998). Appendix 4.9 shows that using this measure produces similar results as the dichotomous measure. This is true for all behavioral outcomes except ODD behaviors. In the models predicting this outcome, the maternal depression coefficient falls from significance once the covariates are included (0.115, *n.s.*). Paternal depression, however, continues to be predictive of children's ODD behaviors (0.183, $p < 0.05$).

The prior multivariate analyses have examined how parental depression when children are about 12 months old influences their outcomes when they are, on average, 36 months old. As discussed in Chapter 3, I do this to establish time ordering between the independent variables, mediating variables, and dependent variables, which is of particular importance in Chapters 5 through 7. However, as two years have passed between the measurement of the independent and dependent variables, the magnitude and strength of the maternal depression coefficients may be muted. The analyses presented in Appendix 4.10 show the relationship between maternal depression and children's outcomes when the two are measured closer to one another, and suggest this may be the case. Even after the covariates are included, maternal depression is strongly associated with children's behavioral outcomes ($p < 0.001$ in all cases except for withdrawn behaviors, which is not linked to maternal depression). The size the maternal depression

coefficient that predicts aggressive and ODD behaviors, respectively, increases 96% and 151% when depression is measured at the 30-month wave. The size of the coefficients for the internalizing behaviors increases as well, though more modestly. The coefficient increases by 52% for anxious/depressed behaviors and 60% for withdrawn behaviors. The size of the maternal depression coefficient only increases by 16% when predicting ADHD behaviors, which lends further evidence to the importance of genetics in predicting ADHD behaviors. Taken together, this suggests that using an indicator of maternal depression at the 12-month wave may underestimate the true effect of maternal depression on children's outcomes.

Finally, the prior analyses are limited because they do not include information about the mother's mental health history prior to having her child. As discussed in Chapter 2, the transition to parenthood is a notably stressful period in one's life, and is often accompanied with changes in psychological wellbeing that may include the onset of depression. Post-partum depression affects a large percentage of women, though women with a prior history of depression are most at risk (Hay, Pawlby, Waters, and Sharp 2008). This leads to three supplemental research questions that I answer in Appendices 4.11 and 4.12. First, do maternal mental health problems that existed prior to the child's birth influence children's outcomes? Second, does controlling for maternal mental health history attenuate the association between maternal depression at the 12-month wave and children's outcomes? Third, does the association between maternal depression and children's outcomes vary if the mother had a history of mental health problems prior to the birth of her child?

These analyses are relegated to appendices for several reasons. First, because information about mental health history is not available for all mothers, the sample size of these analyses is greatly reduced.[30] Only 77% of mothers in Analytic Sample B had data available on mental health history. Additionally, the available data regarding mental health prior to the child's birth does not distinguish between depression and other mental illnesses. This variable is a dummy variable indicating if the mother was ever diagnosed with mental illness, including depression, schizophrenia, bipolar disorder, anxiety disorder, eating disorders, and all other DSM-IV mental illness diagnoses.[31] The medical records data show that about 12% of mothers had at least one mental illness diagnosis prior to the birth of their child. Of these 233 mothers, about 31% of them reported depression at the 12-month wave and 35% reported depression at the 30-month wave.

Appendix 4.11 answers the first question. Results suggest that children's behavior does not suffer when mothers have a history of mental illness. At the bivariate level, these variables are only associated with three outcomes: anxious/depressed, aggressive, and ODD behaviors. This lends support to the importance of environmental factors in predicting children's behavior. Children of mothers with a history of mental illness are not necessarily predisposed to have less favorable behavior. Instead, it may be the manifestation of maternal behavior during their childhood – through parent-child interaction, for example – that lead to disadvantaged outcomes for children.

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[30] Information on mothers' mental health history, psychiatric medications, and substance abuse or addiction was collected from multiple sources from the mothers' and infants' medical records (e.g., laboratory test results, notes, and ICD-9 codes). However, this information was only gathered for subsample of observations.

[31] The timing of onset of mental illness is not available.

The models in Appendix 4.12 answer the next two research questions. The first set of models includes both maternal depression at the 12-month wave and mother's pre-pregnancy mental illness diagnosis, along with all covariates.[32] Similar to the prior table, maternal mental illness prior to the child's birth is not independently associated with children's behavior. Further, including this variable into the models does not substantively change the coefficients of maternal depression at the 12-month wave. The second set of models includes an interaction term between maternal depression at the 12-month wave and pre-pregnancy mental illness diagnosis. Across all outcomes, this variable does not reach statistical significance. Thus, the association between maternal depression and children's outcomes does not vary by maternal pre-pregnancy mental illness.

Parental Depression Over Time as a Predictor of Children's Behavioral Outcomes

The prior multivariate models use an indicator of depression at one point in time and, thus, do not account for the possibility that parents may move in and out of depressive episodes. Tables 4.5a through 4.5c take a step toward rectifying this by considering the consequences of parental depression over time for children's behavior. Though these models extend prior analyses that only consider depression at one point in time, it is important to note that these models cannot completely account for the dynamic nature of depression. For instance, the data do not capture if parents moved in and out of depression several times between the two waves. Table 4.5 shows that children of chronically depressed mothers have worse behavioral outcomes than children of mothers

[32] These variables are moderately correlated (r = 0.145).

who do not report depression at either point in time. These associations are strong and persist across all outcomes except for withdrawn behaviors. Even after controlling for a host of covariates, children with chronically depressed mothers generally score more than one-third of a standard deviation worse than children with never depressed mothers. For example, children with chronically depressed mothers have ADHD behaviors that are 0.367 points higher ($p < 0.001$) and aggressive behaviors that are 0.341 points higher ($p < 0.001$). Furthermore, children's behavior suffers when their mothers develop depression between the two waves, though their behavior suffers slightly less than when mothers are chronically depressed. Across all outcomes, children of mothers who develop depression over time score about one-fourth of a standard deviation worse than their counterparts with never depressed mothers (with coefficients ranging from 0.174 for anxious/depressed behaviors to 0.238 for ODD behaviors). On the other hand, mothers whose depression remits between the two waves have children with behavior similar to those who are never depressed. In fact, for withdrawn and aggressive behaviors, these children have slightly more favorable outcomes (though the coefficients are small and not statistically significant).

[Table 4.5 about here.]

Table 4.6 also presents coefficients for maternal depression over time, though the analyses are restricted to observations with complete data on paternal depression at both the 12-month and 30-month waves. Results are consistent with those presented in Table 4.6. Finally, Table 4.7 examines the influence of paternal depression over time. Inconsistent with expectations, when dads are chronically depressed, their children have

behavioral outcomes similar to those children with fathers who never report depression. Unlike maternal depression, paternal depression exerts its influence on children whether it develops over time or remits over time. When fathers become depressed at the 30-month wave, children have anxious/depressed, aggressive, and ODD behaviors that are about one-fifth of a standard deviation worse than their counterparts with never depressed fathers. Also, children's anxious/depressed and aggressive behaviors are worse when paternal depression remits between waves. The sizes of these coefficients are similar.

[Table 4.6 about here.]

[Table 4.7 about here.]

Variation in the Consequences of Maternal Major Depressive Disorder (MDD) for Children's Outcomes by Race, Socioeconomic Status, and Baseline Relationship Status of Parents

As discussed earlier, though the literature points to a strong, consistent relationship between parental depression and children's outcomes, we know little about how this association may vary among subgroups of the population. Thus, these next set of analyses consider how the association between maternal depression and children's outcomes may vary for children of different race groups, different levels of socioeconomic status, and different family structures. Fortunately, the Fragile Families data includes a representative sample of children born to unmarried parents between 1998 and 2000. As unmarried parents are disproportionately minority and have lower socioeconomic status than married parents (Ellwood and Jencks 2004), these data include

substantial numbers of minorities and economically disadvantaged parents. Thus, these data provide a unique opportunity to examine how parental depression is associated with early life course outcomes for subgroups of children. Of course, it is possible that the association between maternal depression and children's outcomes varies by additional subgroups of the population. Understanding potential variation by race, socioeconomic status, and relationship status is a good starting point for understanding this complicated relationship.[33]

The first set of models in Table 4.6 includes all covariates included in prior models. I only display the coefficients for maternal depression, paternal depression, and maternal race. Controlling for a host of individual-level characteristics, black children have more favorable ODD behaviors than their white counterparts (-0.147, $p < 0.05$). Compared to whites, Hispanic mothers report that their children are more anxious/depressed (0.151, $p < 0.05$) and withdrawn (0.144, $p < 0.05$), and other race mothers report that their children are more withdrawn (0.245, $p < 0.05$).

[Table 4.6 about here.]

The second set of models includes an interaction term between maternal depression and race. Only one of these coefficients reaches statistical significance, which suggests that maternal depression is equally detrimental to white, black, Hispanic, and

[33] For example, child gender is one demographic characteristic that has received a great deal of attention in the literature as a potential moderator. Some research finds that parental depression is more detrimental to females than to males (Cortes, Fleming, Catalano, and Brown 2006; Foley et al. 2001; Landman-Peters et al. 2008; Sheeber, Davis, and Hops 2002), though others find the consequences are worse for males (Hay et al. 2001) or no gender differences (Goodman, Brogan, Lynch, and Fielding 1993; Marmorstein, Malone, and Iacono 2004; Tannenbaum and Forehand 1994). The influence of child gender may also vary by the outcome in question. One study, for example, found that depression was associated with more internalizing behavior problems among girls and more externalizing behavior problems among boys (Foster et al. 2008b). In supplemental analyses using the Fragile Families data, I found that maternal depression is equally consequential for both boys and girls.

other race children. The one exception is that children with other race, depressed mothers have more favorable withdrawn behaviors than their counterparts with white, depressed mothers. This finding should be interpreted cautiously, however, as maternal depression is only weakly associated with withdrawn behaviors and because of the small number of other race mothers in the sample (n = 86).[34]

The next two tables consider if the association between maternal depression and children's behavior varies by two indicators of socioeconomic status: maternal education and maternal household income. In the first set of models in Table 4.7, I include all covariates but only present coefficients for maternal depression, paternal depression, and maternal education, though these models include all covariates included in prior models. Children of more highly educated mothers have more favorable anxious/depressed and withdrawn behaviors. For example, children of mothers with some college have anxious/depressed behaviors 0.234 points ($p < 0.001$) better than their counterparts of mothers who did not graduate high school. Children of college graduates score 0.345 points better on anxious/depressed behaviors ($p < 0.001$). However, maternal education is not associated with children's externalizing (ADHD, aggressive, and ODD) behaviors.

[Table 4.7 about here.]

In the second set of models, only one of the interaction terms reaches statistical significance. When mothers are depressed and have some college education, compared with depressed mothers without a high school diploma, their children have more

[34] Though only one of the interaction terms reaches statistical significance, nearly all of the interaction terms are negative, which suggests that the consequences of maternal depression may be smaller in magnitude for minority children than for white children. In models not presented, I run separate OLS regression models for each of the four race subgroups. These subgroup analyses show findings consistent with Table 4.6; the magnitude and strength of the coefficients for maternal depression are substantively similar across all races and outcomes.

favorable withdrawn behaviors. In this case, maternal education is slightly protective for children. Though the interaction terms do not suggest much variation in the consequences of maternal depression by maternal education, subgroup analyses suggest that children of poorly educated mothers might be most vulnerable.[35]

In Table 4.8, I look at the consequences of maternal depression by socioeconomic status using a different measure of socioeconomic status, maternal household income.[36] In the first set of models, mother's household income is strongly associated with more favorable anxious/depressed (-0.058, $p < 0.001$), withdrawn (-0.060, $p < 0.001$), and ADHD behaviors (-0.036, $p < 0.05$). The interaction terms in the second set of models show that the association between maternal depression and aggressive behaviors, as well as the association between maternal depression and ODD behaviors, varies by household income. Thus, when mothers have more financial resources, the consequences of depression for children are less severe.

[Table 4.8 about here.]

Finally, I consider the possibility that the association between parental depression and children's behavior varies by parents' relationship status at birth. The first set of models in Table 4.9 show that, net of additional individual-level characteristics, parents'

[35] In models not presented, I run separate regression models for mothers in the following subgroups: less than high school education, high school diploma or GED, some college, and college degree. For children of mothers with less than a high school diploma, maternal depression is strongly associated with less favorable behavior across all five outcomes. When children have a depressed mother, their behavioral outcomes are about one-fourth of a standard deviation lower than their counterparts without a depressed mother. However, in the other three subgroups, maternal depression is not associated with children's behavior. Part of this may be the result of small sample sizes (for example, only 300 children in the sample have a mother with at least a college degree), but these findings nonetheless suggest that lower amounts of maternal education may be particularly detrimental to children of depressed mothers.

[36] In additional model specifications not presented, I include interaction terms for two additional measures of socioeconomic status: maternal employment status and maternal homeownership. These interaction terms do not reach statistical significance across any of the five outcomes.

relationship status is predictive of children's behavior. Children are most disadvantaged when born to parents not in a relationship at their birth (about 12% of the sample), compared with children of married parents. The magnitude of this coefficient ranges from 0.162 for withdrawn behaviors ($p < 0.05$) to 0.233 for anxious/depressed behaviors ($p < 0.01$).

[Table 4.9 about here.]

The second set of models includes interaction terms between maternal depression and parents' relationship status at birth. These models suggest that children of depressed mothers are particularly disadvantaged when their parents were romantically involved but not living together at the time of their birth. This persists across three outcomes: anxious/depressed, ADHD, and aggressive behaviors.[37] It may be that the ambiguity associated with this relationship type creates strain on the parents, particularly depressed parents, which then translates into worse outcomes for children. This ambiguity may create confusion for children as well.

Discussion

In this chapter, and throughout this dissertation, I use data from the Fragile Families and Child Wellbeing survey to examine the consequences of parental depression for children's developmental outcomes. Descriptive analyses suggest that depression is a

[37] Subgroup analyses reveal similarly striking findings. For example, when the sample is restricted to children of parents married at baseline maternal depression is not significantly associated with children's outcomes. In fact, for all outcomes except for anxious/depressed behaviors, having a depressed mother is associated with more favorable outcomes (though the magnitude of the coefficients is small). When the sample is restricted to parents cohabiting at birth, maternal depression is strongly associated with worse ADHD and ODD behaviors. Consistent with Table 4.9, maternal depression is strongly associated with worse behavioral outcomes for children of parents who are romantically involved but not living together at birth.

mental health condition experienced by many new parents. A substantial percentage of young children – about 24% of children when they are about 12 months old and 30% of children when they are 30 months old – have at least one depressed parent. Though the percentage is unknown, an additional segment of these new mothers and fathers likely do not fit the diagnostic criteria for depression but experience depressive symptoms that may be impairing for themselves and their children.

Findings suggest that young children do indeed suffer when one or both of their parents are depressed. Parental depression when children are about 12 months old, particularly maternal depression, is associated with the following behavioral outcomes among 36-month-old children: anxious/depressed behaviors, ADHD behaviors, aggressive behaviors, and ODD behaviors. Results are also robust to a host of additional model specifications. These results are consistent with the life course perspective on human development that theorizes that parents' actions are inextricably tied to their children's outcomes (Elder, Johnson, and Crosnoe 2003), as well as a large body of empirical research that links parental depression to negative outcomes in children (Downey and Coyne 1990; Goodman and Gotlib 2002; Meadows et al. 2007).

Although findings are generally consistent across the five behavioral outcomes examined, several nuances exist. Perhaps most notably, once individual-level characteristics are taken into account, parental depression is not a significant predictor of withdrawn behaviors. This is consistent with some research that finds parental depression, particularly paternal depression, to be a more important predictor of externalizing behaviors opposed to internalizing behaviors for both young boys and

young girls (Phares and Compas 1992). The covariates are generally weak predictors of withdrawn behaviors as well, which may indicate this is a poor measure for three-year-old children. Additionally, though not the main focus of these analyses, paternal depression is only independently associated with children's aggressive and ODD behaviors. Analyses discussed but not presented show that these associations persist for both male and female children.

Contrary to expectations, neither maternal nor paternal depression is associated with children's cognitive performance. This is inconsistent with some prior research that finds a positive association between parents' – particularly mothers' – mental health and children's cognitive outcomes (Brennan et al. 2000; Murray, Kempton, Woolgar, and Hooper 1993; Tannenbaum and Forehand 1994). The inconsistency may arise from several factors. First, unlike prior studies based on non-representative samples, these data include a nationally representative sample of children born to unmarried parents. These children may be more disadvantaged than children born to married parents, with respect to their socioeconomic status (Ellwood and Jencks 2004), exposure to parental depression (Kessler and Zhao 1999), and cognitive outcomes (Sigle-Rushton and McLanahan 2004). Or, inconsistencies may result from my focus on young children, a stark contrast from most of the literature that focuses on adolescents (i.e., Tannenbaum and Forehand 1994). It may be that timing of maternal depression moderates the association between depression and cognitive outcomes in children (Elder et al. 2003). Perhaps maternal depression does not predict cognitive outcomes in early childhood but does predict cognitive outcomes in adolescence.

Additionally, I find that children with chronically depressed mothers fare worse than their counterparts with mothers who experience transitory depression or are never depressed. Maternal depression that emerges between the time children are 12 months old and 30 months old is also predictive of less favorable behavioral outcomes among children, while children's behavior does not suffer when maternal depression remits over this time period. When depression is measured proximately close to children's outcomes, children are most likely to suffer. This is also supported by the supplemental analyses that take into account maternal pre-pregnancy mental illness. Taken together, these findings are consistent with prior research that points to the detrimental consequences of chronic maternal depression for children (Beardslee, Versage, and Gladstone 1998; Cummings and Davies 1994; Goodman and Gotlib 2002; Meadows et al. 2007; Petterson and Albers 2001). It appears that children bounce back when their mothers become healthy, which is consistent with other research that demonstrates the resilience of children (Conger and Conger 2002; Kelly and Emery 2003). Thus, early intervention and treatment may be particularly important for depressed mothers.

A different story emerges when looking at the influence of paternal depression over time. Having a chronically depressed mother is detrimental to children's behavioral outcomes, but children's behavior does not seem to suffer from chronic depression among fathers. One potential interpretation for this unexpected finding may relate to the characteristics of this subgroup of fathers. As mental health may impede union formation (Edin and Kefalas 2005; Teitler and Reichman 2008), it is possible that these consistently depressed fathers do not live with their children and, thus, exert less of an influence on

them. Indeed, only 18% of chronically depressed fathers were married to their child's mother at baseline. Also, it is likely that the fathers in this sample are heterogeneous with respect to their engagement with their children or the extent to which they collaborate with mothers in parenting. Looking at father involvement is beyond the scope of this dissertation, though it is likely that such involvement influences how children respond to their fathers. For example, chronically depressed fathers may be less likely to spend time reading to their children and, thus, have less influence on children's outcomes. Additionally, children's outcomes suffer if their fathers experience transitory depression throughout the beginning of their life course. Unlike the influence of maternal depression, the influence of paternal depression does not disappear when paternal depression remits over time. Perhaps even when symptoms associated with depression dissipate, such as feeling tired or worthless, fathers continue to engage in additional behaviors that may be detrimental to child wellbeing such as substance use. Thus, although paternal depression generally matters less than maternal depression, the consequences of paternal depression may be more long-lasting.

Finally, there is some evidence that maternal depression is not an equal opportunity risk factor for children. Instead, the association between maternal depression and children's outcomes varies, most notably, by socioeconomic status. Children of depressed, economically disadvantaged mothers have less favorable outcomes than their counterparts with depressed, economically advantaged mothers. Mothers with less economic strain, for example, may be able to use their resources to purchase high-quality child care. These mothers may also be able to purchase goods and services to buffer

themselves from stressful life experiences, which may lead to better outcomes for children.

The time ordering of the variables suggest that parental depression when their children are about 12 months old is associated with children's behavior when they are about 36 months old. I also control for maternal reports of children's temperament when they are 12 months old, to better isolate the association between maternal depression and children's outcomes.[38] However, these analyses cannot speak to causal mechanisms. Additionally, although these data include a rich array of variables that allow me to hold constant many factors associated with both parental depression and children's outcomes, some of the covariates included the models (i.e., maternal employment status or education) may be endogenous to maternal depression. If this is the case, the true association between maternal depression and children's outcomes is underestimated. Of course, the possibility for unobserved hetereogeneity also exists. In subsequent chapters I consider how parenting behaviors, relationship quality with one's romantic partner, and social support may alter the relationship between parental depression and children's wellbeing. Other contextual factors, however, such as parental incarceration status or children's child care experiences are not considered in this dissertation, and it is possible these factors play an important role in the intergenerational transmission of psychological wellbeing. Also, given the genetic transmission of mental health from parents to children, I cannot ignore the potential role of genetics in predicting children's behavioral outcomes (Downey and Coyne 1990; Goodman and Gotlib 1999). The analyses control for parental

[38] It is possible that parental depression is triggered or sustained by unfavorable behavior in children. In analyses not presented, I find that children's behavior does not independently predict parental depression.

reports of their parents' mental health, but this imperfect measure is subject to both shared methods variance and recall error.[39]

These findings extend prior research on the consequences of parental depression using a representative sample of new parents and their children. Findings suggest that parental depression, particularly maternal depression that persists across multiple years, has substantial implications for children's behavioral outcomes at the beginning of the life course. Thus, children of depressed parents enter school with worse behavior than their counterparts. Children's transition to schooling is an important predictor of later outcomes, which means these disadvantages in early childhood can translate into much larger disadvantages throughout the life course (Entwisle and Alexander 1989; McLeod and Kaiser 2004).

[39] Supplemental analyses (not presented) lend support to the idea that environmental context matters. Among children who never lived with their fathers, there is not even a bivariate association between paternal depression and children's outcomes.

CHAPTER FIVE:

MATERNAL DEPRESSION AND CHILDREN'S BEHAVIORAL OUTCOMES: MATERNAL PARENTING BEHAVIORS AS A MECHANISM OF RISK

The analyses in Chapter 4 establish that, on average, children suffer when their mothers are depressed during their earliest years, that chronic maternal depression is more detrimental than transitory maternal depression, and that the consequences of maternal depression is greater for some subgroups of the population, particularly children in economically disadvantaged families. These findings are generally consistent with prior research, and advance our understanding of the intergenerational transmission of disadvantage by considering change over time in depression and a diverse sample of parents and children. Like much of this existing literature, however, the prior analyses are limited in that they do not consider the mechanisms through which maternal depression influences children. Understanding the pathways linking parents' and children's lives is particularly important the life course of children of depressed mothers. In this chapter, I take one step toward understand this pathway.

Though the mechanisms through which depression influences children are largely unexplored, several scholars have suggested that parenting may be one important pathway (Downey and Coyne 1990; Goodman and Gotlib 2002). Empirically, there is a link between maternal depression and parenting. Depressed mothers, compared to their non-depressed counterparts, are more likely to be withdrawn or hostile when interacting with their children, and are more likely to engage in harsh, inconsistent parenting

practices (Lovejoy, Graczyk, O'Hare and Neuman 2000; Cummings and Davies 1994). The fact that depressed mothers are particularly distressed in their parenting abilities is important, as parenting behaviors are consistently linked to child wellbeing (Simons, Whitbeck, Beaman, and Conger 1994; Koblinsky, Kuvalanka, and Randolph 2006). Despite a strong link between maternal depression and maternal parenting behaviors, and between maternal parenting behaviors and children's outcomes, very few studies examine the extent to which parenting mediates the negative association between maternal depression and children's outcomes.

Research Questions

Thus, in this chapter, I examine four research questions. First, to what extent is maternal Major Depressive Disorder (MDD) associated with mothers' reports of parenting behaviors, including parenting stress, neglect, discipline, and engagement? Based on existing literature about the consequences of depression for mothers, I hypothesize that depressed mothers will exhibit less optimal parenting behaviors than their non-depressed counterparts. I expect depressed mothers to report more parenting stress, more neglectful behavior, more harsh discipline practices, and less engagement.

Second, does the association between maternal depression and maternal parenting behaviors vary by race, socioeconomic status, and baseline relationship status of the parents? Unfortunately, because this topic has been rarely explored with a representative, diverse sample, little is known about subgroup differences in the relationship between maternal depression and maternal parenting behaviors. Despite a lacking body of

literature from which to draw upon, I hypothesize that the link between maternal depression and maternal parenting behaviors will be stronger for groups that are, on average, disadvantaged. I expect depression to more substantially influence the parenting of minority mothers compared to white mothers, mothers with low socioeconomic status compared to mothers with high socioeconomic status, and mothers unmarried at the birth of their child compared to married mothers. For example, socioeconomic resources may allow depressed mothers to purchase child care or other forms of assistance that translates to less stress and more effective parenting behaviors. A marital relationship, by conferring potential emotional support, may also protect depressed mothers from engaging in, for example, harsh discipline practices.

Third, to what extent do maternal parenting behaviors such as parenting stress, neglect, discipline, and engagement attenuate the negative association between maternal depression and children's behavior at the beginning of the life course? Theoretical expectations about depression, as well as some existing empirical research, suggest that the differences in parenting between depressed and non-depressed mothers may account for the variation in children's outcomes. Thus, I expect that maternal parenting behaviors will completely attenuate the negative association between maternal depression and children's behavior in early childhood.

Finally, do maternal parenting behaviors such as parenting stress, neglect, discipline, and engagement differentially attenuate the negative consequences of chronic depression and transitory depression? I expect that maternal parenting behaviors will play a more substantial role in attenuating the consequences of transitory depression than

chronic depression. For children of chronically depressed mothers, favorable parenting behaviors may not be enough to ameliorate some of the disadvantages experienced by these children.

Analytic Plan

In this chapter, I first present descriptive statistics to explore the bivariate association between maternal depression and maternal parenting behaviors. I compare the means of depressed mothers' reports of their parenting behaviors with the means of non-depressed mothers' reports of their parenting behaviors. Parenting behaviors include the following: parenting stress, neglect, psychological aggression, physical assault, and engagement.[40] Descriptive statistics for these variables are shown in Table 5.1. I use two-tailed T-tests to determine the statistical significance of the differences in the means between the groups. I first look at the association between maternal depression at the 12-month wave and maternal parenting behaviors at the 30-month or 36- month wave, and then compare the means of maternal parenting behaviors by depression at the 30-month wave.[41]

[Table 5.1 about here.]

Next, I proceed to the multivariate analyses. In the first set of multivariate analyses, in Table 5.4, I use ordinary least squared (OLS) regression models to predict the following outcomes: parenting stress, neglect, psychological aggression, physical

[40] As discussed in Chapter 3, psychological aggression and physical assault are indicators of how mothers discipline their children.
[41] Measures of parenting stress and engagement come from the 30-month wave of data collection, and neglect, psychological aggression, and physical assault come from the 36-month In-Home survey.

assault, and engagement. The first set of models includes only the main independent variable, maternal depression at the 12-month wave, and this variable is included in all subsequent models. The second set of models adds the following individual-level characteristics: mother's race, mother's immigrant status, mother's age, mother's age squared, mother's frequency of attendance at religious services, if the mother lived with both biological parents at age 15, mother's education, the log of mother's household income, mother's employment status, mother's homeowner status, parents' relationship status at birth, mother's co-residence with a grandmother, the number of children in the household (including the focal child), paternal depression, mother's reports of parental depression, father's reports of parental depression, prenatal smoking, child gender, child born low birth weight, age of child, and the mother's report of the child's temperament at the 12-month wave. As in Chapter 4, I control for child's temperament at the 12-month wave to control for potential reverse causality between maternal depression and children's outcomes (i.e., children with difficult temperaments may cause depression in mothers). Similar to child temperament, other variables may be endogeneous to depression (i.e., maternal employment). If this is the case, the estimates of the association between maternal depression and children's outcomes are conservative. Additionally, including controls for depression of the children's grandparents may underestimate how maternal depression is associated with behavioral disadvantages among children.

Next, in Tables 5.5 through 5.8, I present results that address this chapter's second research question. Again, I use OLS regression, and maternal parenting behaviors are the dependent variables. In each of these tables, the first set of models includes the main

independent variable, maternal depression at the 12-month wave, and all covariates included in the final models of Table 5.4. The second set of models in Table 5.5 includes the following interaction terms between maternal depression and maternal race: depression * white (reference category), depression * black, depression * Hispanic, and depression * other race. In Table 5.6, the second set of models includes an interaction between maternal depression and maternal education. I consider the interaction between maternal depression and maternal household income in Table 5.7, and the interaction between maternal depression and baseline relationship status in Table 5.8.

Beginning in Table 5.9, I turn my attention to the third research question of this chapter. I use OLS regression models to predict the following outcomes for children: anxious/depressed behaviors, withdrawn behaviors, Attention Deficit Hyperactivity Disorder (ADHD) behaviors, aggressive behaviors, and Oppositional Defiant Disorder (ODD) behaviors. The first set of models includes the main independent variable, maternal depression at the 12-month wave, as well as the covariates included in prior models throughout this chapter. The next five models include one of the five measures of maternal parenting behaviors. The final set of models includes maternal depression, all maternal parenting behaviors, and all covariates.

I answer the fourth research question in Table 5.10. The models presented in this table progress in a similar fashion as those in Table 5.9. However, in this table, I substitute the static indicator of maternal depression for a series of mutually exclusive, exhaustive dummy variables that capture the dynamic nature of depression. These variables are as follows: chronic depression (mother depressed at both the 12-month and

30-month wave), depression develops over time (mother not depressed at the 12-month wave but depressed at the 30-month wave), depression remits over time (mother depressed at the 12-month wave but not depressed at the 30-month wave), and no depression (mother not depressed at the 12-month and 30-month waves, which is the reference category).

As throughout most of this dissertation, I use Analytic Sample B (described in Chapter 3). For the sake of parsimony, most tables include only coefficients for the main independent variables of interest (maternal depression, paternal depression, and, in the models predicting children's outcomes, maternal parenting behaviors). In all multivariate analyses, few observations are missing control variables, and I impute these missing values using a regression-based approach in Stata.[42]

Bivariate Association between Maternal Major Depressive Disorder (MDD) and Maternal Parenting Behaviors

The bivariate results presented in Table 5.2 suggest that depressed mothers, compared to their non-depressed counterparts, exhibit less favorable parenting behaviors. For example, depressed mothers report a score of 2.448 on the four-item index of parenting stress, while non-depressed mothers report a score of 2.215 ($p < 0.001$). These differences persist across all outcomes except for physical assault. Though depressed mothers are slightly more likely to report assaulting their children (spanking or hitting

[42] A substantial number of observations (21%) are missing data on paternal depression at the 12-month wave. As with the other variables that are missing much fewer observations, I impute these missing observations with a regression-based approach. In supplemental analyses, I do not impute paternal depression and instead include a dummy variable in the models to indicate if this variable is missing. The substantive findings do not change. Future analyses will use multiple imputation to deal with missing data.

their child, for example), the difference is negligible (less than 2 percentage points) and not statistically significant.[43] Similar to how maternal depression may influence maternal reports of children's outcomes, it is possible that depressed mothers may have distorted, negative views of their parenting behaviors. These analyses, along with the following multivariate analyses, suggest this is not the case, as maternal depression is only associated with some measures of parenting. If depressed mothers were inaccurate reporters of their behaviors, one would expect these differences to persist across multiple measures of parenting.

[Table 5.2 about here.]

The size and strength of the association is stronger when examining maternal parenting behaviors by maternal depression at the 30-month wave, compared to maternal depression at the 12-month wave. Table 5.3 shows statistically significant differences between depressed and non-depressed mothers for all five parenting behaviors ($p < 0.001$). Depressed mothers at the 30-month wave, for example, score 0.359 points higher on the index of parenting stress than their non-depressed counterparts ($p < 0.001$), compared to depressed mothers at the 12-month wave who score 0.233 points higher than their non-depressed counterparts ($p < 0.001$). This translates to a 35% increase in the difference between depressed and non-depressed mothers across the two waves.

[Table 5.3 about here.]

[43] Appendix 5.1 includes all individual items that comprise the five measures of maternal parenting behaviors, by maternal depression at the 12-month wave.

Multivariate Analyses Predicting Maternal Parenting Behaviors, by Maternal Major Depressive Disorder (MDD)

The prior bivariate analyses between maternal depression and parenting behaviors are limited because they do not account for the possibility that these differences are simply artifacts of other heterogeneity between these depressed mothers and non-depressed mothers, such as socioeconomic status or family structure. Thus, Table 5.4 presents multivariate analyses that estimate the relationship between maternal depression and maternal parenting behaviors and control for many factors that are associated with both. For all indicators of parenting behaviors except for engagement, higher values are associated with less favorable parenting behaviors. Higher levels of engagement, on the other hand, signify more favorable parenting behaviors.[44]

The first panel predicts parenting stress. The first model in this panel is consistent with the bivariate results presented in Table 5.2. When mothers are depressed at the 12-month wave, compared to their non-depressed counterparts, they report, on average, more parenting stress (0.234, $p < 0.001$). The inclusion of covariates in the subsequent models generally reduces the magnitude of this coefficient. Ultimately, however, the relationship between maternal depression and parenting stress is a strong one. The coefficient decreases by 27 percentage points from Model 1 to Model 2, which includes all covariates, but the association is still statistically significant (0.170, $p < 0.001$). Interpreted a different way, when mothers are depressed, they report parenting stress

[44] This table only includes the coefficients for maternal and paternal depression; full models can be found in Appendices 5.2 through 5.6.

more than one-fourth of a standard deviation higher than their non-depressed counterparts.

[Table 5.4 about here.]

Maternal depression is also associated with neglectful behavior. It is important to note that a relatively small proportion of mothers report engaging in any one of the neglectful behaviors. For example, only 2% of mothers report being unable to make sure their child had food and 7% report being so caught up in their own problems that they are unable to show their child love. However, even after accounting for a host of individual-level characteristics, depressed mothers are more likely to report such behaviors than their non-depressed counterparts (0.019, $p < 0.001$). Translated into a different metric, depressed mothers report neglectful behaviors that are more than one-fifth of a standard deviation higher than their non-depressed counterparts.

Maternal depression is not as strongly predictive of other parenting behaviors when individual-level characteristics are included in the models. For instance, there are no differences in psychological aggression and engagement between depressed and non-depressed mothers. In Model 2 predicting psychological aggression and engagement, coefficients for maternal depression go in the expected direction, but they are small and not statistically significant. Finally, consistent with Table 5.2, there is not even a bivariate association between maternal depression and physical assault. In fact, once the covariates are included in Model 2, the direction of this relationship goes in the unexpected direction, though the magnitude of this coefficient is small and not statistically significant (-0.005, *n.s.*). Paternal depression is not independently predictive of mothers' parenting

behaviors. It may be that paternal depression brings hardship to families but that mothers compensate for paternal depression by exhibiting more optimal parenting behaviors themselves.

Alternative Model Specifications

These findings are robust to alternative model specifications, many of which are described in more detail in Chapter 4. First, I use a more conservative measure of both maternal and paternal depression. Second, I substitute the dichotomous indicator of depression for a categorical variable that indicates probability of caseness, the probability the mother would have been diagnosed as having experienced MDD if she completed the Long-Form Composite International Diagnostic Interview (CIDI). Third, I substitute depression at the 12-month wave with depression at the 30-month wave. Fourth, I substitute depression at the 12-month wave with a dummy variable indicating if the mother received a mental illness diagnosis prior to her child's birth. Finally, instead of prevalence measures for neglect, psychological aggression, and physical discipline, I use variables that measure the chronicity of these behaviors. See Chapter 3 for a discussion of the strengths and weaknesses of these two different types of measures.

Nearly all of these alternative model specifications discussed above produce results that are substantively similar to those in Table 5.4. Depressed mothers are more likely to report parenting stress and neglect than their non-depressed counterparts, but both depressed and non-depressed mothers report similar amounts of psychological aggression, physical assault, and engagement. There are two exceptions to this general

pattern. First, mothers who had a pre-pregnancy mental illness diagnosis do not report any more or less parenting stress than those who did not, once other factors are taken into account. This suggests that mental illness may not have long-term implications for the amount of stress that mothers report. As discussed in Chapter 4, these findings should be interpreted cautiously because I cannot distinguish between different types of illness, account for comorbidity, or establish timing of diagnosis.

Second, and perhaps more importantly, the association between maternal depression at the 30-month wave and maternal parenting behaviors persists across all outcomes. When maternal depression is measured at this later time point, the coefficients are twice as large. For example, after accounting for all covariates, when mothers report depression at the 30-month wave they report parenting stress that is 0.313-points higher than their non-depressed counterparts ($p < 0.001$). Additionally, when they are depressed, mothers are more likely to report neglect (0.222, $p < 0.001$) and forms of harsh discipline including psychological aggression (0.030, $p < 0.01$) and physical assault (0.027, $p < 0.05$). Finally, depressed mothers are less engaged than their non-depressed counterparts (-0.130, $p < 0.01$). The magnitude of these coefficients ranges from just more than one-tenth of a standard deviation (for physical assault) to nearly one-half of a standard deviation (for parenting stress). It is not surprising that the link between depression and parenting behaviors is stronger when the two are measured at the same time or only six months apart. These findings lend support to the hypothesis that maternal depression is tightly linked to parenting behaviors. They also suggest that depression may not have

long-term impairments for some parenting behaviors. Parenting behaviors may improve if maternal depression remits over time.

Additional Predictors of Maternal Parenting Behaviors

Though not the main focus of this analysis, the other covariates that predict maternal parenting behaviors generally work in the expected direction.[45] To begin with, in the full models, black mothers report more parenting stress (0.089, $p < 0.05$), more psychological aggression (0.036, $p < 0.05$), more physical assault (0.082, $p < 0.001$), and less engagement (-0.167, $p < 0.05$) than their white counterparts. There are few differences in parenting between white and Hispanic mothers, or between white and other race mothers. Hispanic and other race mothers, on the other hand, generally do not report parenting behaviors that are statistically different from whites. There is one exception: Other race mothers report greater levels of engagement than their white counterparts. Additionally, foreign-born mothers, regardless of race, report less psychological aggression and physical assault than their native-born counterparts. They also report less engagement with their children than native-born mothers. Taken together, the differences in parenting across race and immigrant status is consistent with prior research demonstrating cultural differences in childrearing. In terms of demographic characteristics, mother's religiosity is also positively correlated with optimal parenting. Compared to mothers who report attending religious services at least once a week, those who attend less frequently report more parenting stress and psychological aggression. Mothers who never attend religious services, compared with those who attend at least

[4545] See Appendices 5.2 through 5.6 for complete tables.

once a week, report less engagement with their children. Thus, attendance at religious services may provide mothers with a form of social support that translates to more favorable parenting behaviors.

Although some literature points to social class differences in parenting behaviors, this idea is only mildly supported in these data. To begin with, in the full models, mother's household income is not associated with any of the five parenting behaviors. On the other hand, mothers with a high school diploma or education beyond high school report less parenting stress and more engagement with their children than their counterparts without a high school diploma. Inconsistent with expectations, maternal employment is associated with more reports of psychological aggression or physical discipline.

Household characteristics, including parents' relationship status at birth, co-residence with a grandmother, and number of children in the household, are not strongly predictive of maternal parenting behaviors. There are several exceptions. First, inconsistent with expectations, mothers who were cohabiting with the child's biological father report less parenting stress than their married counterparts. Additionally, mothers in non-cohabiting romantic relationships with the child's father report less neglect than their married counterparts. Finally, consistent with prior research, the number of children in the household and maternal engagement are inversely related to one another.

There is some evidence that maternal health behaviors and child characteristics are associated with maternal parenting behaviors. Having a family history of depression is one of the strongest, most consistent predictors of maternal parenting behaviors.

Mothers who report that at least one of her biological parents experienced depression, compared with those who do not report a parental history of depression, also report less favorable parenting behaviors, and this association is consistent across all five parenting behaviors. Finally, these models show evidence for a transactional relationship between mothers and their children. Mothers, on average, report higher levels of parenting stress, neglect, and physical assault, as well as lower levels of engagement, when their children have more difficult temperaments when they are about 12 months old.

Variation in the Consequences of Maternal Major Depressive Disorder (MDD) for Maternal Parenting Behaviors by Race, Socioeconomic Status, and Baseline Relationship Status of Parents

The prior tables support theoretical expectations about the consequences of depression, as well as empirical research that find depressed mothers suffer impairments in some aspects of parenting. Because most research that examines the link between maternal depression and parenting is based on small, homogenous samples of mothers, there is scarce knowledge about how this association may vary among subgroups of the population. Therefore, in Tables 5.5 through 5.8, I examine variation in the association between maternal depression and maternal parenting behaviors by demographic characteristics such as race, socioeconomic status, and parents' baseline relationship status.

To begin with, in Table 5.5, I examine how maternal depression and race may interact in predicting maternal parenting behaviors. The first set of models in this table

includes all individual-level covariates included in Table 5.4. I only display the coefficients for maternal depression, paternal depression, and maternal race. As discussed earlier, there are some race differences in parenting behaviors. However, Model 2 of this table suggests there are few differences in the association between maternal depression and maternal parenting behaviors by race. There is one exception: Compared with white depressed mothers, black depressed mothers are less likely to report neglecting their children. Thus, when it comes to neglect, the consequences of depression are less harmful for black mothers than for white mothers.[46]

[Table 5.5 about here.]

Tables 5.6 and 5.7 show little differences in the association between maternal depression and maternal parenting behaviors by socioeconomic status. The second set of models in Table 5.6 includes an interaction term between maternal depression and maternal education. Though maternal education is independently associated with parenting stress and engagement, as discussed earlier, only one interaction term reaches statistical significance. Inconsistent with expectations, depressed mothers are more likely to report physically assaulting their children when they are college graduates, compared

[46] Though the majority of the interaction terms do not reach statistical significance, a slightly different story emerges when I run the models separately for the following subgroups of mothers: whites, blacks, Hispanics, and other race. Maternal depression continues to be predictive of parenting stress across all race groups except for Hispanics. This association is largest for whites (0.241, $p < 0.001$), and less strong for blacks (0.153, $p < 0.01$) and other race mothers (0.512, $p < 0.05$). Depression is also predictive of neglect (0.041, $p < 0.001$) and psychological aggression (0.044, $p < 0.05$) for white mothers. Among non-white mothers, there is no statistically significant association between depression and neglect, psychological aggression, physical assault, or engagement. Taken together, these subgroup analyses provide some evidence that depression is most detrimental to the parenting behaviors of white mothers.

to those mothers who did not graduate high school.[47] Table 5.7 shows no variation in the association between maternal depression and parenting behaviors by income.[48]

[Table 5.6 about here.]

[Table 5.7 about here.]

Finally, Table 5.8 shows little differences in the association between maternal depression and parenting behaviors by parents' relationship status at birth. Depressed mothers do not display more or less favorable parenting behaviors if they are unmarried at the time of their child's birth.[49] Overall, the interaction terms suggest that, with regard to parenting behaviors, depression is an equal opportunity risk factor for mothers.

[Table 5.8 about here.]

Maternal Parenting Behaviors as a Mediator in the Association between Maternal Major Depressive Disorder (MDD) and Children's Behavioral Outcomes

Findings from Chapter 4 show that maternal depression when children are 12 months old may be particularly harmful for children's behavioral outcomes when they are about 36 months old. However, the analyses are limited in that they do not consider the pathways through which maternal depression may influence children's behavior. Maternal parenting behavior is one mechanism that may potentially underlie this

[47] Subgroup analyses also show little variation by mother's education level.
[48] Similar to Chapter 4, in additional model specifications not presented, I include interaction terms for two additional measures of socioeconomic status: mother's employment status and mother's homeownership. There is some evidence that the association between maternal depression and maternal parenting behaviors varies by these measures. To begin with, the association between depression and parenting behaviors is stronger among mothers who are employed than mothers who are unemployed. Additionally, the association between depression and neglect, as well as the association between depression and physical assault, is stronger among mothers who are homeowners compared to those who are not homeowners.
[49] This is consistent with subgroup analyses not presented.

relationship, and I explore this in Table 5.9. The first panel in Table 5.9 predicts children's anxious/depressed behaviors when they are 36 months old. For the sake of parsimony, I present only the coefficients for maternal depression at the 12-month wave, paternal depression at the 12-month wave, and maternal parenting behaviors. However, all models include covariates from Table 5.4 (full tables available upon request). In Model 1, the coefficients for maternal and paternal depression are identical to those presented in Table 4.4. When mothers are depressed when children are about 12 months old, children have anxious/depressed behaviors 0.138 points worse than their counterparts with non-depressed mothers ($p < 0.01$). Paternal depression, on the other hand, does not independently predict children's anxious/depressed behaviors when they are 36 months old. The next model includes parenting stress, which attenuates the maternal depression coefficient (0.104, $p < 0.05$). The next four models each include one additional measure of maternal parenting behaviors: neglect (Model 3), psychological aggression (Model 4), physical assault (Model 5), and engagement (Model 6). Neglect and psychological aggression slightly attenuate the coefficient for maternal depression. In Model 7, which controls for all parenting behaviors, the maternal depression coefficient falls to nonsignificance. Thus, net of parenting, children of depressed and non-depressed mothers have similar anxious/depressed behaviors (0.099, *n.s.*).

[Table 5.9 about here.]

The models predicting aggressive and ODD behaviors are fairly consistent with those predicting anxious/depressed behaviors. The first set of models, consistent with findings in Chapter 4, show that children are more likely to exhibit aggressive (0.137, $p <$

0.05) or ODD (0.109, $p < 0.05$) behaviors when their mother is depressed, even after controlling for a host of covariates. Paternal depression is also independently associated with these behaviors (0.172, $p < 0.05$ for aggressive behaviors; 0.143, $p < 0.05$ for ODD behaviors). Maternal parenting behaviors completely attenuate the association between maternal depression and children's aggressive behaviors, reducing the coefficient to nonsignificance in the final model (0.086, *n.s.*). In fact, accounting for parenting stress alone completely attenuates the negative association between maternal depression and children's aggressive behaviors (0.085, *n.s.*). However, maternal parenting behaviors do not make the association between paternal depression and children's aggressive behaviors disappear (0.148, $p < 0.05$). In predicting ODD behaviors among children, maternal parenting behaviors completely attenuate the negative consequences of having a depressed mother (0.065, *n.s.* in the final model) or a depressed father (0.120, *n.s.* in the final model). In fact, parenting stress, neglect, and psychological aggression all independently attenuate the maternal depression coefficient to nonsignificance.

Different patterns emerge when predicting children's withdrawn and ADHD behaviors when they are 36 months old. Consistent with Chapter 4, once a host of individual-level characteristics are held constant, maternal depression is not independently associated with withdrawn behaviors. Although maternal depression is not significantly associated with withdrawn behaviors, the inclusion of maternal parenting behaviors slightly attenuates the coefficient from 0.047 (*n.s.*) to 0.004 (*n.s.*). With respect to ADHD behaviors, the disadvantages experienced by children of depressed mothers do not disappear when maternal parenting behaviors are held constant. In the final model

predicting ADHD behaviors, children of depressed mothers still have scores that are 0.164 points worse than their counterparts without a depressed mother ($p < 0.01$).

The inclusion of maternal parenting behaviors into the models explains a substantial portion of the variation in children's behavior. This is particularly true when predicting externalizing behaviors such as ADHD, aggressive, and ODD behaviors. In the models predicting ADHD behaviors, the R-squared increases from 0.067 in the first model to 0.155 in the final model. Similarly, the R-squared increases from 0.104 to 0.228 in the models predicting aggressive behaviors and from 0.074 to 0.189 in the models predicting ODD behaviors.

The last set of models show that maternal parenting behaviors are independently associated with behavioral outcomes in children. Across all outcomes, mothers who report greater amounts of parenting stress, psychological aggression, and physical discipline have children with less favorable behaviors. For example, a one-unit increase in parenting stress is associated with less favorable anxious/depressed behaviors in children (0.167, $p < 0.001$). Similarly, a one-unit increase in psychological aggression is associated with a 0.541-point increase in anxious/depressed behaviors ($p < 0.001$), and a one-unit increase in physical assault is associated with a 0.197-point increase in anxious/depressed behaviors ($p < 0.05$). The consequences of maternal psychological aggression are particularly large, as this coefficient translates into more than one-half of a standard deviation increase in anxious/depressed behaviors. On the other hand, with two exceptions, neglect and engagement are generally not independently associated with children's behaviors. First, higher reports of neglect are strongly predictive of less

favorable withdrawn behaviors in children (0.954, $p < 0.001$). Second, and contrary to expectations, higher levels of maternal engagement are predictive of less favorable anxious/depressed behaviors (0.046, $p < 0.05$).

Alternative Model Specifications

To test the robustness of these findings, I run a series of alternative model specifications similar to those from Table 5.4 (tables available upon request). First, I use a more conservative indicator of parental depression. Second, I substitute the dichotomous measure of parental depression for a continuous measure that indicates the probability of caseness. Third, I substitute depression at the 12-month wave with depression at the 30-month wave. Fourth, I substitute depression at the 12-month wave with a dummy variable indicating if the mother received any pre-pregnancy mental illness diagnosis. Fifth, I substitute prevalence measures of neglect, psychological aggression, and physical discipline for the measures that indicate the chronicity of these behaviors. Finally, as in Chapter 4, I substitute the continuous measure of children's behavioral outcomes with a dichotomous measure that indicates whether the child has behavioral problems at or above the 90^{th} percentile in the population of children.

With respect to these alternative model specifications, the patterns are generally consistent with those presented in Table 5.9. Maternal parenting behaviors, by and large, attenuate the negative association between maternal depression and children's behaviors. However, in some cases, accounting for maternal parenting behaviors does not completely negate the consequences of maternal depression for children. This occurs in

two noteworthy circumstances. First, when maternal depression is measured temporally closer to the measurement of children's behavioral outcomes, maternal depression continues to be an independent predictor of outcomes even once maternal parenting behaviors are included in the models. Across all outcomes, parenting behaviors do completely attenuate the coefficients for maternal depression at the 30-month wave. When predicting anxious/depressed behaviors, for example, including parenting behaviors into the model reduces the coefficient by 34%. The coefficient is reduced by 87% when predicting withdrawn behaviors, 43% when predicting ADHD behaviors, 43% when predicting aggressive behaviors, and 38% when predicting ODD behaviors. According to the full model that includes parenting behaviors, when mothers are depressed at the 30-month wave, children have anxious/depressed scores that are 0.141 points worse than children of non-depressed mothers ($p < 0.01$). Children also have aggressive behaviors that are 0.159 points worse ($p < 0.001$) and ODD behaviors that are 0.180 points worse ($p < 0.001$).

The other exception to the pattern of consistent findings occurs when using the clinical cutoff for children's behavioral problems instead of the continuous measure. In this instance, accounting for maternal parenting behaviors does not completely attenuate the consequences of maternal depression for aggressive and ODD behaviors. Before taking into account maternal parenting behaviors, children with a depressed mother have 1.637 times the odds of falling into the clinical range of aggressive behaviors ($p < 0.01$). The odds of falling into this clinical range is only slightly reduced after considering maternal parenting behaviors (OR = 1.552, $p < 0.01$). Similarly, the odds of falling into

the clinical range of ODD behaviors decreases from 1.789 ($p < 0.01$) in the model without parenting behaviors to 1.718 ($p < 0.05$) in the model with parenting behaviors. Taken together, these alternative specifications suggest that parenting behaviors may indeed ameliorate the negative consequences of depression for children, but that maternal depression matters less as time passes and that parenting behaviors do less to assuage the disadvantages faced by the most at-risk children.

Variation in the Consequences of Maternal Parenting Behaviors for Children's Behavioral Outcomes by Race, Socioeconomic Status, and Baseline Relationship Status of Parents

It is beyond the scope of this dissertation to fully examine the pathways that may buffer children from the negative consequences of parenting or exacerbate the consequences of parenting. It is possible, however, that the association between parenting behaviors and children's outcomes varies across demographic factors such as race, socioeconomic status, and parents' relationship status at birth. I consider this in Appendices 5.7 through 5.10. In each of these tables, the first set of models includes maternal depression and all covariates from Table 5.9. In Appendix 5.7, the second set of models includes interaction terms between maternal parenting behaviors and maternal race. Appendix 5.8 includes interaction terms between maternal parenting behaviors and maternal education, Appendix 5.9 includes interaction terms between maternal parenting behaviors and maternal household income, and Appendix 5.10 includes interaction terms between maternal parenting behaviors and parents' relationship status at birth.

Though maternal parenting behaviors – in particular, parenting stress, psychological aggression, and physical assault – are strongly predictive of children's behaviors, these appendices present little evidence that the association between parenting behaviors and children's behavior varies by race, as none of the interaction terms between parenting behaviors and race reach statistical significance. Also, there is little evidence that socioeconomic status or parents' relationship status at birth alters the association between parenting behaviors and children's behavior. There are several exceptions, particularly when predicting anxious/depressed behaviors. The consequences of maternal neglect, for example, are stronger when mothers have at least some college education, compared to when mothers did not graduate high school. On the other hand, maternal education is a protective factor for children when mothers report higher levels of psychological aggression.

Maternal Parenting Behaviors as a Mediator in the Association Between Maternal Major Depressive Disorder (MDD) Over Time and Children's Behavioral Outcomes

The prior analyses show that, for at least some behavioral outcomes when children are 36 months old, maternal parenting behaviors can completely attenuate the negative consequences of earlier maternal depression. Supplemental analyses, discussed above but not presented, suggest that maternal parenting behaviors do less to buffer the negative consequences of maternal depression when it occurs temporally closer to the measurement of children's behaviors. Both sets of analyses are limited, though, because they use a static measure of depression. Depression is a chronic condition for many

mothers, and results from Chapter 4 show that chronic maternal depression is worse for children than transitory maternal depression. Also, the pathways that link maternal depression and children's outcomes may vary depending on whether the depression is chronic depression and transitory (Hammen and Brennan 2003). Thus, in Table 5.10, I substitute the static indicator of depression with a series of mutually exclusive dummy variables that indicate change over time in depression.

The first set of models includes all covariates from prior tables. Consistent with findings from Chapter 4, these models suggest that chronic maternal depression is particularly detrimental for children. For example, children of chronically depressed mothers have anxious/depressed behaviors more than one-fourth of a standard deviation worse than their counterparts with never depressed mothers (0.284, $p < 0.001$). Additionally, the consequences of transitory depression depend on the timing of depression. When maternal depression develops over time (i.e., mothers are not depressed at the 12-month wave but are depressed at the 30-month wave), children have worse outcomes than their never depressed counterparts. Though the development of depression is detrimental for children, the magnitude and strength of the coefficients suggest it is less detrimental than chronic depression. On the other hand, when maternal depression remits over time (i.e., mothers are depressed at the 12-month wave but are not depressed at the 30-month wave), children's behavior, on average, does not suffer. These findings persist across all outcomes but withdrawn behaviors.

[Table 5.10 about here.]

The second set of models includes the five indicators of maternal parenting behaviors: parenting stress, neglect, psychological aggression, physical assault, and engagement. The inclusion of maternal parenting behaviors does little to attenuate the negative association between chronic maternal depression and children's outcomes. Across all outcomes except for withdrawn behaviors, children of chronically depressed mothers have worse behavior than their counterparts with never depressed mothers. Depending on the outcome, the sizes of the coefficients range from about one-fifth to one-fourth of a standard deviation. In predicting anxious/depressed and ADHD behaviors, the consequences of transitory depression are completely attenuated once maternal parenting behaviors are taken into account. However, maternal parenting behaviors do not completely attenuate the negative consequences of transitory maternal depression for children's aggressive and ODD behaviors. For example, when children have mothers who develop depression over time, compared to children of never depressed mothers, children have worse aggressive (0.115, $p < 0.05$) and ODD behaviors (0.134, $p < 0.05$). Taken together, these results suggest that maternal parenting behaviors attenuate the consequences of transitory but not chronic depression, though the magnitude of this attenuation depends on the outcome.

Discussion

In Chapter 4, I established a strong, robust link between maternal depression and children's behavioral outcomes. In this chapter, I use data from the Fragile Families and Child Wellbeing survey to extend these findings. I examine how maternal parenting

behaviors may be one pathway through which depressed mothers transmit disadvantages to their children. To begin with, I find that depressed mothers and non-depressed mothers differentially practice some aspects of parenting. Even after taking into account of a host of individual-level characteristics that may be associated with depression or parenting, maternal depression at 12 months post-partum is associated with greater reports of parenting stress and neglect. This is consistent with prior research that suggests depression leads to more parenting stress and more neglectful behaviors (Abidin 1990; Crnic and Acevado 1995; Egami, Ford, Greenfield, and Crum 1996; Tyler, Allison, and Winsler 2006). As discussed earlier, these analyses control for some factors that may be endogenous to depression (i.e., maternal employment), so it is likely that the magnitude of this association is under-estimated.

On the other hand, maternal depression is not independently associated with reports of psychological aggression, physical discipline, or engagement. These findings are contrary to theoretical expectations that depression impairs parenting (Downey and Coyne 1990). These contradictory findings may arise for several reasons. First, unlike the large body of empirical research that links depression to parenting stress and neglect, there is little research that examines the influence of depression on these three measures of parenting. For example, though psychological aggression and physical assault are established measures of parental discipline, to my knowledge, there are no empirical tests of the extent to which depression is associated with these measures. Thus, it may be that maternal depression influences some aspects of parenting more strongly than others. Additionally, it is also possible that the lack of a direct link between maternal depression

and some aspects of parenting behaviors results from the two-year time difference between survey waves. Indeed, when maternal depression and parenting behaviors are measured temporally close to one another, the link between the two is strong and consistent across outcomes. Finally, differences may arise because the rich nature of the Fragile Families data allows me to include a host of covariates that are not available in other surveys.

Additionally, I find little evidence that the association between maternal depression and parenting behaviors varies by race, socioeconomic status, or parents' relationship status at birth. There is little literature that considers factors that may moderate the association between maternal depression and parenting, though I suspected that this association would be stronger for groups that are more disadvantaged. I anticipated, for example, that being depressed would be more detrimental to the parenting behaviors of mothers with less education than their more highly educated counterparts. However, the analyses do not support this hypothesis. Instead, they suggest that depression, by and large, is equally impairing for white mothers and minority mothers, mothers with lower socioeconomic status and mothers with higher socioeconomic status, and married mothers and unmarried mothers. It may be that differences by race, socioeconomic status, and relationship status do not appear because of the relatively disadvantaged nature of the sample. Compared to other nationally representative surveys, for example, there is less variation in respondents' household income.

Finally, when mothers report depression at the 12-month wave, maternal parenting behaviors play an important role in attenuating the negative consequences for

children's behavioral outcomes. This holds true for all outcomes except for ADHD behaviors, which is consistent with research that suggests a strong genetic component to ADHD (Sprich et al. 2000). Thus, it may be that environmental factors play a less important role in children's development and maintenance of these behaviors. Additionally, parenting behaviors attenuate the consequences of transitory but not chronic maternal depression. When mothers experience depression that does not persist across multiple years, children's behavior may not suffer if their mothers exhibit parenting behaviors similar to mothers who are never depressed. When mothers experience chronic depression, though, parenting behaviors do not attenuate the negative implications for children. This research directly supports the idea that children of depressed parents may experience worse outcomes because their caregivers have a limited capacity to parent. This is important, as the mechanisms through which depression affects children are generally unexplored (Goodman and Gotlib 2002; for an exception, see Kiernan and Huerta 2008).

Furthermore, most aspects of parenting are independently associated with children's behaviors. This research is consistent with past literature that suggests parenting behaviors such as neglect (Hildyard and Wolfe 2002; Tyler et al. 2006), parenting stress (Anthony et al. 2005; Crnic, Gaze, and Hoffman 2005), and discipline (Lyons-Ruth, Lyubchik, Wolfe, and Bronfman 2002) matter for children's outcomes.

The analyses presented in this chapter suffer from additional limitations than those discussed in prior chapters. To begin with, the measures of maternal parenting behaviors are not exhaustive of all types of behaviors that may be related to maternal

depression or children's outcomes. Also, the inter-item correlation for some of these indicators is relatively low. However, all of these indicators come from established scales and are important predictors of children's outcomes. Second, the time-ordering of the variables suggest that maternal depression when their children are about 12 months old is associated with maternal parenting behaviors when their children are about 30 months old, but it is likely parenting also influences depression. Although parenting stress is relatively stable over time (Crnic et al. 2005), high levels of parenting stress, for example, may cause an onset or recurrence of depression. It is also possible that the mechanisms might influence each other (Tyler et al. 2006).

By using a representative sample of new parents and their children, these findings extend prior research on the consequences of maternal depression for maternal parenting behaviors and children's outcomes. Findings suggest that both maternal depression and maternal parenting behaviors should be taken into account when predicting behavioral outcomes in 36-month-old children. The link between maternal depression and children's outcomes, particularly maternal depression that is transitory, is not direct, and instead works through maternal parenting behaviors. These findings have important implications for treatment and intervention programs for depressed mothers. One way to ameliorate some of the disadvantages faced by young children of depressed mothers may be to target various aspects of parenting.

CHAPTER SIX:

MATERNAL DEPRESSION AND CHILDREN'S BEHAVIORAL OUTCOMES: PARTNER RELATIONSHIP QUALITY AS A MECHANISM OF RISK

In the prior chapter, I established that the link between maternal depression and children's outcomes may not be a direct one. Instead, maternal parenting behaviors are one pathway through which depressed mothers transmit disadvantages to their children. When mothers are depressed, they are likely to report higher levels of parenting stress and more neglectful behaviors than their non-depressed counterparts, which, in turn, are associated more behavioral problems in children. It is likely that parenting behaviors are not the only mechanism that links maternal depression to negative outcomes in children and, indeed, theoretical formulations suggest there may be others. As discussed in Chapter 2, relationship quality between parents has received a great deal of attention as a potential mediating factor (Downey and Coyne 1990; Goodman and Gotlib 1999). However, there have been few empirical examinations of this.

Research Questions

Thus, this chapter addresses four research questions. First, what is the association between maternal Major Depressive Disorder (MDD) and maternal reports of relationship quality with her current romantic partner, including supportive behaviors, hostile behaviors, shared responsibility in parenting, and cooperation in parenting? I expect that both chronic maternal depression and transitory maternal depression will be associated

with less favorable reports of all four aspects of relationship quality. I expect these associations to persist once I control for a host of individual-level characteristics that may be correlated with depression or relationship quality.

Second, do the consequences of maternal depression for relationship quality vary by race, socioeconomic status, and relationship status of the parents? Unfortunately, similar to the association between maternal depression and parenting behaviors, this topic has been rarely explored with a representative, diverse sample. Though there is little empirical research from which to draw upon, I hypothesize that the association between maternal depression and relationship quality will be stronger for groups that are more disadvantaged. For example, I expect that maternal depression is more strongly related to relationship quality for minority mothers and mothers with less education and income, compared with white mothers and mothers with higher levels of socioeconomic status. It is unclear whether relationship status will buffer individuals from the potentially negative consequences of depression or exacerbate the consequences. On the one hand, the consequences of maternal depression may be more severe for mothers in a relationship with the biological father of their child than for mothers in a relationship with another man. The majority of these parents are living together, and depression may pose additional, unique challenges that are not experienced when parents live apart. The depressed individual, for example, may be hostile or withdrawn, and this behavior may be only consequential if parents spend a substantial amount of time with one another. Additionally, when only one partner is depressed, the non-depressed partner may be unsure about how to interact with the depressed individual, which may create additional

conflict. On the other hand, the consequences of maternal depression may be stronger for mothers in a relationship with someone other than the child's father or for mothers not in a romantic relationship, as these subgroups of mothers are generally more disadvantaged than their counterparts in a romantic relationship with their child's biological father.

Third, to what extent do indicators of relationship quality, including supportive behaviors, hostile behaviors, shared responsibility in parenting, and cooperation in parenting, mediate the negative association between maternal depression and children's behavior at the beginning of the life course? I expect that these four aspects of partner relationships will ameliorate the disadvantages faced by children of depressed mothers. I expect that once these four indicators of relationship quality are taken into account, children with depressed mothers will have behavioral outcomes similar to children with non-depressed mothers. Furthermore, I expect the two measures of co-parenting (shared responsibility in parenting and cooperation in parenting) will most strongly attenuate the association between maternal depression and children's behavior, as the way parents work together in joint childrearing tasks is more directly related to the child than the other two indicators of relationship quality (supportive behaviors and hostile behaviors).

Finally, do indicators of relationship quality, including supportive behaviors, hostile behaviors, shared responsibility in parenting, and cooperation in parenting, differentially attenuate the negative consequences of chronic maternal depression and transitory maternal depression? In line with research that finds particularly detrimental consequences of chronic maternal depression, I expect that relationship quality will play a less substantial role in attenuating the consequences of chronic depression than

transitory depression. Children with chronically depressed mothers, compared to their counterparts with never depressed mothers, may exhibit worse behavior even when holding constant maternal reports of relationship quality.

Analytic Plan

In this chapter, I first present descriptive statistics to explore the bivariate association between maternal depression and maternal reports of relationship quality with her current partner. I compare differences in the means of relationship quality between mothers who are chronically depressed (report depression at both the 12-month and 30-month wave of data collection), mothers who develop depression over time (not depressed at the 12-month wave but depressed at the 30-month wave), and mothers with depression that remits over time (depressed at the 12-month wave but not depressed at the 30-month wave) to mothers who never report depression. The four indicators of relationship quality, which are measured at both the 12-month and 30-month waves, include the following: supportive behaviors, hostile behaviors, shared responsibility in parenting, and cooperation in parenting. Descriptive statistics for these variables are shown in Table 6.1. I use two-tailed T-tests to determine the statistical significance of the differences of the means between the groups.

[Table 6.1 about here.]

In the first set of multivariate analyses, in Table 6.3, I use ordinary least squared (OLS) regression models to predict the following mother-reported outcomes measured at the 30-month wave: supportive behaviors, hostile behaviors, shared responsibility in

parenting, and cooperation in parenting.[50] The first set of models includes only the main independent variable, maternal depression over time, which is included in all subsequent models. In this chapter, I look at maternal depression over time, as opposed to a static measure of depression at one point in time, to account for the dynamic nature of depression and the potentially reciprocal relationship between depression and relationship quality. The second set of models adds the following variables: mother's race, mother's immigrant status, mother's age, mother's age squared, mother's frequency of attendance at religious services, if the mother lived with both biological parents at age 15, mother's education, the log of mother's household income, mother's employment status, mother's homeowner status, parents' current relationship status, disagreements with child's father at baseline, companionship with child's father at baseline, mother's co-residence with a grandmother, the number of children in the household (including the focal child), paternal depression, mother's reports of parental depression, father's reports of parental depression, prenatal smoking, child gender, child born low birth weight, age of child, and the mother's report of the child's temperament at the 12-month wave.[51] The final set of models includes a lagged measure of the dependent variable (i.e., supportive behaviors at the 12-month wave for the models predicting supportive behaviors at the 30-month wave). As in prior empirical chapters, I control for child's temperament at the 12-month

[50] As discussed in Chapter 3, for the measures of supportive behaviors and hostile behaviors, if the mother is in a relationship with her child's father at the time of data collection, these measures refer to the mother's relationship with this partner. If the mother is not in relationship with the child's father, but has a new partner, these measures refer to her relationship with this new partner. Responses for mothers not in a relationship are coded as 0 (with a dummy variable indicating this in the multivariate analyses). For shared responsibility in parenting and cooperation in parenting, I use mother's responses about the biological father unless she is in a new relationship, in which case I use her responses about her new partner.

[51] Parents' relationship status is measured differently in this chapter than in other chapters. In this chapter, relationship status is indicated by a series of mutually exclusive dummy variables measured at the 30-month wave: partner is biological father (reference category), partner is social father, and no partner.

wave to control for potential reverse causality between maternal depression and children's outcomes. Similar to child temperament, other variables may be endogeneous to depression (i.e., maternal employment). If this is the case, the estimates of the association between maternal depression and children's outcomes are conservative. Additionally, including controls for depression of the children's grandparents may underestimate how maternal depression is associated with disadvantages among children. In Tables 6.4 through 6.7, I answer the chapter's second research question about variation in the association between maternal depression and relationship quality by subgroups. I use OLS regression models and predict maternal reports of relationship quality. The first set of models in each of these tables includes maternal depression over time and all covariates from the final models of Table 6.3. The second set of models in Table 6.4 includes the following interaction terms between maternal depression and maternal race: depression * white (reference category), depression * black, depression * Hispanic, and depression * other race. In Table 6.5, the second set of models includes an interaction between maternal depression and maternal education. I consider the interaction between maternal depression and maternal household income in Table 6.6, and the interaction between maternal depression and current relationship status in Table 6.7.

Beginning in Table 6.8, I turn my attention to the third research question and predict the following outcomes for 36-month-old children: anxious/depressed behaviors, withdrawn behaviors, Attention Deficit Hyperactivity Disorder (ADHD) behaviors, aggressive behaviors, and Oppositional Defiant Disorder (ODD) behaviors. The first set of models includes the main independent variable, maternal depression at the 12-month

wave, as well as the host of covariates included in prior models throughout this chapter. The next four models add in one of the four indicators of relationship quality. The final set of models includes maternal depression, maternal reports of relationship quality, and all covariates.

I answer the fourth research question in Table 6.9. The models presented in this table progress in a similar fashion as those in Table 6.8. However, in this table, I substitute the static indicator of depression for the series of mutually exclusive, exhaustive dummy variables that capture the dynamic nature of depression used in prior analyses.

As throughout most of this dissertation, I use Analytic Sample B (described in Chapter 3). For the sake of parsimony, most tables include only coefficients for the main independent variables of interest (maternal depression, paternal depression and, in the models predicting children's outcomes, maternal reports of relationship quality). In all multivariate analyses, few observations are missing control variables, and I impute these missing values using a regression-based approach in Stata.[52]

Bivariate Association between Maternal Major Depressive Disorder (MDD) and Maternal Reports of Relationship Quality

Table 6.2 shows that when mothers experience chronic or transitory depression, they report lower relationship quality with their romantic partner than their non-depressed

[52] As in Chapter 5, a substantial number of observations (21%) are missing data on paternal depression at the 12-month wave. As with the other variables that are missing much fewer observations, I impute these missing observations with a regression-based approach. In supplemental analyses, I do not impute paternal depression and instead include a dummy variable in the models to indicate if this variable is missing. The substantive findings do not change. Future analyses will address missing data with multiple imputation.

counterparts. For example, the mean of maternal reports of partner supportive behaviors at the 30-month wave is 1.714 when mothers are chronically depressed and 2.086 when mothers are never depressed ($p < 0.001$). The mean of maternal reports of partner hostile behaviors at the 30-month wave is 1.714 when mothers are chronically depressed and 2.209 when mothers are never depressed ($p < 0.001$). Keep in mind that the indicator for hostile behaviors is reverse coded, so that higher values indicate less hostile behaviors. Similarly, chronically depressed mothers report less shared responsibility in parenting (2.383 compared to 2.962, $p < 0.001$) and less cooperation in parenting (3.062 compared to 3.523, $p < 0.001$) than their never depressed counterparts. When maternal depression remits over time, the bivariate association between maternal depression and relationship quality is less strong, though still statistically significant.[53]

[Table 6.2 about here.]

Multivariate Analyses Predicting Maternal Reports of Relationship Quality, by Maternal Major Depressive Disorder (MDD)

Though the above bivariate tables suggest a strong relationship between maternal depression and the four indicators of relationship quality, it is likely that additional individual-level characteristics influence both maternal depression and maternal reports of relationship quality. Thus, in Table 6.3, I present a series of multivariate analyses that

[53] See Appendix 6.1 for the means, by maternal depression over time, of the individual items that comprise the four indicators of relationship quality.

attempt to isolate the relationship between depression and relationship quality. Across all models, higher values indicate better quality relationships.[54]

The first set of models shows results consistent with those presented in Table 6.2. Compared with mothers who never report depression, mothers who experience chronic or transitory depression report lower quality relationships with their romantic partner. These patterns generally persist when all individual-level characteristics are included in Model 2. When mothers are depressed at both points in time, or when they become depressed between the 12-month and 30-month waves, they report fewer supportive behaviors, more hostile behaviors, more shared responsibility in parenting, and more cooperation in parenting. These associations are weaker than the bivariate associations. When predicting supportive behaviors, for example, the coefficient for chronically depressed mothers is reduced by 71%. For mothers with depression that develops between the 12-month and 30-month waves, the coefficient decreases by 77%. Interestingly, when maternal depression remits between waves, mothers report supportive and hostile behaviors that are similar to their never depressed counterparts. However, on average, this group of mothers reports less shared responsibility in parenting and cooperation in parenting.

Including a lagged measure of the dependent variable, in Model 3, does little to alter the relationship between maternal depression and maternal reports of supportive behaviors or hostile behaviors. In this full model, for example, mothers who are depressed at both points in time report supportive behaviors at the 30-month wave that are 0.107 points worse than their never depressed counterparts ($p < 0.001$). Similarly,

[54] This table only includes the coefficients for maternal and paternal depression; full models can be found in Appendices 6.2 through 6.5.

when mothers become depressed between waves, they report supportive behaviors that are 0.097 points worse ($p < 0.001$).[55] Including lagged measures of shared responsibility in parenting and cooperation completely attenuates the coefficient for maternal depression that remits over time.

Though not the main focus of this analysis, paternal depression is not linked to maternal reports of relationship quality in the full models. Also, as expected, the lagged indicators of relationship quality are strongly linked to the dependent variables. A more supportive relationship at the 12-month wave, for example, is linked to a more supportive relationship at the 30-month wave (0.043, $p < 0.001$).

[Table 6.3 about here.]

Alternative Model Specifications

By and large, these findings are robust to additional model specifications similar to those presented in prior chapters. The association between maternal depression and all four indicators of relationship quality persist when the independent variable, maternal depression over time, is replaced with a more conservative indicator of depression or the probability of caseness, the probability the mother would have been diagnosed as having experienced MDD if she completed the Long-Form Composite International Diagnostic Interview (CIDI). There is, however, no link between maternal mental illness prior to

[55] This table includes mothers in a relationship with the child's biological father, mothers in a relationship with a new partner, and mothers not in a relationship. The models include dummy variables that indicate mothers' relationship status. In supplemental analyses, I ran these models separately for the following two subgroups: mothers in a relationship with the child's biological father and mothers in a relationship with a new partner. The results are substantively similar.

pregnancy and maternal reports of relationship quality. This is consistent with findings in prior chapters that suggest little consequences of pre-pregnancy maternal mental illness.

Additional Predictors of Maternal Reports of Relationship Quality

Though a full examination of additional predictors of maternal reports of relationship quality with her current partner is beyond the scope of this dissertation, the covariates included in the models are consistent with expectations. There are few differences by demographic characteristics such as race. Two exceptions persist. First, black mothers report higher levels of shared responsibility in parenting (0.140, $p < 0.01$) and cooperation in parenting (0.096, $p < 0.01$) than white mothers. Second, other race mothers report more hostile behaviors than their white counterparts (-0.080, $p < 0.01$), but more shared responsibility in parenting (0.202, $p < 0.05$). Holding other factors constant, immigrant mothers report less shared responsibility in parenting than native-born mothers (-0.128, $p < 0.05$).

Not surprisingly, mothers' current relationship status is one of the strongest predictors of relationship quality. Mothers in relationships with individuals other than the child's biological father report more supportive behaviors (0.178, $p < 0.001$) and less hostile behaviors (0.065, $p < 0.001$), compared to their counterparts in a relationship with their child's biological father. These same mothers, though, report less shared responsibility in parenting (-1.325, $p < 0.001$) and cooperation in parenting (-0.803, $p < 0.001$) from their partners, which suggests that these social fathers are less invested in their children than the biological fathers. It is possible that these mothers actually receive

the most assistance with co-parenting, as they may have help from both the child's biological father (that is not captured in these analyses) and their new partners. Additionally, prior reports of relationship quality are predictive of current reports of relationship quality. Mothers who report more disagreements with their partner at baseline also report less favorable relationship quality at the 30-month wave. Though not all mothers are in a relationship with the same partner at both points in time, this association persists across all four outcomes. Additionally, more companionship at baseline is associated with more favorable reports of both measures of co-parenting at the 30-month wave. Interestingly, holding other factors constant, having male children is associated with better quality relationships.

Variation in the Consequences of Maternal Major Depressive Disorder (MDD) for Maternal Reports of Relationship Quality by Race, Socioeconomic Status, and Relationship Status of Parents

The prior tables support theoretical expectations and empirical research about the consequences of depression for partner relationships. Like most research that links maternal depression to parenting, most research that examines the association between maternal depression and relationship quality is based on small, nonrepresentative samples of mothers. Thus, though theory suggests this association may vary among subgroups of the population, we know little about how race, socioeconomic status, or relationship status may alter this association. Therefore, in Tables 6.4 through 6.7, I examine whether

the association between maternal depression and maternal reports of relationship quality varies by these demographic characteristics.

To begin with, Table 6.4 considers whether maternal race moderates the association between maternal depression and maternal reports of relationship quality. The first set of models in this table includes all individual-level covariates included in Table 6.3. As discussed earlier, there is little racial variation in reports of supportive behaviors and hostile behaviors, but black mothers are more likely than white mothers to report their partners participate in childrearing. The interaction terms included in the second set of models show some race variation in the association between maternal depression and maternal reports of relationship quality. To begin with, when mothers are depressed at both waves, the association between maternal depression and hostile behaviors is stronger for Hispanic and other race mothers than for white mothers. Slightly different findings emerge when looking at mothers who become depressed between waves. Black and Hispanic mothers who become depressed between waves report greater supportiveness than their white counterparts with a similar depression trajectory. Taken together, this table suggests there is some racial variation in the association between maternal depression and maternal reports of supportive and hostile behaviors. The association between maternal depression and co-parenting, however, does not vary by race. Whether race buffers mothers from the negative consequences of depression or exacerbates the consequences of depression depends on both whether depression is chronic or temporary and the indicator of relationship quality.

[Table 6.4 about here.]

Tables 6.5 and 6.6 provide some evidence that the association between maternal depression and maternal reports of relationship quality varies by socioeconomic status. The first set of models in Table 6.5 show that mothers with a high school diploma or some college are less likely to report shared responsibility in parenting than their counterparts without a high school diploma, but that maternal education is not associated with other aspects of relationship quality. The second set of models in Table 6.5 includes interaction terms between maternal depression and maternal education. These models suggest that, for some indicators of relationship quality, education can be a protective factor for depressed mothers. For example, when mothers are chronically depressed and have some college education, they report their partner exhibits more supportive behaviors than their chronically depressed counterparts without a high school diploma. Similarly, chronically depressed mothers report more hostile behaviors in their partners if they do not have a high school diploma. For mothers who develop depression between the 12-month and 30-month waves, education beyond high school protects them from hostile behaviors. On the other hand, maternal education does not moderate the association between maternal depression and shared responsibility in parenting.

[Table 6.5 about here.]

The first set of models in Table 6.6 shows that maternal household income is not associated with maternal reports of relationship quality with her current partner. There is some evidence that income moderates the association between maternal depression and relationship quality, though the findings are inconsistent. For mothers whose depression develops over time, income is associated with less supportive behaviors. On the other

hand, when maternal depression remits over time, income is a protective factor for mothers' reports of shared responsibility in parenting. Taken together, the prior two tables suggest that education and household income, alters the relationship between maternal depression and maternal reports of relationship quality, but the association is a complicated one..

[Table 6.6 about here.]

Finally, Table 6.7 examines how the association between maternal depression and maternal reports of relationship quality varies by relationship status. As discussed earlier, mothers in relationships with someone other than their child's biological father report more supportive behaviors and less hostile behaviors than their counterparts in a relationship with their child's biological father, but less shared responsibility in parenting and cooperation in parenting. Also, across all four domains of relationship quality, mothers without partners report lower relationship quality. The interaction terms provide some evidence that the association between depression and relationship status varies by the mothers' current relationship status. Consistently depressed mothers report more supportive behaviors when they are in a relationship with someone other than the child's biological father. On the other hand, for depressed mothers, being in a relationship with their child's father is a protective factor for the co-parenting outcomes.

[Table 6.7 about here.]

Maternal Reports of Relationship Quality as a Mediator in the Association between Maternal Major Depressive Disorder (MDD) and Children's Behavioral Outcomes

In Chapter 4, I established that children, on average, suffer when their mothers are depressed. Holding constant a host of mother- and child-related characteristics, children with depressed mothers, on average, have less favorable behavioral outcomes compared with children of non-depressed mothers. The analyses presented in Chapter 5 suggest that some forms of maternal parenting behaviors can attenuate the negative association between maternal depression and children's outcomes. Maternal parenting behaviors, though, are likely not the only pathway that facilitates the transmission of disadvantage from mothers to children.

Relationship quality is one theoretically driven mechanism that may link mothers to children, and I explore this possibility in Table 6.8. The first panel in Table 6.8 predicts children's anxious/depressed behaviors. The first model estimates the association between maternal depression and children's outcomes, and includes the covariates from previous tables. Similar to results presented in Chapters 4 and 5, maternal depression at the 12-month wave is associated with worse anxious/depressed behaviors when children are 36 months old (0.117, $p < 0.05$).[56] Paternal depression does not independently predict children's anxious/depressed behaviors. The maternal depression coefficient only attenuates slightly when supportive behaviors are included in the model (0.114, $p < 0.05$). The other indicators of relationship quality – hostile behaviors, shared responsibility in parenting, and cooperation in parenting – also do little to reduce the coefficient for maternal depression. In fact, when all four indicators of relationship quality are included in the final model, maternal depression at the 12-month wave is still associated with

[56] Though substantively similar, the coefficients in the first models of this table differ slightly from results presented in the previous chapters. This is a result of the fact that the models presented in this chapter include several different covariates.

worse anxious/depressed behaviors among 36-month-old children (0.106, $p < 0.05$). Thus, taking into account relationship quality reduces the negative consequences of maternal depression, but only slightly. Children with a depressed mother have anxious/depressed scores more than one-tenth of a standard deviation worse than children without a depressed mother.

[Table 6.8 about here.]

I now turn my attention to the models that predict the other four outcomes. Unlike the models predicting anxious/depressed behaviors, taking into account maternal reports of relationship quality completely attenuates the negative consequences of maternal depression for children's aggressive (0.080, *n.s.*) and ODD (0.055, *n.s.*) behaviors when they are 36 months old. In fact, when independently included in the models, all indicators of relationship quality attenuate the maternal depression coefficient to nonsignificance.

Analyses predicting the final two behaviors, withdrawn behaviors and ADHD behaviors, are consistent with those presented in Chapters 4 and 5. First, maternal depression is not predictive of children's withdrawn behaviors. Also, even after taking into account maternal measures of relationship quality, maternal depression is a strong, consistent predictor of ADHD behaviors (0.171, $p < 0.01$). Thus, children with depressed mothers have ADHD behaviors nearly two-fifths of a standard deviation worse than their counterparts without depressed mothers.

Consistent with prior research, some indicators of relationship quality are independently linked to children's behaviors. In the full models, there is an association between maternal reports of her partner's supportive behaviors and children's behaviors.

For example, a one-unit increase in maternal reports of supportive behaviors is associated with more favorable aggressive behaviors in children (-0.283, $p < 0.001$). This association persists for all behavioral outcomes except for anxious/depressed behaviors. Interestingly, maternal reports of hostile behaviors are predictive of children's anxious/depressed behaviors (-0.235, $p < 0.05$). Additionally, cooperation in parenting but not shared responsibility in parenting is independently associated with children's outcomes. When mothers report greater cooperation in parenting from their partners, they are also likely to report that children have more favorable withdrawn (-0.092, $p < 0.01$), ADHD (-0.086, $p < 0.05$), aggressive (-0.150, $p < 0.01$) and ODD (-0.153, $p < 0.01$) behaviors.

Alternative Model Specifications

To test the robustness of these findings, I run a series of alternative model specifications similar to those from Chapter 5 (tables available upon request). First, I use a more conservative indicator of parental depression. Second, I substitute the dichotomous measure of parental depression for a continuous measure that indicates the probability of caseness. Third, I substitute depression at the 12-month wave with depression at the 30-month wave. Fourth, I substitute depression at the 12-month wave with a dummy variable indicating if the mother received any pre-pregnancy mental illness diagnosis. Finally, as in prior models that predict children's outcomes, I substitute the continuous measure of children's behavioral outcomes with a dichotomous measure

that indicates whether the child has behavioral problems at or above the 90th percentile in the population of children.

With respect to these alternative model specifications, the patterns are generally consistent with those presented in Table 6.8. There are two exceptions. First, when maternal depression and children's behavior are measured temporally closer, the indicators of relationship quality do not completely attenuate the negative consequences of maternal depression on children's aggressive and ODD behaviors. Also, the association between maternal depression and children's outcomes is stronger when depression is measured at the 30-month wave instead of the 12-month wave. This is consistent with the alternative model specifications presented in Chapter 5, which found that maternal parenting behaviors do not fully attenuate the negative consequences of maternal depression when maternal depression and children's behaviors are measured closer in time.

The second exception to the pattern of consistent findings occurs when using the clinical cutoff for children's behavioral problems instead of the continuous measure. In this instance, accounting for maternal reports of relationship quality does not completely attenuate the consequences of maternal depression for aggressive and ODD behaviors. Before taking into account relationship quality, children with a depressed mother have 1.706 times the odds of falling into the clinical range of aggressive behaviors ($p < 0.001$). The odds of falling into this clinical range is only slightly reduced after considering maternal reports of relationship quality (OR = 1.674, $p < 0.01$). The odds of falling into

the clinical range of ODD behaviors decreases from 1.896 ($p < 0.001$) to 1.822 ($p < 0.001$).

Variation in the Consequences of Maternal Reports of Relationship Quality for Children's Behavioral Outcomes by Race, Socioeconomic Status, and Relationship Status of Parents

It is beyond the scope of this dissertation to fully examine the pathways through which maternal reports of relationship quality are linked to children's outcomes, or to examine factors that may buffer children from the negative effects of relationship quality. It is possible that the association between maternal reports of relationship quality and children's outcomes varies across demographic factors such as race or socioeconomic status.[57] Though a full discussion is beyond the scope of this dissertation, analyses presented in the Appendices provide some support for the idea that race and household income may alter the association between relationship quality and children's outcomes, particularly children's anxious/depressed behaviors.

Maternal Reports of Relationship Quality as a Mediator in the Association between Maternal Major Depressive Disorder (MDD) Over Time and Children's Behavioral Outcomes

[57] I present these analyses in Appendices 6.6 through 6.8. Though a fruitful direction for future research, I do not explore potential variation in the association between maternal reports of relationship quality and children's behaviors by parents' current relationship status. For mothers not in a relationship at the time of the survey, there is no variation in the relationship quality thus, this would not yield meaningful findings.

The prior analyses show that maternal reports of relationship quality can attenuate the negative consequences of maternal depression when children are about 12 months old, though the strength of the attenuation depends on the outcome in question. Supplemental analyses, discussed above but not shown, suggest that maternal reports of relationship quality, similar to maternal parenting behaviors, do less to buffer the negative consequences of maternal depression when measured temporally closer to children's outcomes. Both sets of analyses are limited, though, because they rely on a static measure of depression and obscure the possibility that some mothers may move in and out of depressive episodes. Thus, in Table 6.9, I substitute the static indicator of depression with a series of mutually exclusive dummy variables that captures change over time in maternal depression.

The first set of models includes all covariates from prior tables, and the results are consistent with those presented in Chapter 4. Chronic depression is particularly detrimental for children. Transitory depression can also be detrimental for young children, though the degree to which transitory depression matters is contingent on its timing. When maternal depression develops over time (i.e., mothers are not depressed at the 12-month wave but are depressed at the 30-month wave), children have worse outcomes than their never depressed counterparts, but children appear to bounce back when maternal depression remits. These findings persist across all outcomes but withdrawn behaviors.

[Table 6.9 about here.]

The second set of models includes the four indicators of maternal reports of relationship quality: supportive behaviors, hostile behaviors, shared responsibility in parenting, and cooperation in parenting. The inclusion of these indicators of relationship quality does little to attenuate the negative association between chronic maternal depression and children's outcomes. Relationship quality also does little to attenuate the negative association between transitory maternal depression and children's outcomes. In all cases, the sizes of the maternal depression coefficients decrease, but the reductions are small. For example, between Models 1 and 2, the percentage change in the coefficient for chronic maternal depression ranges from 6% (anxious/depressed behaviors) to 17% (aggressive behaviors). The coefficients for depression that develops over time are more strongly attenuated, though children still suffer when their mothers become depressed at the 30-month wave.

Discussion

In this chapter, I extend the analyses presented in Chapter 5 by examining an additional mechanism that may underlie the association between maternal depression and children's outcomes: maternal reports of relationship quality with her current partner. To begin with, I find that chronic maternal depression or maternal depression that develops between the 12-month and 30-month waves of data collection is linked to four aspects of partner relationships: supportive behaviors, hostile behaviors, shared responsibility in parenting, and cooperation in parenting. After taking into account a host of individual-level characteristics, depressed mothers report less favorable relationships with their

current partner. The analyses control for several factors that might be endogenous to depression (i.e., maternal employment) and, thus, these estimates are likely conservative. Standardized coefficients suggest that maternal depression is more consequential for the two aspects of co-parenting, the ability of parents to work together as parents, than for the two indicators of relationship quality not directly related to parenting a shared child. Instead of parents coming together to raise their child even in the face of depression, depressed parents experience particular impairments in this aspect of their relationship. Perhaps the challenges associated with parenthood make it difficult to jointly deal with issues related to the child. Interestingly, when maternal depression remits between waves, relationship quality at the 30-month wave does not seem to suffer. This suggests that the consequences of maternal depression for relationship quality with one's partner are not long-lasting, and that relationships can recover once depression remits.

In these analyses, the association between maternal depression and relationship quality is consistent with past literature (Frech and Williams 2007; McLeod and Eckberg 1993; Segrin, Powell, Givertz, and Brackin 2003; Whisman, Uebelacker, and Weinstock 2004; Zlotnick, Kohn, Keitner, and Grotta 2000). In addition to looking at both positive and negative aspects of relationship quality as an outcome, my analyses add to this literature by considering how depression influences the co-parental relationship. This is important, as co-parenting is associated with more favorable behaviors in children (Carlson, McLanahan, and Brooks-Gunn 2008; Schoppe, Mangelsdorf, and Frosch 2001; Belsky and Hsieh 1998) and may even be more important than marital quality in predicting children's outcomes (McHale and Rasmussen 1998). Theory suggests that

depressed individuals have more hostile and withdrawn interactions with others (Coyne 1976), and it is possible that these negative interactions are driving the link between depression and partner relationships. Another explanation for this strong, consistent association may be that depressed mothers have a distorted view of their relationship with their partner; those who are depressed may perceive their relationships to be worse (regardless of the quality of these relationships).[58] Supplemental analyses, however, show that maternal depression is also associated with worse relationship quality according to the fathers.

Additionally, I find some evidence that the association between maternal depression and maternal reports of relationship quality varies by demographic factors. For example, there is some evidence that maternal depression is more detrimental to hostile behaviors for minority mothers compared with white mothers. There is additional evidence, though, that maternal depression is less detrimental to supportive behaviors for minority mothers. Taken together, this suggests that the processes linking depression to relationship quality may be different for different subgroups of the population and may depend on the specific outcome. Additionally, for chronically depressed mothers, education can be a protective factor. Mothers with lower socioeconomic status may suffer from stronger consequences of depression, as they may be unable to mobilize economic and social resources to protect them from these potentially debilitating consequences. They may be less able to seek treatment, and may have differential exposure to stressors

[58] Unlike in Chapter 5, where maternal depression was associated with only some aspects of maternal parenting behaviors, maternal depression is linked to all four indicators of relationship quality. This lends some support for the possibility that depressed mothers have distorted perspectives of their relationships, or it may be that all aspects of partner relationships are affected by depression.

that exacerbate the symptoms of depression. Depressed mothers with social fathers, compared to depressed mothers with biological fathers, report more supportive and less hostile behaviors, but less co-parenting from their partner. By definition, the relationships between mothers and social fathers are relatively new, and it may be that these couples are going through a honeymoon period in which they are able to maintain high-quality relationships with one another even in the face of maternal depression. When mothers are depressed, though, these non-biological fathers still distance themselves from getting involved with co-parenting tasks.

Finally, these analyses extend prior research by looking at one mechanism through which maternal depression is associated with less favorable outcomes among 36-month-old children. I find that four aspects of partner relationships – supportive behaviors, hostile behaviors, shared responsibility in parenting, and cooperation in parenting – completely attenuate the association between maternal depression at the 12-month wave and children's anxious/depressed and ADHD behaviors when they are 36 months old. Relationship quality also attenuates, though only slightly, the consequences of depression at the 12-month wave for children's aggressive and ODD behaviors. Additionally, relationship quality only slightly alters the consequences of chronic maternal depression, or maternal depression that develops over time, on children's outcomes. Taken together, these findings suggest that although maternal depression is detrimental to the partner relationship, children are not additionally harmed by this reduced relationship quality. This suggests that other mechanisms, such as genetics and parenting behaviors, as discussed in Chapter 5. In fact, when both maternal parenting

behaviors and maternal reports of relationship quality are included jointly in the models (analyses not presented), maternal parenting behaviors explain more of the variation in children's outcomes when mothers are either chronically or temporarily depressed.

The fact that relationship quality does little to attenuate the association between maternal depression and children's outcomes is consistent with other research (Brennan Hammen, Katz, and LeBrocque 2002; Papp, Cummings, and Schermerhon 2004; DuRocher and Cummings 2003). On the other hand, these findings go against results from two other studies (Miller, Cowan, Cowan, Hetherington, and Clingempeel; Leinonen, Solantaus, and Punamaki 2003), though the inconsistencies are likely due to the different ways in which relationship quality and children's outcomes are operationalized.

In terms of attenuating the disadvantages faced by children of depressed mothers, relationship quality between mothers and their partners matters little. However, some aspects of relationship quality – particularly supportive behaviors and cooperation in parenting – are independently associated with children's outcomes. When mothers report that their partner is supportive, or that their partner assists with childrearing tasks, children benefit. This is consistent with prior research linking parental relationship quality to children's outcomes (Cummings and Davies 1994; Grych and Fincham 1990; McHale, Johnson, and Sinclair 1999; Schoppe, Mangelsdorf, and Frosch 2001), and is innovative because it considers both positive and negative dimensions of the partner relationship, as well as aspects of the partner relationship that concern the child. It is, of course, possible that supportive behaviors or hostile behaviors influence co-parenting

(Katz and Gottman 1996; Belsky and Hsieh 1998), or that co-parenting influences these other aspects of relationship quality (Sobolewski and King 2005; McHale 1995), but a full examination of this association is beyond the scope of this dissertation.

Additional limitations exist. As discussed above, mothers report on both relationship quality and children's outcomes, and it is possible that depressed mothers are more likely to negatively distort their relationship with their children's fathers and their children's outcomes, as discussed in Chapter 4. Future research would benefit from a nuanced examination of paternal depression and paternal reports of relationship quality. Relationship quality, particularly the two indicators of co-parenting, may be a proxy for paternal involvement with children (Linnenberg 2007). Future research would also benefit from examining how father involvement modifies the association between maternal depression and children's behaviors. Multipartnered fertility, which is common among many of the unmarried couples, may also alter the couple relationship and child wellbeing (Monte 2007).

Regardless of these limitations, these analyses extend prior research on the consequences of maternal depression using a representative sample of new mothers and their children. These findings highlight that depression, a mental health problem that afflicts many individuals and families each year, may influence both relationships among parents and children's behavior. The fact that relationship quality and co-parenting only slightly attenuate the negative consequences of both chronic and transitory maternal depression and children's behavior suggests that depression is particularly debilitating for children. These findings may be particularly important to policymakers and clinicians.

Clinicians are in a particularly unique position to be able to intervene when parents are depressed, thus allowing these children to circumvent some of the long-lasting problems associated with behavioral problems in childhood.

CHAPTER SEVEN:

MATERNAL DEPRESSION AND CHILDREN'S BEHAVIORAL OUTCOMES: THE MODERATING INFLUENCE OF SOCIAL SUPPORT

The analyses documented in the previous chapters suggest that maternal depression can be particularly consequential for young children's behavioral outcomes. The consequences of both chronic and transitory maternal depression for children's behavioral outcomes are largely indirect, working at least partially through maternal parenting behaviors and maternal reports of relationship quality. Depressed mothers, for example, tend to engage in less favorable parenting behaviors such as parenting stress and neglect; it is these parenting behaviors, and not necessarily depression, that leads to less favorable outcomes in children. In fact, if depressed mothers exhibit parenting behaviors similar to their non-depressed counterparts, children's outcomes do not suffer. Additionally, maternal reports of relationship quality with her romantic partner also attenuate the consequences of maternal depression for children, though relationship quality is a less substantial part of the story than parenting behaviors.

Although maternal parenting behaviors and maternal reports of relationship quality prove to be an important component of the link between maternal depression and children's outcomes, it is likely that certain individual-level characteristics may buffer children from the negative consequences of maternal depression. In Chapter 4, I examined the extent to which the association between maternal depression and children's outcomes varied by demographic factors such as race, socioeconomic status, and parents'

relationship status at birth. These analyses provide some evidence that, indeed, some groups of children are more vulnerable to the negative consequences associated with maternal depression. On the other hand, in some cases, familial resources (such as having more highly educated mothers) may buffer children from the ramifications of maternal depression.

As discussed in Chapter 2, both theoretical perspectives and empirical research suggest that social support may buffer adults from various stressors. In this chapter, I conceptualize maternal depression as a stressor to the family system and examine how various types of social support may buffer children from the negative consequences that may arise from this stressor. In these analyses, social support is operationalized as follows (described in detail in Chapter 3): perceptions of instrumental support, perceptions of neighborhood support, receipt of financial support, and co-residence with a grandparent. Thus, the forms of social support explored in this chapter refer to support that can be garnered from someone other than a romantic partner. Though the indicators of relationship quality explored in Chapter 6 may also be considered forms of support, the measures used in this chapter are conceptually distinct from the four measures of relationship quality.

This examination of the linkages between maternal depression, social support, and children's outcomes is unique because it pays attention to both received and perceived social support. Though received support is an objective measure, this approach is limited because mothers' receipt of support is highly correlated with their need for support. Measures of received support cannot distinguish between two very different types of

mothers: those who need instrumental support from their networks but are not receiving it and those who have no need for support (Taylor 1990; Meadows 2009). Measuring perceived social support, which captures potential support that mothers can draw on when needs arise (Wethington and Kessler 1986), is an alternative way to measure support. Considering both received and perceived support may paint the most accurate, nuanced picture of mothers' support networks.

Research Questions

In this chapter, I examine four research questions. First, what is the association between maternal depression and social support, including perceptions of instrumental support, perceptions of neighborhood support, receipt of financial support, and co-residence with a grandparent? Theoretical perspectives and empirical research both suggest an ambiguous direction of causality; maternal depression and social support may reciprocally influence one another. On the one hand, depression in mothers may lead to a reduction in social support from friends, family members, and neighbors, as depressed individuals are more likely to have strained relationships that may erode support networks. Similarly, depressed mothers may simply have distorted, negative views about the availability of their friends, family members, and neighbors to assist in times of need. It is also possible that lacking social support may lead to depression, though this potential transactional relationship is beyond the scope of my analyses.

Second, how do race, socioeconomic status, and relationship status of the parents alter the association between maternal depression and social support? Because the

association between maternal depression and social support has rarely been explored with a large, representative sample, prior leads gives little clues from which to base my hypotheses. Despite this, I expect that the association between maternal depression and social support will be consistent other findings in this dissertation about the consequences of depression for families. Thus, I hypothesize that the association between maternal depression and social support will be stronger for groups that are more disadvantaged such as minority mothers, mothers with less education and less income, and unmarried mothers.

Third, to what extent does social support moderate the negative association between maternal depression and children's behavioral outcomes? Theoretical expectations suggest that social support, particularly perceived support, may buffer individuals and families from the negative consequences of maternal depression, a stressor to the family system. Thus, I hypothesize that when mothers report more social support, children of depressed mothers will have behavioral outcomes similar to their counterparts of non-depressed mothers.

Finally, to what extent do maternal reports of social support independently contribute to young children's behavioral outcomes? A growing body of literature has linked social support among mothers to economic and psychological well-being, and some evidence suggests that the benefits of social support extend to children as well. Thus, I expect that more perceived instrumental support, more perceived neighborhood support, more financial support, and co-residence with a grandparent will lead to more favorable behaviors in children.

Analytic Plan

In this chapter, I first present descriptive statistics to explore the bivariate association between maternal depression and maternal social support. I compare differences in the means of social support between mothers who are chronically depressed (report depression at both the 12-month and 30-month wave of data collection), mothers who develop depression over time (not depressed at the 12-month wave but depressed at the 30-month wave), and mothers with depression that remits over time (depressed at the 12-month wave but not depressed at the 30-month wave) to mothers who never report depression. Social support includes the following: perceptions of instrumental support, perceptions of neighborhood support, receipt of financial support, and grandparent in household.[59] Instrumental support, receipt of financial support, and grandparent in household are measured at both the 12-month and 30-month waves.[60] Neighborhood support comes from the In-Home survey administered when children were, on average, 36 months old. Descriptive statistics for these variables are shown in Table 7.1. For the continuous measures of social support, instrumental support and neighborhood support, I use two-tailed T-tests to determine the statistical significance of the difference of the means between the groups. For the dichotomous

[59] When asked about instrumental support, mothers were asked if they felt they could receive support from anyone; thus, mothers may have answered affirmatively if they felt they could receive support from a romantic partner. When asked about receipt of financial support, mothers were asked if they received financial assistance from anyone other than the child's father.

[60] Much prior research on intergenerational relationships focuses solely on grandmothers. Because grandfathers may also serve as a support system for families, and because a nontrivial percentage (7% at the 12-month wave and 6% at the 30-month wave) of children lives with grandfathers, I choose to combine grandmothers and grandfathers in these analyses. However, in supplemental analyses (not presented), I look at co-residence with a grandmother instead of co-residence with a grandparent. The results are substantively similar.

measures of social support, receipt of financial support and co-residence with a grandparent, I use chi-square tests.

[Table 7.1 about here.]

The first set of multivariate analyses, in Table 7.3, predicts social support. I use ordinary least squared (OLS) regression models to predict instrumental support and neighborhood support, and logistic regression models to predict receipt of financial support and co-residence with a grandparent. The first set of models includes only the main independent variables, a series of mutually exclusive and exhaustive dummy variables representing maternal depression over time: chronic depression, depression develops over time, depression remits over time, and never depressed (reference category). These variables are also included in the second and third set of models. Model 2 adds the following variables: mother's race, mother's immigrant status, mother's age, mother's age squared, mother's frequency of attendance at religious services, if the mother lived with both biological parents at age 15, mother's education, the log of mother's household income, mother's employment status, mother's homeowner status, parents' relationship status at birth, mother's co-residence with a grandmother, the number of children in the household (including the focal child), paternal depression, mother's reports of parental depression, father's reports of parental depression, prenatal smoking, child gender, child born low birth weight, age of child, and the mother's report of the child's temperament at the 12-month wave. The final set of models includes a lagged measure of the dependent variable (i.e., instrumental support at the 12-month

wave for the models predicting instrumental support at the 30-month wave).[61] As in prior empirical chapters, I control for child's temperament at the 12-month wave to control for potential reverse causality between maternal depression and children's outcomes. Similar to child temperament, other variables may be endogeneous to depression (i.e., maternal employment). If this is the case, the estimates of the association between maternal depression and children's outcomes are conservative. Additionally, including controls for depression of children's grandparents may underestimate how maternal depression is associated with disadvantages among children.

In Tables 7.4 through 7.7, I answer the chapter's second research question about variation in the association between maternal depression and relationship quality by subgroups. As in Table 7.3, I use OLS regression models to predict perceived instrumental support and perceived neighborhood support, and logistic regression models to predict financial support and co-residence with a grandparent. The first set of models in each of these tables includes maternal depression over time and all covariates from Table 7.3. The second set of models in Table 7.4 includes the following interaction terms between maternal depression and maternal race: depression * white (reference category), depression * black, depression * Hispanic, and depression * other race. In Table 7.5, the second set of models includes an interaction between maternal depression and maternal education. I consider the interaction between maternal depression and maternal household income in Table 7.6, and the interaction between maternal depression and baseline relationship status with the child's father in Table 7.7.

[61] Perceptions of neighborhood support was only asked at the 36-month In-Home interview; thus, the models predicting neighborhood support do not include a lagged indicator of this variable.

Beginning in Table 7.8, I turn my attention to the third and fourth research questions. I use OLS regression to predict the following outcomes for children: anxious/depressed, withdrawn, ADHD, aggressive, and ODD behaviors. The first set of models includes the main independent variable, maternal depression, as well as the host of covariates included in prior models throughout this chapter. In the second set of models, I include the four indicators of social support: instrumental support, neighborhood support, financial support, and co-residence with a grandparent. The third set of models includes interaction terms between maternal depression and each of the types of social support.

As throughout most of this dissertation, I use Analytic Sample B (as described in Chapter 3). For the sake of parsimony, most tables include only coefficients for the main independent variables of interest (maternal depression, paternal depression, and social support). In all multivariate analyses, few observations are missing control variables, and I impute these missing values using a regression-based approach in Stata.[62]

Bivariate Association between Maternal Major Depressive Disorder (MDD) and Social Support

The bivariate results presented in Table 7.2 suggest that maternal depression at either or both waves is correlated with reports of social support. When mothers are chronically depressed, compared to their counterparts who are never depressed, they

[62] As in prior chapters, a substantial number of observations (21%) are missing data on paternal depression at the 12-month wave. I impute these missing observations with the regression-based approach that I use to impute other missing data. In supplemental analyses, I do not impute paternal depression and instead include a dummy variable in the models to indicate if this variable is missing. The substantive findings do not change. Future analyses will use multiple imputation to deal with missing data.

report less instrumental support, less neighborhood support, and more received financial support. For example, the mean of perceived instrumental support at the 12-month wave is 0.554 for chronically depressed mothers and 0.715 for never depressed mothers ($p < 0.001$). This pattern is consistent when examining mothers' reports of perceived instrumental support at the 30-month wave.[63]

[Table 7.2 about here.]

On the other hand, at the 12-month wave, 55% of chronically depressed mothers report receiving financial support in the past year, while only 38% of the never depressed mothers report such financial assistance ($p < 0.001$). It is likely that friends and family members are reacting to mothers' need for support. Contrary to expectations, having a grandparent live in the household is generally not associated with maternal depression. The exception is that when mothers report their depression remits over time, compared to never depressed mothers, grandparents are more likely to live in the household at the 12-month wave.

Multivariate Analyses Predicting Social Support, by Maternal Major Depressive Disorder (MDD)

The bivariate associations between maternal depression over time and social support are limited because these analyses do not account for the possibility that these differences are simply artifacts of other variation between these families, such as socioeconomic status or family structure. Socioeconomic status, for example, may lead to

[63] See Appendix 7.1 for the means, by maternal depression over time, of the individual items that comprise the instrumental support and neighborhood support variables.

both depression and less instrumental support. Individuals with less education or financial resources, for example, may be more likely than others to have friends and family members simply cannot help out in times in need. Thus, Tables 7.3 presents multivariate analyses that predict social support at the 30-month wave, regressed on maternal depression over time.

The results presented in this table are generally consistent with the bivariate findings. When mothers are depressed, they generally report less instrumental support, less neighborhood support, and more financial support. In the case of instrumental support, mothers are most disadvantaged when they are depressed at both points in time. When mothers are chronically depressed, compared to mothers who are never depressed, they report 0.132 points less perceived instrumental support ($p < 0.001$). Moving from Model 1, the bivariate model, to Model 2, the model that includes all covariates, reduces the coefficient by 27%. The magnitude of this association is not small, as it is equivalent to almost one-half of a standard deviation in instrumental support. Mothers who experience only transitory depression also report less instrumental support than their counterparts who are never depressed. In the Model 2, mothers with depression that develops between the 12-month and 30-month waves report 0.077 points less instrumental support than mothers who are never depressed ($p < 0.001$), and mothers with depression that remits over time report 0.101 points less instrumental support ($p < 0.001$). The magnitude of these coefficients translates into, respectively, nearly one-fifth and one-fourth of a standard deviation. Model 3 includes a measure of instrumental support from the prior survey wave, which this further reduces the size of the maternal depression

coefficients. However, both chronic and transitory maternal depression is linked to instrumental support. Not surprisingly, prior instrumental support is strongly associated with current instrumental support (0.541, $p < 0.001$). The magnitude of this coefficient translates into more than 1.75 standard deviations.[64]

[Table 7.3 about here.]

The second panel examines perceived neighborhood support, and shows that chronic maternal depression is not associated with neighborhood support. On the other hand, depression at one point in time is associated with less perceived neighborhood support. When mothers develop depression between the 12-month and 30-month waves, they report 0.266 points less neighborhood support than their counterparts who are never depressed ($p < 0.001$). Likewise, when maternal depression remits across waves, mothers still report 0.197 points less neighborhood support ($p < 0.01$). This translates into about one-fourth of a standard deviation and one-fifth of a standard deviation, respectively. The fact that chronically depressed and never depressed mothers report similar neighborhood support is puzzling.

The third panel presents logistic regression models that predict financial support. For ease of interpretation, odds ratios are shown. Consistent with the results presented in Table 7.2, at the bivariate level, chronic maternal depression and depression that develops over time is linked to financial support. When all covariates are taken into account in Model 2, the odds ratios are attenuated yet remain statistically significant. Compared to their never depressed counterparts, mothers depressed at both points in time have 1.886

[64] The dependent variable in this panel is the index of instrumental support that includes mothers' reports of child care support, housing support, and small and large financial support. As shown in Appendix 7.7, maternal depression is associated with a reduced likelihood of all six individual measures of support.

times the odds of receiving financial support in the past year ($p < 0.001$). Mothers who become depressed between waves have 1.627 times the odds of receiving financial support compared to their never depressed counterparts ($p < 0.001$). The odds ratios are further reduced when controlling for financial support at the 12-month wave, but these associations are still statistically significant. Not surprisingly, receipt of financial support at the 12-month wave is strongly correlated with financial support at the 30-month wave (OR = 3.745, $p < 0.001$).

Finally, consistent with the bivariate findings, Table 7.3 shows that maternal depression is not predictive of co-residence with a grandparent. This is true in both the bivariate model and the second model that includes all control variables. However, in the third model that controls for co-residence with a grandparent at the 12-month wave, there is a negative association between depression that remits over time and co-residence with a grandparent. When depression among mothers remits over time, compared to when mothers are never depressed, they are 0.583 times less likely to co-reside with a grandparent at the 30-month wave ($p < 0.05$). Additionally, this model suggests continuity in co-residence with a grandparent over time. Mothers who live with at least one of the child's grandparents at the 12-month wave, compared to those who are not co-resident with a grandparent, are 7.933 times as likely to live with a grandparent at the 30-month wave ($p < 0.001$).

Though a full examination of the consequences of paternal depression for maternal social support is outside the scope of this analysis, the coefficients for paternal depression are presented in the tables. Fathers could influence maternal social support in

several ways. For example, depressed fathers may have negative or hostile interactions with their own family members or friends, or with the mother's family members or friends. In turn, these potential sources of support for the family may be less willing to provide assistance to the family. On the other hand, independent of her own mental health, a mother with a depressed partner may simply have a greater need for support than a mother without a depressed partner. The results suggest that, like maternal depression, paternal depression may erode maternal neighborhood support. In the final models, which hold constant maternal depression, paternal depression is associated with less neighborhood support among mothers (-0.170, $p < 0.05$). Additionally, even though maternal depression is not linked to being co-resident with a grandparent, mothers have 1.495 times the odds of receiving this type of support when the father is depressed ($p < 0.01$). Paternal depression is not associated with mothers' instrumental support or mothers' financial support.

Alternative Model Specifications

As in other chapters, I run these analyses with using alternative specifications of maternal depression. First, I substitute the measure of maternal depression over time with a static measure of depression measured at the 12-month wave. The subsequent supplemental analyses use a dummy variable indicating the presence of depression at the 30-month wave, a dummy variable indicating a conservative measure of depression, a continuous variable indicating probability of caseness, and a dummy variable indicating

if the mother received a mental illness diagnosis prior to her child's birth.[65] These alternative model specifications produce results that are substantively similar to those in Table 7.3. In nearly all cases, mothers report less instrumental support, more neighborhood support, and more financial support if they are depressed. The exception is that having a pre-pregnancy mental illness diagnosis is only associated with a greater receipt of financial support in the past year and is not predictive of instrumental support or neighborhood support. This is not surprising that pre-pregnancy mental illness diagnosis is not predictive of maternal parenting behaviors, maternal reports of relationship quality, or children's outcomes.

Additional Predictors of Social Support

A full discussion of additional predictors of social support is beyond the scope of this chapter, but the covariates generally work as expected.[66] Both minority and immigrant mothers report less instrumental support and less neighborhood support, and immigrant mothers report less financial support in the past year. Mothers who never attend religious services, compared to mothers who attend religious services at least once a week, report less instrumental support, less neighborhood support, and less financial support. Consistent with expectations, some aspects of socioeconomic status are correlated with support. All mothers with at least high school diploma, for example, report more instrumental support, and mothers with a college degree report more

[65] As described in other chapters, the probability of caseness indicates the probability that the respondent would have been diagnosed as having experienced a Major Depressive Episode (MDE) if they had completed the Long-Form Composite International Diagnostic Interview (CIDI).
[66] See the full models in Appendices 7.2 through 7.5.

neighborhood support than their counterparts who did not graduate high school. Further, being unmarried to the child's father at baseline is associated with less instrumental support and less neighborhood support. On the other hand, compared to married mothers, those mothers who are romantically involved but not living with their child's father and those mothers not involved with their child's father is associated with a greater odds of received support and a greater odds of being co-resident with a grandparent.

Variation in the Consequences of Maternal Major Depressive Disorder (MDD) for Social Support by Race, Socioeconomic Status, and Relationship Status of Parents

The prior tables support theoretical expectations and empirical research about how maternal depression may be linked to mothers' relationships with their broader family system, friendship networks, and community. Both chronic and transitory depression are linked to lower perceptions of instrumental support, lower neighborhood support, and greater financial support. Similar to the consequences of depression for maternal parenting behaviors and relationship quality, this association may vary among subgroups of the population.

In Table 7.4, I consider whether maternal race moderates the association between maternal depression and social support. The first set of models in this table includes all individual-level covariates included in Table 7.3. As discussed earlier, black, Hispanic and other race mothers report less perceived instrumental support than their white counterparts. Black mothers are particularly disadvantaged (-0.083, $p < 0.001$). Black and Hispanic mothers also report less neighborhood support than their white counterparts (-

0.322, $p < 0.001$ and -0.170, $p < 0.01$, respectively), and Hispanic mothers are more likely to report co-residing with a grandparent (OR = 1.536, $p < 0.01$).

[Table 7.4 about here.]

The interaction terms included in the second set of models suggest there is some racial variation in the consequences of maternal depression for the availability of mothers' support. For example, chronic or transitory depression is associated with greater perceptions of neighborhood support for black mothers compared with white mothers. Additionally, depression is particularly harmful to depressed mothers' financial support when they are black. This is only true when black mothers experience transitory depression (depression that develops between waves or depression that remits between waves), but not when they experience chronic depression.

The first set of models in Tables 7.5 and 7.6 shows that socioeconomic status is related to both perceived and received social support. According to Table 7.5, more highly educated mothers are more confident in their ability to garner instrumental support from their friends and family members. Similarly, mothers with a college degree, compared with their counterparts without a high school degree, report greater perceptions of neighborhood support. This table also presents some evidence that the association between depression and social support varies by socioeconomic status. For example, for those mothers who are chronically depressed, having a college degree can be a protective factor in mothers' neighborhood support. Additionally, chronically depressed mothers with a college degree, compared to chronically depressed mothers without a high school

degree, report more financial support. Thus, more highly educated mothers may have networks of friends and family members who can provide such support when necessary.

[Table 7.5 about here.]

Household income, independently of maternal education, is also associated with some types of social support. Mothers with more household income report more instrumental support. These mothers are also more likely to co-reside with a grandparent, though most likely have higher household incomes as a result of the grandparent's income. When mothers report more household income, the association between depression that develops over time and instrumental support is greater. Additionally, greater household income is associated with a stronger relationship between depression that remits over time and financial support.

[Table 7.6 about here.]

Finally, in Table 7.7, I examine whether the association between maternal depression and social support varies by mothers' baseline relationship status with the child's father. This table shows that baseline relationship status is indeed associated with social support. All groups of unmarried parents (including parents who were cohabiting at the child's birth, romantically involved but not living together, and not in a relationship) report less instrumental support and neighborhood support than their married counterparts. Additionally, compared to mothers married at their child's birth, mothers who were romantically involved but not living together and mothers who were not in a relationship with their child's father report greater financial assistance. These mothers are also more likely to co-reside with a grandparent. Despite the strong

association between relationship status and all forms of support, this table provides little evidence that the association between maternal depression and social support varies by relationship status.

[Table 7.7 about here.]

Variation in the Consequences of Maternal Major Depressive Disorder (MDD) for Children's Behavioral Outcomes by Social Support

In Chapter 4, I established that maternal depression when children are 12 months old is associated with less favorable anxious/depressed, ADHD, aggressive, and ODD behaviors when children are about 36 months old. Earlier in this chapter, I provided evidence that, in addition to influencing children's outcomes, maternal depression has implications for mothers' broader support networks. In particular, when mothers experience chronic or transitory depression, they are likely to report less perceived instrumental support and perceived neighborhood support. It is possible that social support moderates the negative association between maternal depression and behavioral outcomes in early childhood, and I explore this in Table 7.8.

The first panel in Table 7.8 predicts anxious/depressed behaviors, and is consistent with results from prior chapters. When mothers are depressed, children score 0.146 points worse in their anxious/depressed behaviors ($p < 0.01$), though paternal depression does not exert an independent influence on this outcome (0.095, *n.s.*). The maternal depression coefficient attenuates slightly when social support is included in the

next model, though maternal depression still remains a significant predictor of children's anxious/depressed behaviors (0.110, $p < 0.05$).

[Table 7.8 about here.]

The third model includes the following interaction terms between maternal depression and support: depression * instrumental support, depression * neighborhood support, depression * financial support, and depression * co-residence with a grandparent. None of these interaction terms reach statistical significance. Though not statistically significant, the direction of the coefficients provides evidence that some types of social support may buffer children from the negative consequences of maternal depression. For example, when depressed mothers report more instrumental support, compared to their counterparts with less instrumental support, children may be protected from the negative consequences of maternal depression.

With several noteworthy exceptions, a similar pattern emerges when examining other types of behavior in children. To begin with, social support attenuates the association between maternal depression and children's behavior. The magnitude of this attenuation varies by the outcome. When predicting withdrawn and ADHD behaviors, the inclusion of social support attenuates the coefficient for maternal depression only marginally. For example, when predicting ADHD behaviors, the coefficient decreases from 0.220 ($p < 0.001$) to 0.180 ($p < 0.001$). However, when predicting aggressive behaviors, including social support into the models completely reduces the maternal depression coefficient to nonsignificance (from 0.141, $p < 0.01$ to 0.100, *n.s.*). A similar story emerges for ODD behaviors, with the maternal depression coefficient decreasing

from 0.112 ($p < 0.05$) to 0.076 (*n.s.*). Thus, once social support is taken into account, children with depressed and non-depressed mothers have substantively similar aggressive and ODD behaviors.[67]

Finally, similar to the analyses predicting children's anxious/depressed behaviors, the interaction terms between maternal depression and social support suggest that social support does not buffer other aspects of children's behavior from the negative consequences of maternal depression. In fact, the models predicting ADHD, aggressive, and ODD behaviors show that the consequences of having a depressed mother are exacerbated if a grandparent lives in the household. Children who have a depressed mother and are co-resident with a grandparent have less favorable outcomes than their counterparts with a depressed mother who are not co-resident with a grandparent.

Across all outcomes, more instrumental support and neighborhood support are linked to more favorable behavior in children. For example, every one-unit increase in instrumental support is associated with a 0.273-point better anxious/depressed behavior score ($p < 0.001$). Similarly, every one-unit increase in neighborhood support is associated with a 0.068-point better anxious/depressed behavior score ($p < 0.001$). In fact, standardized coefficients (not shown) show that instrumental support and neighborhood support are more strongly associated with children's outcomes than maternal depression. Children of mothers who received financial support over the past year, compared to children of mothers who did not receive financial support, have less favorable aggressive

[67] In supplemental analyses (not presented), I separately added the four indicators of social support into the models. These analyses show that it perceived instrumental support and perceived neighborhood support most strongly attenuate the maternal depression coefficients.

and ODD behaviors. Finally, on average, being co-resident with a grandparent is not independently associated with behavior.

Alternative Model Specifications

To test the robustness of these findings, I run a series of alternative model specifications similar to those from Chapters 5 and 6 (tables available upon request). First, I use a more conservative indicator of parental depression. Second, I substitute the dichotomous measure of parental depression for a continuous measure that indicates the probability of caseness. Third, I substitute depression at the 12-month wave with depression at the 30-month wave. Fourth, I substitute depression at the 12-month wave with a dummy variable indicating if the mother received any pre-pregnancy mental illness diagnosis. Finally, as in prior models that predict children's outcomes, I substitute the continuous measure of children's behavioral outcomes with a dichotomous measure that indicates whether the child has behavioral problems at or above the 90^{th} percentile in the population of children.

By and large, the findings are robust to these alternative model specifications. There are three instances in which a different specification produces slightly different findings. To begin with, when the probability measure of depression is used instead of the continuous measure, the interaction terms between maternal depression and co-residence with a grandparent are stronger. Additionally, when depression is measured at the 30-month wave instead of the 12-month wave, greater levels of neighborhood support buffers children from having withdrawn problem behaviors. Finally, when mothers report

a pre-pregnancy mental illness diagnosis and the receipt of financial support in the past year, children are particularly disadvantaged.

Discussion

A large theoretical literature suggests that social support from friends or family members may buffer individuals from the negative consequences associated with stressors. In this chapter, I conceive of maternal depression as a stressor to the family environment, and examine the extent to which social support ameliorates some of the disadvantages faced by children of depressed mothers. I examine a host of indicators of social support, including perceptions of instrumental support, perceptions of neighborhood support, financial support, and co-residence with a grandparent. This is in contrast to much of the literature that examines only a narrowly defined measure of social support. These analyses are particularly useful because they consider both mothers' perceptions of their available support networks as well as actual support these mothers have received.

To begin with, I find that depressed mothers, compared to their non-depressed counterparts, are less likely to report instrumental support and neighborhood support. This association is strong and robust. This finding is consistent with the interactional theory of depression that suggests depressed mothers may alienate members of their support systems and be unable to rely on friends, family members, or neighbors for support (Coyne 1976). This is also consistent with empirical research that finds depressed individuals are more likely to lack support than their non-depressed counterparts (Thoits

1984; Lin, Ye and Ensel 1999). These findings, particularly about instrumental support, are also consistent with findings from Chapter 6 of this dissertation, as partner relationship quality may be conceptualized as an additional, distinct form of social support (Edin and Lein 1997).

On the other hand, I find that chronic or transitory depression among mothers is associated with greater financial support from friends and family members. This is contradictory to the findings about perceived support, but is consistent with the idea that receipt of support is highly correlated with need (Taylor 1990). Taken together, these findings suggest that depressed mothers may perceive difficulties in mobilizing their support networks but need more support than their non-depressed counterparts. Or it may be that depression simply causes mothers to have distorted, negative perceptions of the support they have available to them, regardless of actual potential support. If this is the case, these mothers may experience additional disadvantages because they are unable to activate instrumental support (i.e., child care) when needed.

Second, the analyses provide some evidence that depression is not an equal opportunity risk factor for eroding mothers' available social support. I find some evidence that the instrumental support of black mothers is particularly protected when they are depressed. Even in the face of depression, these mothers are more likely than their white counterparts to report instrumental support. This is consistent with qualitative evidence about the strength of kin networks in the black community, and suggests that these kin networks can buffer against hardship (Stack 1974). On the other hand, in the context of depression, black mothers report less financial support than their white

counterparts. Perhaps these women have friends and family members available to assist, particularly with non-monetary support such as child care, but are not able to provide large amounts of financial assistance.

Depression may erode mothers' social support networks, though these analyses suggest that, in the context of maternal depression, social support does little to protect children. In nearly all instances, the association between maternal depression and children's behavior does not vary by the availability of the family's social support. The one noteworthy exception is that children of depressed mothers seem to particularly suffer when they live in a three-generation household. In households with depressed mothers, being co-resident with a grandparent can exacerbate the negative consequences of maternal depression for children's ADHD, aggressive, and ODD behaviors.

This is contradictory to the theoretical expectation that grandparents may serve as a form of social support for parents and children. This is also contradictory to a host of literature that suggests that grandparents can lead to greater well-being among children or serve as a protective factor for families struggling with adversity (Gordon 1999; Bengston 2001). Instead, when the families experience hardship such as depression, grandparents may be a drain on family resources. Or, at best, the benefits associated with living in a three-generational household – such as having increased financial or emotional resources – are outweighed by the costs. One could imagine a scenario where a grandparent was forced to move into her daughter's residence due to medical problems that needed constant care. In this case, the grandparent may create additional stress and complication for the mother that, in turn, spills over to the child.

Another explanation for the particularly negative outcomes for children living with a depressed mother in a three-generational household may be that these families are particularly disadvantaged in ways that are unmeasured in the analyses. Perhaps these depressed mothers are particularly debilitated by their condition, or perhaps the family has experienced an unexpected trauma, either of which could negatively affect the child. In this case, the cumulative disadvantages experienced by the family may be too great for the grandparent to make much of a difference. Little is known about the correlates of living in a three-generation household, so prior research provides little guide regarding the extent to which this is true (for an exception, see DeLeire and Kalil 2005).

Although there is little evidence that social support can buffer children from the consequences of maternal depression, I find that social support does play a role in the association between maternal depression and children's outcomes. In fact, the negative association between maternal depression and children's aggressive and ODD behaviors disappears entirely once the four indicators of social support are taken into account. Thus, depression may erode mothers' perceptions of available support that, in turn, leads to reduced child well-being. When depressed mothers report having support similar to their non-depressed counterparts, their children's behavior does not suffer. Social support is a pathway that links maternal depression to only some behavioral outcomes, which provides evidence for the importance of examining multiple domains of child wellbeing.

Finally, across all outcomes, maternal perceptions of instrumental support and perceptions of neighborhood support are independently linked to children's behavior. This is consistent with a growing body of literature that links social support to adult and

child wellbeing (Harknett 2006; Ryan et al. 2009). Some researchers have posited that support networks may lead to better outcomes for children through more favorable parenting behaviors. Parents who report more available support, for example, are in better positions to garner parenting advice (Moncher 1995) and are more likely to be emotionally invested in their children (Bradley, Whiteside-Mansell, Brisby and Caldwell 1997). In terms of specific parenting behavior, mothers who are able to rely on friends and family members in times of need are more emotionally responsive to (Crnic, Greenberg, Ragozin, Robinson, and Basham 1983) and less punitive of (Colletta 1979) their children.

Though children of depressed mothers experience particular disadvantages if they live in a three-generational household, this type of family arrangement, on average, is not detrimental to children. This is contrary to some studies that suggest benefits to children living with grandparents (Gordon 1999; DeLeire and Kalil 2002; Aquilino 1996). These findings, however, are consistent with other research that suggests the benefits of living with a grandparent are restricted to certain groups. Children that are traditionally disadvantaged, such as minorities and children of single parents, may not experience benefits associated with this familial arrangement (Dunifon and Kowaleski-Jones 2002; McLanahan and Sandefur 1994). The pathways through which grandparents negatively influence the child are unclear, but it is possible that co-resident grandparents undermine parental authority or meddle in the couple relationship, which may lead to worse outcomes for children (Gordon, Chase-Lansdale, and Brooks-Gunn 2004; Bachman and Chase-Lansdale 2005).

In addition to the limitations discussed in Chapter 4, the analyses presented in this chapter suffer from some additional limitations. To begin with, though this research is innovative in that it considers both perceived and received support, the measures of social support are limited. The types of support are not exhaustive of all of the types of support that new parents may need. For example, these data do not include any direct measures of available emotional support.[68] Additionally, I do not examine institutional sources of support such as religious attendance.[69] The measure of received financial support is particularly simplistic, and the variation in the amount, frequency, or source of such support may be related to maternal depression and children's outcomes. It is also possible that these analyses omit variables that may be related to either depression or children's outcomes. For example, research has found neighborhood socioeconomic conditions to be related to instrumental support, and this may be particularly true for neighborhood support (Turney and Harknett forthcoming). Finally, as alluded to earlier, it is difficult to fully understand the complexities of the triadic relationship between grandparents, parents, and children. Grandparents were not interviewed themselves, and parents were only asked a limited set of questions about their own parents. We do not know the reason the child is living in a multi-generational household, and it is likely this reason is directly related to children's outcomes. Including more information about the providers of

[68] At the 60-month survey, mothers were asked two questions that may capture emotional support.
[69] Mothers' religious attendance is included as a control variable in the analyses. Like other forms of social support, mothers who attend religious services more frequently have children with better behavior, and it is likely that such religious attendance serves as a form of social support for mothers. In additional analyses not presented, I find that attendance at religious services does not moderate the negative association between maternal depression and children's behaviors.

support, or interviewing the providers themselves, may be an important direction for future data collection efforts.

Despite these limitations, these analyses provide a foundation for future research to examine the relationship between maternal depression, social support, and children's outcomes. Findings presented in this chapter show that children benefit when mothers report greater perceptions of social support from their friends, family members, and community. Though children, on average, benefit from social support, there is no evidence that children of depressed mothers benefit more than their counterparts of non-depressed mothers. In fact, one factor that has been conceptualized as a source of support for parents, living in a multi-generational household, may be particularly detrimental to children of depressed mothers. It is possible that these are a drain on family resources, or that such co-residence is a proxy for extreme disadvantage, and future research would benefit from a more nuanced understanding of this complex family structure arrangement. Because maternal depression is associated with a reduction in perceptions of social support, it may be that social support is, along with maternal parenting behaviors and partner relationship quality, a pathway through which depression is detrimental to young children.

CHAPTER EIGHT:

CONCLUSIONS

Over the past 40 years, life course theory has emerged as the dominant theoretical framework for understanding human development from infancy through adulthood. In accordance with one of the key tenants of life course theory, the life trajectories of parents and children are intertwined; thus, the wellbeing of parents can be linked to the wellbeing of their children (Elder, Johnson, and Crosnoe 2003). Life course theory also suggests that outcomes in early childhood are critical for understanding individuals' life trajectories. Children exposed to disadvantages in childhood, such as poverty, living with a single parent, or exposure to parental depression, are placed on a trajectory that, over time, may accumulate to additional disadvantages throughout the life course.

Thus, life course theory provides a strong grounding for understanding the link between parental depression and children's outcomes in infancy, childhood, adolescence, and adulthood. Indeed, empirical research consistently finds that children of depressed parents, particularly depressed mothers, are more likely than their counterparts with non-depressed mothers to have impaired social, behavioral, and cognitive outcomes throughout the life course (Dodge 1990; Downey and Coyne 1990; Goodman and Gotlib 2002; Phares and Compas 1992).

Given the emergence of the life course perspective, as well as the importance of early childhood outcomes in predicting future outcomes, recent years have been characterized by a growing body of literature that examines the consequences of parental

depression for the behavioral and cognitive outcomes of young children. This existing literature suffers from several limitations, however, and the analyses presented in this dissertation work to advance our understanding of how depressed parents transmit disadvantages to their children. To begin with, I look at the pathways through which maternal depression matters for children, as little is known about the factors that may mediate or moderate this association. I examine the following three contextual factors: maternal parenting behaviors, maternal reports of relationship quality with her current partner, and maternal social support. Though these three mechanisms are not exhaustive of all potential pathways, and may indeed be linked to one another, they provide a useful starting point for understanding the intergenerational transmission of disadvantage. Second, I advance our knowledge of child wellbeing by examining the dynamic nature of parental depression, and how children fare when their parents move in and out of depressive episodes. Third, I pay particular attention to understanding how social position influences the life course trajectories of parents and children. Finally, unlike most research that examines maternal depression and ignores paternal depression, I consider the emotional resources of both mothers and fathers.

In my analyses, I use data from the Fragile Families and Child Wellbeing survey (Fragile Families), a longitudinal study of nearly 5,000 new and mostly unmarried parents in 20 U.S. cities. I examine children's cognitive outcomes when they are 36 months old, measured by the Peabody Picture Vocabulary Test-Third Edition (PPVT-III). I also examine five behavioral outcomes that are also measured when the children are 36 months old: anxious/depressed behaviors, withdrawn behaviors, Attention Deficit

Hyperactivity Disorder (ADHD) behaviors, aggressive behaviors, and Oppositional Defiant Disorder (ODD) behaviors. Many limitations of prior empirical research on parental depression and children's outcomes exist due to data restrictions, and these data are ideal for addressing these gaps. These data include a rich set of covariates, allow for an examination of depression trajectories, and contain an over-representation of children from diverse social backgrounds. Additionally, data are collected from children's mothers and fathers and include commonly used measures of children's behavioral development.

Mechanisms

To begin with, and perhaps most importantly, the analyses presented in this dissertation add to a growing body of research on the consequences of parental depression for children by examining the pathways through which depression is linked to child wellbeing. Indeed, I find that maternal depression is associated less favorable anxious/depressed, ADHD, aggressive, and ODD behaviors in children. Contrary to expectations, however, maternal depression is not linked to less favorable withdrawn behaviors or worse cognitive outcomes in children.

In Chapter 5, I examine how maternal parenting behaviors – operationalized as parenting stress, neglect, psychological aggression, physical assault, and engagement – may attenuate the negative consequences of maternal depression. I find that when mothers report depression at the 12-month wave, maternal parenting behaviors play an important role in attenuating the negative consequences for children's behavioral outcomes. Parenting stress and neglect are particularly important in attenuating the

negative consequences of maternal depression. Another important story that emerges is that parenting behaviors attenuate the consequences of transitory but not chronic maternal depression. When mothers experience depression that does not persist across multiple years, children's behavior may not suffer if their mothers exhibit parenting behaviors similar to mothers who are never depressed. Children with chronically depressed mothers, however, still have disadvantaged outcomes when their mothers exhibit parenting behaviors similar to never depressed mothers.

In Chapter 6, I shift my attention from the dyadic mother-child relationship to the triadic relationship between mothers, fathers, and children. I consider how the mothers' relationship with her current romantic partner (often, but not always, the child's biological father) may attenuate the negative consequences of maternal depression. The four indicators of relationship quality include the following: supportive behaviors, hostile behaviors, shared responsibility in parenting, and cooperation in parenting. I find that relationship quality between the mother and her current partner only slightly attenuates the association between both chronic and transitory maternal depression and children's behavioral outcomes. Though maternal depression is strongly linked to relationship quality – with depressed mothers reporting less supportive relationships, more hostile relationships, less shared responsibility in parenting, and less cooperation in parenting – favorable relationship quality does not aid children when mothers are depressed.

Finally, I extend my analyses from the triadic relationship between mothers, fathers, and children to include maternal relationships with members of the broader family system and friends. I conceptualize maternal depression as a stressor on the family

system, and examine the extent to which social support may buffer children from the negative consequences of depression. Social support is operationalized as follows: perceptions of social support, perceptions of neighborhood support, financial support, and co-residence with a grandparent. Indeed, both chronic and transitory depression erodes mothers' social support from family, friends, and the community. However, these analyses provide scant evidence that maternal networks of social support protect children from the negative consequences of maternal depression. By and large, regardless of the amount of perceived or received support reported by the mother, children of depressed mothers have less favorable behavioral outcomes than their non-depressed counterparts. On the other hand, these analyses do provide evidence that co-residence with a grandparent may not be a form of support for children and instead be a source of stress, particularly when their mothers are depressed. When children's mothers are depressed and they live with a grandparent, children have particularly disadvantaged ADHD, aggressive, and ODD behaviors. Though these analyses provide no support for the idea that social support buffers children from the negative consequences associated with maternal depression, they lend support to the fact that the broader family environment may matter for predicting children's outcomes.

Timing

In addition to advancing our understanding about the pathways that may link maternal depression to children's behavior, this dissertation contributes to the literature on parental depression and children's outcomes by considering how the dynamic nature

of depression is associated with child wellbeing. By and large, analyses show that chronic depression and transitory depression are differentially linked to children's outcomes, with chronic depression being more detrimental to children than transitory depression. Further, when mothers move in and out of depressive episodes over time, the timing of this transitory depression matters in predicting children's outcomes. Maternal depression that is temporally close to the measurement of children's outcomes is more strongly linked to negative outcomes than maternal depression that occurred farther away from the measurement of children's outcomes. These findings are consistent with the life course perspective that timing of events may have particularly important consequences of future trajectories (Elder et al. 2003).

To begin with, in Chapter 4, I show that children are most at risk when their mothers are chronically depressed. Children of chronically depressed mothers, compared to their counterparts with never depressed mothers, have behavioral outcomes that are between one-fourth and one-fifth of a standard deviation worse than their counterparts with never depressed mothers. Additionally, children's behavior suffers when maternal depression develops over time, but children bounce back when maternal depression remits. On the other hand, chronic paternal depression is not linked to children's outcomes, which is a puzzling finding that deserves further attention. When fathers experience transitory depression, though, at either the 12-month or 30-month wave, children are likely to have worse anxious/depressed, aggressive, and ODD behaviors.

The analyses presented in the following empirical chapters also support the idea that the mechanisms through which chronic maternal depression leads to behavioral

outcomes may be different from the mechanisms through which transitory maternal depression leads to behavioral outcomes. As discussed earlier, the analyses presented in Chapter 5 show that maternal parenting behaviors attenuate the negative consequences of transitory depression but not chronic depression. In Chapter 6, I find that although relationship quality only slightly attenuates the consequences of either chronic or transitory maternal depression, relationship quality does more to ameliorate the consequences of transitory depression than chronic depression. Taken together, these findings suggest that chronic depression is particularly impairing to children. Transitory depression is also impairing, but the negative consequences are more likely to be ameliorated if mothers exhibit favorable parenting behaviors or report favorable relationships with their partner.

Social Context

Consistent with life course theory that posits individuals' trajectories are influenced by contextual conditions, this dissertation contributes to our knowledge about the association between parental depression and children's outcomes by considering the importance of social context. Throughout each of the chapters, I consider how the consequences of depression – for children and for aspects of the broader family system such as parenting, relationship quality, and social support – may vary by demographic characteristics such as race, socioeconomic status, and relationship status. The analyses lend support to the fact that the social contexts in which these families are embedded are particularly important in understanding the divergent trajectories of children of depressed

parents. Though the findings vary by the outcome in question, social disadvantages, by and large, play an important role in exacerbating the consequences of maternal depression.

For example, in Chapter 4, I provide some evidence that maternal depression is not an equal opportunity risk factor for children. In particular, children of depressed parents are most likely to suffer when their mothers have limited economic resources. Children of depressed, economically disadvantaged mothers have less favorable outcomes than their counterparts with depressed, economically advantaged mothers. It is possible, for example, that mothers with less economic strain may be able to use their resources to purchase high-quality child care or to seek medical treatment for their depression.

Findings presented in other chapters, particularly Chapters 6 and 7, provide evidence about the importance of race, socioeconomic status, and parents' relationship status in predicting aspects of the broader family context when mothers are depressed. In Chapter 6, for example, I show that the processes linking depression to relationship quality may be different for different racial subgroups of the population and may depend on the specific indicator of relationship quality. Additionally, in Chapter 7, I find that the instrumental support of black mothers is particularly protected, compared to that of white mothers, when they are depressed. Finally, the analyses presented in both Chapters 6 and 7 provide evidence that depression is less detrimental to maternal reports of relationship quality and maternal social support when they have higher levels of education.

Fathers and the Broader Family System

Finally, the analyses presented in this dissertation extend prior research on the consequences of parental depression for children they consider both maternal and parental depression. I pay most attention to paternal depression in Chapter 4, and find that, across all five behavioral outcomes, paternal depression is less consequential for children's behavioral outcomes than maternal depression. When I consider the potentially dynamic nature of paternal depression, I find that transitory but not chronic paternal depression is linked to children's anxious/depressed, aggressive, and ODD behaviors. The fact that chronic paternal depression is not linked to children's outcomes is a puzzling finding that warrants further attention.

In addition to the contributions discussed above, this dissertation expands our knowledge about the broader consequences of maternal depression. Consistent with theoretical perspectives and empirical research, both chronic and transitory maternal depression is associated with less favorable behavioral outcomes for children. But maternal depression has additional important implications for the broader family system including parenting behaviors, relationship quality a romantic partner, and social support networks.

In Chapter 5, for example, I find that depressed mothers report less favorable parenting behaviors than their non-depressed counterparts. Even after taking into account of a host of individual-level characteristics that may be associated with maternal depression or parenting behaviors, maternal depression at 12 months post-partum is associated with greater reports of parenting stress and neglect. Maternal depression is not

associated with other aspects of parenting, including psychological aggression, physical discipline, and engagement. Future research would benefit from a more thorough examination of why maternal depression is linked to some aspects of parenting but not others. Additionally, in Chapter 6, I find that when mothers are chronically depressed or develop depression over time, compared to their never depressed counterparts, they report less favorable relationship quality. This association is strongest for the two indicators of the co-parental relationship, shared responsibility in parenting and cooperation in parenting. Finally, the analyses presented in Chapter 7 show that mothers with chronic or transitory depression, compared to their counterparts who never report depression, perceive difficulties in mobilizing their support networks but have a greater need for support. Thus, though depressed mothers may indeed transmit disadvantages to their young children, these mothers face impairments in aspects of their own lives. The fact that depression in mothers may lead to less favorable parenting, worse relationship quality with one's partner, and less social support may have important consequences beyond children's outcomes and for the broader family system.

Future Research

The analyses presented in the prior chapters are informative about the consequences of maternal depression for children and for the broader family system. These findings extend prior research on the consequences of parental depression for children, and provide important guidelines for researchers who study parental depression, early childhood outcomes, or the relationship between the two. To begin with, the

analyses suggest that paternal depression is less important than maternal depression in predicting children's outcomes, but that contextual factors are important moderators of maternal depression. Thus, it may be less important for future research to take into account paternal depression and, instead, more important for future research to take into account other aspects of fathers and fatherhood. For example, economic resources are an important part of the story, so future research should not ignore how residential and nonresidential fathers provide economic support to their children.

Additionally, these findings paint a complicated picture of the association between maternal depression and children's outcomes. Some factors, such as favorable parenting behaviors, may ameliorate the negative consequences of maternal depression for children. Other factors, such as favorable reports of relationship quality, may do little to ameliorate the negative consequences of maternal depression for children. Both parenting behaviors and relationship quality, though, are strongly, independently associated with children's outcomes. Given this, future research on outcomes in early childhood must pay attention to indicators of the broader family context.

Finally, given the findings presented in this dissertation, researchers who study early childhood outcomes need to pay particular attention to the dynamic nature of childhood experiences. For example, I found that chronic maternal depression is more detrimental to children than transitory maternal depression. Additionally, in some cases, the mechanisms linking maternal depression to children's outcomes varied by whether the depression was chronic or transitory. If these data only included an indicator of maternal depression at the 12-month wave, I would have underestimated how children's

behavioral outcomes are influenced by maternal depression. On the other hand, if these data only included an indicator of maternal depression at the 30-month wave, I would have overestimated the consequences of maternal depression for children's behavioral outcomes. Likewise, if these data only included an indicator of maternal depression at one point in time, I would have underestimated or overestimated the consequences of maternal depression on the broader family system. The dynamic nature of maternal depression is important, and future research should make an effort to include such measures.

Though this dissertation is an important contribution to the growing literature on the association between parental depression and children's outcomes throughout the life course, there are several important directions for future research. To begin with, future research will benefit from paying more attention to paternal characteristics. Though paternal depression is less consequential for children than maternal depression, other paternal characteristics may matter for children. How do paternal parenting behaviors mediate or moderate the negative consequences of maternal depression? When fathers are depressed, are children better off if fathers are co-residential or live in a different household? What role does paternal substance use play in predicting children's outcomes? Additionally, future research will benefit from paying more attention to additional potential mechanisms. For example, to what extent do children's child care experiences mediate or moderate the consequences of parental depression? Finally, as depressed mothers may be biased reporters (of contextual circumstances and their children's behavioral outcomes), future research would benefit from relying on others

(such as teachers, clinicians, or fathers) to evaluate behavioral outcomes in young children.

Table 3.1. Descriptive Statistics of Mother, Father, and Child Characteristics Included in Analyses (Full Sample).

	Mothers					Fathers				
Variable	Valid N	Mean	S.D	Min	Max	Valid N	Mean	S.D	Min	Max
Children's developmental outcomes										
Anxious/depressed behaviors (ih)[a]	2,769	0.000	1.000	-1.384	4.271	---	---	---	---	---
Withdrawn behaviors (ih)	3,201	0.000	0.000	-0.941	5.654	---	---	---	---	---
ADHD behaviors (ih)[b]	2,793	0.000	0.000	-1.944	2.286	---	---	---	---	---
Aggressive behaviors (ih)	2,713	0.000	0.000	-1.693	3.627	---	---	---	---	---
ODD behaviors (ih)[b]	3,185	0.000	0.000	-1.477	3.033	---	---	---	---	---
PPVT score (ih)[c]	2,368	85.745	16.656	40.000	137.000	---	---	---	---	---
Parent characteristics										
Major Depressive Disorder (y1)	4,362	0.155	0.362	0.000	1.000	3,375	0.104	0.306	0.000	1.000
Major Depressive Disorder (y3)	4,221	0.206	0.404	0.000	1.000	3,291	0.143	0.350	0.000	1.000
Race (b)[d]										
White	4,886	0.211	0.408	0.000	1.000	4,870	0.184	0.387	0.000	1.000
Black	4,886	0.476	0.499	0.000	1.000	4,870	0.494	0.500	0.000	1.000
Hispanic	4,886	0.273	0.446	0.000	1.000	4,870	0.278	0.448	0.000	1.000
Other race	4,886	0.040	0.195	0.000	1.000	4,870	0.044	0.206	0.000	1.000
Immigrant (b)	4,885	0.170	0.376	0.000	1.000	3,822	0.183	0.386	0.000	1.000
Age (b)	4,894	25.276	6.038	15.000	43.000	3,830	27.925	7.163	15.000	53.000
Frequency of attendance at religious services (b)										
At least once a week	4,882	0.220	0.414	0.000	1.000	3,820	0.175	0.380	0.000	1.000
Several times a month	4,882	0.163	0.369	0.000	1.000	3,820	0.137	0.344	0.000	1.000
Several times a year or hardly ever	4,882	0.469	0.499	0.000	1.000	3,820	0.513	0.500	0.000	1.000
Never	4,882	0.149	0.356	0.000	1.000	3,820	0.175	0.380	0.000	1.000
Lived with both biological parents at age 15 (b)	4,855	0.433	0.495	0.000	1.000	3,805	0.468	0.499	0.000	1.000

(Table 3.1 continued)

Education (b)[d]										
Less than high school	4,892	0.323	0.468	0.000	1.000	4,696	0.316	0.465	0.000	1.000
High school diploma (includes GED)	4,892	0.273	0.446	0.000	1.000	4,696	0.343	0.475	0.000	1.000
Some college	4,892	0.290	0.454	0.000	1.000	4,696	0.233	0.422	0.000	1.000
College degree or higher	4,892	0.113	0.317	0.000	1.000	4,696	0.109	0.311	0.000	1.000
Log of household income (y1)	4,364	9.720	1.561	0.000	13.122	3,364	10.026	1.555	0.000	13.816
Employed (y1)	4,359	0.529	0.499	0.000	1.000	3,364	0.786	0.410	0.000	1.000
Homeowner (b)	4,860	0.342	0.475	0.000	1.000	3,799	0.377	0.485	0.000	1.000
Relationship status at birth (b)[d]										
Married	4,897	0.242	0.429	0.000	1.000	---	---	---	---	---
Cohabiting	4,897	0.364	0.481	0.000	1.000	---	---	---	---	---
Romantically involved but not living together	4,897	0.260	0.439	0.000	1.000	---	---	---	---	---
Not in a relationship	4,897	0.133	0.400	0.000	1.000	---	---	---	---	---
Grandmother in household (y1)	4,344	0.188	0.391	0.000	1.000	3,378	0.168	0.374	0.000	1.000
Number of children in household (y1)	4,343	2.305	1.333	0.000	1.000	3,237	1.807	1.408	0.000	10.000
Either of respondent's parents depressed (y3)	4,296	0.333	0.471	0.000	1.000	3,410	0.303	0.460	0.000	1.000
Prenatal smoking (b)	4,886	0.195	0.396	0.000	1.000	---	---	---	---	---
Generalized Anxiety Disorder (y1)	4,357	0.031	0.175	0.000	1.000	3,372	0.025	0.157	0.000	1.000
Drug or alcohol problem (y1)	4,359	0.006	0.077	0.000	1.000	3,366	0.021	0.143	0.000	1.000
Child characteristics										
Male (b)	4,897	0.524	0.499	0.000	1.000	---	---	---	---	---
Born low birth weight (b)	4,759	0.102	0.302	0.000	1.000	---	---	---	---	---
Age, in months (ih3)	3,273	38.564	3.270	31.300	53.400	---	---	---	---	---
Temperament (y1)	4,355	3.403	0.767	1.000	5.000	2,928	3.270	0.754	1.000	5.000

[a] b = baseline survey; y1 = 12-month survey; y3 = 30-month survey; ih = 36-month In-Home survey.

[b] ADHD: Attention Deficit Hyperactivity Disorder; ODD: Oppositional Defiant Disorder.

[c] Children administered the PPVT test by interviewer; mothers not asked directly about children's cognitive abilities.

[d] If data not available from fathers, responses from mothers are used.

Table 3.2. Descriptive Statistics of Mother, Father, and Child Characteristics Included in Analyses (Analytic Sample A).[a]

	Mothers					Fathers				
Variable	Valid N	Mean	S.D	Min	Max	Valid N	Mean	S.D	Min	Max
Children's developmental outcomes										
Anxious/depressed behaviors (ih)[b]	1,989	-0.044	0.973	-1.384	4.271	---	---	---	---	---
Withdrawn behaviors (ih)	1,989	-0.078	0.953	-0.941	4.712	---	---	---	---	---
ADHD behaviors (ih)[c]	1,989	-0.035	0.983	-1.944	2.286	---	---	---	---	---
Aggressive behaviors (ih)	1,989	-0.031	0.962	-1.693	3.627	---	---	---	---	---
ODD behaviors (ih)[c]	1,989	-0.055	0.967	-1.477	3.033	---	---	---	---	---
PPVT score (ih)[d]	1,496	86.507	16.945	40.000	137.000	---	---	---	---	---
Parent characteristics										
Major Depressive Disorder (y1)	1,989	0.151	0.358	0.000	1.000	1,989	0.110	0.320	0.000	1.000
Major Depressive Disorder (y3)	1,988	0.210	0.407	0.000	1.000	1,804	0.129	0.335	0.000	1.000
Race (b)[e]										
White	1,985	0.259	0.438	0.000	1.000	1,989	0.234	0.424	0.000	1.000
Black	1,985	0.474	0.499	0.000	1.000	1,989	0.497	0.500	0.000	1.000
Hispanic	1,985	0.229	0.191	0.000	1.000	1,989	0.230	0.421	0.000	1.000
Other race	1,985	0.038	0.191	0.000	1.000	1,989	0.038	0.192	0.000	1.000
Immigrant (b)	1,985	0.116	0.320	0.000	1.000	1,860	0.122	0.327	0.000	1.000
Age (b)	1,989	25.286	6.062	15.000	43.000	1,861	27.650	7.081	16.000	53.000
Frequency of attendance at religious services (b)										
At least once a week	1,987	0.223	0.416	0.000	1.000	1,859	0.183	0.387	0.000	1.000
Several times a month	1,987	0.162	0.368	0.000	1.000	1,859	0.129	0.334	0.000	1.000
Several times a year or hardly ever	1,987	0.482	0.500	0.000	1.000	1,859	0.521	0.500	0.000	1.000
Never	1,987	0.134	0.341	0.000	1.000	1,859	0.168	0.374	0.000	1.000
Lived with both biological parents at age 15 (b)	1,975	0.422	0.494	0.000	1.000	1,855	0.456	0.498	0.000	1.000

(Table 3.2 continued)

Education (b)[e]										
Less than high school	1,986	0.264	0.441	0.000	1.000	1,976	0.271	0.444	0.000	1.000
High school diploma (includes GED)	1,986	0.275	0.447	0.000	1.000	1,976	0.338	0.473	0.000	1.000
Some college	1,986	0.322	0.467	0.000	1.000	1,976	0.265	0.441	0.000	1.000
College degree or higher	1,986	0.138	0.345	0.000	1.000	1,976	0.127	0.333	0.000	1.000
Log of household income (y1)	1,989	9.894	1.310	0.000	13.122	1,989	10.000	1.663	0.000	13.816
Employed (y1)	1,988	0.543	0.498	0.000	1.000	1,984	0.784	0.411	0.000	1.000
Homeowner (b)	1,977	0.388	0.487	0.000	1.000	1,855	0.424	0.494	0.000	1.000
Relationship status at birth (b)[e]										
Married	1,989	0.283	0.450	0.000	1.000	---	---	---	---	---
Cohabiting	1,989	0.398	0.490	0.000	1.000	---	---	---	---	---
Romantically involved but not living together	1,989	0.256	0.436	0.000	1.000	---	---	---	---	---
Not in a relationship	1,989	0.063	0.244	0.000	1.000	---	---	---	---	---
Grandmother in household (y1)	1,983	0.167	0.373	0.000	1.000	1,989	0.166	0.372	0.000	1.000
Number of children in household (y1)	1,983	2.312	1.327	0.000	10.000	1,918	1.818	1.432	0.000	10.000
Either of respondent's parents depressed (y3)	1,989	0.326	0.469	0.000	1.000	1,824	0.285	0.452	0.000	1.000
Prenatal smoking (b)	1,987	0.191	0.393	0.000	1.000	---	---	---	---	---
Generalized Anxiety Disorder (y1)	1,987	0.034	0.181	0.000	1.000	1,988	0.025	0.157	0.000	1.000
Drug or alcohol problem (y1)	1,987	0.004	0.059	0.000	1.000	1,982	0.019	0.137	0.000	1.000
Child characteristics										
Male (b)	1,989	0.521	0.500	0.000	1.000	---	---	---	---	---
Born low birth weight (b)	1,930	0.097	0.296	0.000	1.000	---	---	---	---	---
Age, in months (ih3)	1,989	38.059	3.053	31.600	53.400	---	---	---	---	---
Temperament (y1)	1,988	3.254	0.751	1.000	5.000	1,975	3.254	0.743	1.000	5.000

[a] Analytic Sample A includes observations with a complete 12-month mother interview, 12-month father interview, and 36-month In-Home interview, as well as no missing data on children's behavioral outcomes and parental depression at the 12-month interview (N = 1,989).

[b] b = baseline survey; y1 = 12-month survey; y3 = 30-month survey; ih = 36-month In-Home survey.

[c] ADHD: Attention Deficit Hyperactivity Disorder; ODD: Oppositional Defiant Disorder.

[d] Children administered the PPVT test by interviewer; mothers not asked directly about children's cognitive abilities.

[e] If data not available from fathers, responses from mothers are used.

Table 3.3. Descriptive Statistics of Mother, Father, and Child Characteristics Included in Analyses (Analytic Sample B).[a]

	Mothers					Fathers				
Variable	Valid N	Mean	S.D	Min	Max	Valid N	Mean	S.D	Min	Max
Children's developmental outcomes										
Anxious/depressed behaviors (ih)[b]	2,529	-0.004	1.000	-1.384	4.271	---	---	---	---	---
Withdrawn behaviors (ih)	2,529	-0.042	0.994	-0.941	5.183	---	---	---	---	---
ADHD behaviors (ih)[c]	2,529	-0.006	0.999	-1.944	2.286	---	---	---	---	---
Aggressive behaviors (ih)	2,529	-0.004	0.998	-1.693	3.627	---	---	---	---	---
ODD behaviors (ih)[c]	2,529	-0.040	0.992	-1.477	3.033	---	---	---	---	---
PPVT score (ih)[d]	1,912	85.806	16.552	40.000	137.000	---	---	---	---	---
Parent characteristics										
Major Depressive Disorder (y1)	2,529	0.161	0.368	0.000	1.000	1,989	0.110	0.312	0.000	1.000
Major Depressive Disorder (y3)	2,528	0.214	0.410	0.000	1.000	2,005	0.134	0.341	0.000	1.000
Race (b)[e]										
White	2,525	0.233	0.423	0.000	1.000	2,518	0.206	0.405	0.000	1.000
Black	2,525	0.507	0.500	0.000	1.000	2,518	0.528	0.499	0.000	1.000
Hispanic	2,525	0.226	0.418	0.000	1.000	2,518	0.230	0.421	0.000	1.000
Other race	2,525	0.034	0.181	0.000	1.000	2,518	0.035	0.185	0.000	1.000
Immigrant (b)	2,524	0.115	0.318	0.000	1.000	2,096	0.124	0.330	0.000	1.000
Age (b)	2,529	25.094	6.033	15.000	43.000	2,100	27.614	7.139	15.000	53.000
Frequency of attendance at religious services (b)										
At least once a week	2,527	0.223	0.416	0.000	1.000	2,095	0.179	0.383	0.000	1.000
Several times a month	2,527	0.159	0.366	0.000	1.000	2,095	0.129	0.336	0.000	1.000
Several times a year or hardly ever	2,527	0.481	0.500	0.000	1.000	2,095	0.524	0.500	0.000	1.000
Never	2,527	0.137	0.343	0.000	1.000	2,095	0.168	0.374	0.000	1.000
Lived with both biological parents at age 15 (b)	2,510	0.399	0.490	0.000	1.000	2,093	0.444	0.947	0.000	1.000

(Table 3.3 continued)

Education (b)[e]										
Less than high school	2,526	0.284	0.451	0.000	1.000	2,457	0.292	0.455	0.000	1.000
High school diploma (includes GED)	2,526	0.283	0.451	0.000	1.000	2,457	0.353	0.478	0.000	1.000
Some college	2,526	0.314	0.464	0.000	1.000	2,457	0.243	0.429	0.000	1.000
College degree or higher	2,526	0.119	0.119	0.000	1.000	2,457	0.112	0.315	0.000	1.000
Log of household income (y1)	2,529	9.764	1.500	0.000	13.122	1,991	9.998	1.666	0.000	13.816
Employed (y1)	2,527	0.540	0.498	0.000	1.000	1,985	0.784	0.411	0.000	1.000
Homeowner (b)	2,516	0.373	0.484	0.000	1.000	2,091	0.417	0.493	0.000	1.000
Relationship status at birth (b)[e]										
Married	2,529	0.244	0.430	0.000	1.000	---	---	---	---	---
Cohabiting	2,529	0.354	0.478	0.000	1.000	---	---	---	---	---
Romantically involved but not living together	2,529	0.279	0.449	0.000	1.000	---	---	---	---	---
Not in a relationship	2,529	0.123	0.328	0.000	1.000	---	---	---	---	---
Grandmother in household (y1)	2,521	0.186	0.390	0.000	1.000	1,991	0.166	0.372	0.000	1.000
Number of children in household (y1)	2,520	2.329	1.327	0.000	10.000	1,920	1.817	1.432	0.000	10.000
Either of respondent's parents depressed (y3)	2,528	0.317	0.465	0.000	1.000	2,046	0.290	0.454	0.000	1.000
Prenatal smoking (b)	2,526	0.196	0.397	0.000	1.000	---	---	---	---	---
Generalized Anxiety Disorder (y1)	2,526	0.035	0.183	0.000	1.000	1,988	0.025	0.157	0.000	1.000
Drug or alcohol problem (y1)	2,526	0.004	0.066	0.000	1.000	1,982	0.019	0.137	0.000	1.000
Child characteristics										
Male (b)	2,529	0.525	0.499	0.000	1.000	---	---	---	---	---
Born low birth weight (b)	2,461	0.099	0.299	0.000	1.000	---	---	---	---	---
Age, in months (ih3)	2,529	38.132	3.136	31.300	53.400	---	---	---	---	---
Temperament (y1)	2,528	3.403	0.769	1.000	5.000	1,977	3.254	0.743	1.000	5.000

[a] Analytic Sample B includes observations with a complete 12-month mother interview and 36-month In-Home interview, as well as no missing data on children's behavioral outcomes and maternal depression at the 12-month interview (N = 2,529).

[b] b = baseline survey; y1 = 12-month survey; y3 = 30-month survey; ih = 36-month In-Home survey.

[c] ADHD: Attention Deficit Hyperactivity Disorder; ODD: Oppositional Defiant Disorder.

[d] Children administered the PPVT test by interviewer; mothers not asked directly about children's cognitive abilities.

[e] If data not available from fathers, responses from mothers are used.

Table 3.4. Statistically Significant Differences in Means of Variables Between Full Sample, Analytic Sample A, and Analytic Sample B.[a]

	Mothers			Fathers		
Variable	Full Sample vs. Analytic Sample A	Full Sample vs. Analytic Sample B	Analytic Sample A vs. Analytic Sample B	Full Sample vs. Analytic Sample A	Full Sample vs. Analytic Sample B	Analytic Sample A vs. Analytic Sample B
Children's developmental outcomes						
Anxious/depressed behaviors (ih)[b]				---	---	---
Withdrawn behaviors (ih)	***	*		---	---	---
ADHD behaviors (ih)[c]				---	---	---
Aggressive behaviors (ih)				---	---	---
ODD behaviors (ih)[c]	**	*		---	---	---
PPVT score (ih)[d]				---	---	---
Parent characteristics						
Major Depressive Disorder (y1)						
Major Depressive Disorder (y3)						
Race (b)[e]						
White	***	*	*	***	*	*
Black		*	*		**	*
Hispanic	***	***		***	***	
Other race						
Immigrant (b)	***	***		***	***	
Age (b)						
Frequency of attendance at religious services (b)						
At least once a week						
Several times a month						
Several times a year or hardly ever						

(Table 3.4 continued)

Never						
Lived with both biological parents at age 15 (b)		**				
Education (b)[e]						
Less than high school	***	***		***	*	
High school diploma (includes GED)						
Some college	**	*		**		
College degree or higher	**		**	*		
Log of household income (y1)	***		**			
Employed (y1)						
Homeowner (b)	***	**		***	**	
Relationship status at birth (b)[e]						
Married	***		**	---	---	---
Cohabiting	**		***	---	---	---
Romantically involved but not living together				---	---	---
Not in a relationship	***		***	---	---	---
Grandmother in household (y1)	*					
Number of children (y1)						
Either of respondent's parents depressed (y3)						
Prenatal smoking (b)				---	---	---
Generalized anxiety disorder (y1)						
Drug or alcohol problem (y1)						
Child characteristics						
Male (b)				---	---	---
Born low birth weight (b)				---	---	---
Age, in months (ih3)				---	---	---
Temperament (y1)	***		***			

[a] Full Sample includes all observations (N = 4,898). Analytic Sample A includes observations with a complete 12-month mother interview, 12-month father interview, and 36-month In-Home interview, as well as no missing data on children's behavioral outcomes and parental depression at the 12-month interview (N = 1,989). Analytic Sample B includes observations with a complete 12-month mother interview and 36-month In-Home interview, as well as no missing data on children's behavioral outcomes and maternal depression at the 12-month interview (N = 2,529).

[b] b = baseline survey; y1 = 12-month survey; y3 = 30-month survey; ih = 36-month In-Home survey.

[c] ADHD: Attention Deficit Hyperactivity Disorder; ODD: Oppositional Defiant Disorder.

[d] Children administered the PPVT test by interviewer; mothers not asked directly about children's cognitive abilities.

[e] If data not available from fathers, responses from mothers are used.

Table 4.1. Means of Children's Developmental Outcomes, by Parental Major Depressive Disorder (MDD) at 12-Month Wave.

Variable	Both parents depressed	Only mother depressed	Only father depressed	Neither depressed
Children's developmental outcomes				
Anxious/depressed behaviors	0.556 ***	0.193 ***	0.060 *	-0.114
Withdrawn behaviors	0.400 **	-0.021	-0.056	-0.102
ADHD behaviors[a]	0.516 ***	0.250 ***	0.032	-0.107
Aggressive behaviors	0.604 ***	0.201 ***	0.108 **	-0.105
ODD behaviors[a]	0.516 ***	0.141 ***	0.043 *	-0.117
PPVT score	88.919	85.580	85.250	86.733
N	46	255	172	1,516

Note: Symbols compare both parents depressed, only mother depressed, and only father depressed to neither depressed. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] ADHD: Attention Deficit Hyperactivity Disorder; ODD: Oppositional Defiant Disorder.

Table 4.2. Means of Children's Developmental Outcomes, by Parental Major Depressive Disorder (MDD) at 30-Month Wave.

Variable	Both parents depressed	Only mother depressed	Only father depressed	Neither depressed
Children's developmental outcomes				
Anxious/depressed behaviors	0.329 ***	0.269 ***	-0.007	-0.138
Withdrawn behaviors	0.136 *	0.045 **	-0.097	-0.126
ADHD behaviors[a]	0.262 **	0.298 ***	-0.004	-0.123
Aggressive behaviors	0.408 ***	0.307 ***	0.081 **	-0.147
ODD behaviors[a]	0.498 ***	0.228 ***	0.037 *	-0.156
PPVT score	86.934	85.219	84.109 *	87.316
N	70	303	163	1,267

Note: Symbols compare both parents depressed, only mother depressed, and only father depressed to neither depressed. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] ADHD: Attention Deficit Hyperactivity Disorder; ODD: Oppositional Defiant Disorder.

Table 4.3. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Parental Major Depressive Disorder (MDD) at 12-Month Wave.

	Anxious/depressed behaviors		Withdrawn behaviors		ADHD behaviors[a]		Aggressive behaviors		ODD behaviors[a]	
Variable	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Parental depression at 12-month wave										
Both parents depressed	0.671 ***	0.421 **	0.442 **	0.291 *	0.623 ***	0.440 **	0.709 ***	0.441 **	0.633 ***	0.379 **
	(0.014)	(0.135)	(0.142)	(0.137)	(0.146)	(0.001)	(0.142)	(0.139)	(0.144)	(0.142)
Only mother depressed	0.308 ***	0.136 *	0.082	-0.033	0.357 ***	0.209 **	0.305 ***	0.129 *	0.258 ***	0.115 *
	(0.065)	(0.062)	(0.064)	(0.062)	(0.066)	(0.067)	(0.064)	(0.064)	(0.065)	(0.065)
Only father depressed	0.174	0.015	0.047	-0.055	0.138	0.070	0.213 **	0.122	0.161 *	0.010
	(0.078)	(0.073)	(0.077)	(0.074)	(0.078)	(0.078)	(0.077)	(0.075)	(0.077)	(0.077)
Neither parent depressed (reference)	---	---	---	---	---	---	---	---	---	---
Intercept	-0.114	1.814	-0.102	1.611	-0.107	0.075	-0.105	0.836	-0.117	0.974
Adjusted R-squared	0.020	0.171	0.004	0.114	0.021	0.068	0.022	0.104	0.016	0.078
N	1,989	1,989	1,989	1,989	1,989	1,989	1,989	1,989	1,989	1,989

Note: Coefficients are unstandardized. Standard errors are in parentheses. Model 2 includes the following control variables: mother's race, mother's immigrant status, mother's age, mother's age squared, frequency of mother's attendance at religious services, if mother lived with both biological parents at age 15, mother's education, mother's household income (log), mother's employment status, mother's homeownership, mother's relationship status with child's father at birth, if mother is co-resident with a grandmother, number of children in mother's household, depression of one of mother's biological parents, depression of one of father's biological parents, prenatal smoking, child's gender, if the child was born low birth weight, child's age, and child's temperament at the 12-month wave. All coefficients are displayed in Appendices 4.2 through 4.6. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] ADHD: Attention Deficit Hyperactivity Disorder; ODD: Oppositional Defiant Disorder.

Table 4.4. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave.

	Anxious/depressed behaviors		Withdrawn behaviors		ADHD behaviors[a]		Aggressive behaviors		ODD behaviors[a]	
Variable	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Maternal depression	0.308 ***	0.138 **	0.152 **	0.047	0.348 ***	0.214 ***	0.320 ***	0.137 *	0.260 ***	0.109 *
at 12-month wave	(0.054)	(0.052)	(0.054)	(0.053)	(0.054)	(0.054)	(0.054)	(0.054)	(0.053)	(0.054)
Paternal depression		0.083		0.034		0.117		0.176 *		0.147 *
at 12-month wave		(0.068)		(0.069)		(0.071)		(0.070)		(0.070)
Intercept	-0.054	1.717	-0.067	1.342	-0.062	0.549	-0.055	1.131	-0.082	1.203
Adjusted R-squared	0.012	0.154	0.003	0.103	0.016	0.067	0.014	0.104	0.009	0.074
N	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529

Note: Coefficients are unstandardized. Standard errors are in parentheses. Model 2 includes the following control variables: mother's race, mother's immigrant status, mother's age, mother's age squared, frequency of mother's attendance at religious services, if mother lived with both biological parents at age 15, mother's education, mother's household income (log), mother's employment status, mother's homeownership, mother's relationship status with child's father at birth, if mother is co-resident with a grandmother, number of children in mother's household, depression of one of mother's biological parents, depression of one of father's biological parents, prenatal smoking, child's gender, if the child was born low birth weight, child's age, and child's temperament at the 12-month wave. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] ADHD: Attention Deficit Hyperactivity Disorder; ODD: Oppositional Defiant Disorder.

Table 4.5. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Maternal Major Depressive Disorder (MDD) Over Time.

	Anxious/depressed behaviors		Withdrawn behaviors		ADHD behaviors[a]		Aggressive behaviors		ODD behaviors[a]	
Variable	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Maternal depression over time[b]										
Chronic depression	0.493 ***	0.284 ***	0.270 ***	0.131	0.537 ***	0.367 ***	0.571 ***	0.341 ***	0.524 ***	0.332 ***
	(0.070)	(0.068)	(0.070)	(0.070)	(0.070)	(0.071)	(0.070)	(0.070)	(0.069)	(0.070)
Depression develops	0.278 ***	0.174 **	0.132 *	0.058	0.289 ***	0.208 ***	0.341 ***	0.234 ***	0.317 ***	0.238 ***
	(0.060)	(0.057)	(0.060)	(0.059)	(0.060)	(0.060)	(0.060)	(0.059)	(0.060)	(0.059)
Depression remits	0.176 *	0.039	0.053	-0.024	0.215 **	0.120	0.128	-0.007	0.044	-0.056
	(0.077)	(0.072)	(0.077)	(0.074)	(0.076)	(0.076)	(0.076)	(0.074)	(0.076)	(0.075)
No depression (reference)	---	---	---	---	---	---	---	---	---	---
							---			
Paternal depression		0.083		0.035		0.116		0.174 *		0.145 *
at 12-month wave		(0.068)		(0.069)		(0.071)		(0.069)		(0.070)
Intercept	-0.096	1.698	-0.088	1.337	-0.105	0.526	-0.106	1.101	-0.129	1.169
Adjusted R-squared	0.024	0.158	0.006	0.103	0.028	0.073	0.033	0.113	0.028	0.086
N	2,528	2,528	2,528	2,528	2,528	2,528	2,528	2,528	2,528	2,528

Note: Coefficients are unstandardized. Standard errors are in parentheses. Model 2 includes the following control variables: mother's race, mother's immigrant status, mother's age, mother's age squared, frequency of mother's attendance at religious services, if mother lived with both biological parents at age 15, mother's education, mother's household income (log), mother's employment status, mother's homeownership, mother's relationship status with child's father at birth, if mother is co-resident with a grandmother, number of children in mother's household, depression of one of mother's biological parents, depression of one of father's biological parents, prenatal smoking, child's gender, if the child was born low birth weight, child's age, and child's temperament at the 12-month wave. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] ADHD: Attention Deficit Hyperactivity Disorder; ODD: Oppositional Defiant Disorder.

[b] Chronic depression: mother depressed at both 12-month and 30-month waves; depression develops: mother not depressed at 12-month wave, depressed at 30-month wave; depression remits: mother depressed at 12-month wave, not depressed at 30-month wave; no depression: mother not depressed at 12-month or 30-month wave.

Table 4.6. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Maternal Major Depressive Disorder (MDD) Over Time (Restricted Sample).[a]

	Anxious/depressed behaviors		Withdrawn behaviors		ADHD behaviors[b]		Aggressive behaviors		ODD behaviors[b]	
Variable	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Maternal depression over time[c]										
Chronic depression	0.586 ***	0.356 ***	0.291 ***	0.138	0.589 ***	0.392 ***	0.636 ***	0.414 ***	0.578 ***	0.401 ***
	(0.084)	(0.081)	(0.082)	(0.081)	(0.084)	(0.086)	(0.082)	(0.082)	(0.082)	(0.084)
Depression develops	0.312 ***	0.183 **	0.116	0.018	0.312 ***	0.195 **	0.343 ***	0.213 **	0.316 ***	0.220 **
	(0.070)	(0.066)	(0.068)	(0.066)	(0.070)	(0.070)	(0.068)	(0.067)	(0.068)	(0.068)
Depression remits	0.200 *	0.068	0.001	-0.081	0.247 **	0.128	0.141	-0.013	0.077	-0.048
	(0.093)	(0.088)	(0.091)	(0.087)	(0.093)	(0.093)	(0.090)	(0.089)	(0.091)	(0.090)
No depression (reference)	---	---	---	---	---	---	---	---	---	---
Paternal depression at 12-month wave		0.073		0.002		0.101		0.141 *		0.113
		(0.070)		(0.070)		(0.075)		(0.071)		(0.073)
Intercept	-0.140	1.852	-0.123	1.455	-0.130	0.061	-0.132	0.675	-0.140	0.674
Adjusted R-squared	0.032	0.180	0.006	0.116	0.033	0.076	0.040	0.112	0.033	0.086
N	1,803	1,803	1,803	1,803	1,803	1,803	1,803	1,803	1,803	1,803

Note: Coefficients are unstandardized. Standard errors are in parentheses. Model 2 includes the following control variables: mother's race, mother's immigrant status, mother's age, mother's age squared, frequency of mother's attendance at religious services, if mother lived with both biological parents at age 15, mother's education, mother's household income (log), mother's employment status, mother's homeownership, mother's relationship status with child's father at birth, if mother is co-resident with a grandmother, number of children in mother's household, depression of one of mother's biological parents, depression of one of father's biological parents, prenatal smoking, child's gender, if the child was born low birth weight, child's age, and child's temperament at the 12-month wave. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] Restricted sample includes those observations in Analytic Sample B that have complete data on paternal depression at the 12-month and 30-month waves.

[b] ADHD: Attention Deficit Hyperactivity Disorder; ODD: Oppositional Defiant Disorder.

c Chronic depression: mother depressed at both 12-month and 30-month waves; depression develops: mother not depressed at 12-month wave, depressed at 30-month wave; depression remits: mother depressed at 12-month wave, not depressed at 30-month wave; no depression: mother not depressed at 12-month or 30-month wave.

Table 4.7. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Paternal Major Depressive Disorder (MDD) Over Time (Restricted Sample).[a]

	Anxious/depressed behaviors		Withdrawn behaviors		ADHD behaviors[b]		Aggressive behaviors		ODD behaviors[b]	
Variable	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Paternal depression over time[c]										
Chronic depression	0.124	-0.046	0.066	-0.025	0.141	0.047	0.248 *	0.119	0.276 *	0.172
	(0.112)	(0.105)	(0.108)	(0.104)	(0.112)	(0.111)	(0.109)	(0.106)	(0.109)	(0.108)
Depression develops	0.212 *	0.156 *	0.085	0.081	0.135	0.065	0.269 ***	0.188 *	0.271 ***	0.199 *
	(0.084)	(0.078)	(0.081)	(0.078)	(0.084)	(0.083)	(0.081)	(0.079)	(0.082)	(0.081)
Depression remits	0.384 ***	0.194 *	0.170	0.042	0.267 **	0.156	0.327 ***	0.200 *	0.218 *	0.118
	(0.097)	(0.090)	(0.093)	(0.090)	(0.097)	(0.060)	(0.094)	(0.092)	(0.094)	(0.093)
No depression (reference)	---	---	---	---	---	---	---	---	---	---
Maternal depression		0.183 **		0.033		0.230 ***		0.173 **		0.150 *
at 12-month wave		(0.062)		(0.062)		(0.066)		(0.063)		(0.064)
Intercept	-0.087	1.846	-0.105	1.443	-0.061	0.053	-0.082	0.657	-0.097	0.652
Adjusted R-squared	0.010	0.177	0.001	0.114	0.004	0.070	0.012	0.103	0.009	0.078
N	1,803	1,803	1,803	1,803	1,803	1,803	1,803	1,803	1,803	1,803

Note: Coefficients are unstandardized. Standard errors are in parentheses. Model 2 includes the following control variables: mother's race, mother's immigrant status, mother's age, mother's age squared, frequency of mother's attendance at religious services, if mother lived with both biological parents at age 15, mother's education, mother's household income (log), mother's employment status, mother's homeownership, mother's relationship status with child's father at birth, if mother is co-resident with a grandmother, number of children in mother's household, depression of one of mother's biological parents, depression of one of father's biological parents, prenatal smoking, child's gender, if the child was born low birth weight, child's age, and child's temperament at the 12-month wave. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] Restricted sample includes those observations in Analytic Sample B that have complete data on paternal depression at the 12-month and 30-month waves.

[b] ADHD: Attention Deficit Hyperactivity Disorder; ODD: Oppositional Defiant Disorder.

[c] Chronic depression: mother depressed at both 12-month and 30-month waves; depression develops: mother not depressed at 12-month wave, depressed at 30-month wave; depression remits: mother depressed at 12-month wave, not depressed at 30-month wave; no depression: mother not depressed at 12-month or 30-month wave.

Table 4.8. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave, with Interactions by Maternal Race.

	Anxious/depressed behaviors		Withdrawn behaviors		ADHD behaviors[a]		Aggressive behaviors		ODD behaviors[a]	
Variable	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Maternal depression	0.138 **	0.157	0.047	0.187	0.214 ***	0.228 *	0.137 *	0.170	0.109 *	0.216
at 12-month wave	(0.052)	(0.107)	(0.053)	(0.110)	(0.054)	(0.113)	(0.053)	(0.110)	(0.054)	(0.111)
Paternal depression	0.083	0.082	0.034	0.026	0.117	0.116	0.176 *	0.174 *	0.147 *	0.142 *
at 12-month wave	(0.068)	(0.068)	(0.069)	(0.070)	(0.071)	(0.071)	(0.070)	(0.070)	(0.070)	(0.071)
Race										
White (reference)	---	---	---	---	---	---	---	---	---	---
Black	0.107	0.110	0.028	0.052	0.073	0.078	0.021	-0.015	-0.162 **	-0.147 *
	(0.055)	(0.059)	(0.056)	(0.060)	(0.058)	(0.062)	(0.057)	(0.061)	(0.057)	(0.061)
Hispanic	0.147 *	0.151 *	0.113	0.144 *	0.070	0.075	0.101	0.025	-0.121	-0.076
	(0.064)	(0.068)	(0.065)	(0.070)	(0.067)	(0.071)	(0.065)	(0.070)	(0.066)	(0.071)
Other race	0.211	0.235	0.150	0.245 *	-0.013	-0.060	0.113	0.091	-0.008	-0.020
	(0.113)	(0.121)	(0.116)	(0.124)	(0.119)	(0.127)	(0.116)	(0.124)	(0.117)	(0.126)
Maternal depression * race interactions										
Depression * white (reference)		---		---		---		---		---
Depression * black		-0.019		-0.152		-0.030		-0.034		-0.092
		(0.127)		(0.130)		(0.133)		(0.130)		(0.131)
Depression * Hispanic		-0.018		-0.180		-0.038		-0.095		-0.284
		(0.151)		(0.155)		(0.158)		(0.155)		(0.157)
Depression * other race		-0.182		-0.709 *		0.371		0.181		0.118
		(0.331)		(0.338)		(0.347)		(0.340)		(0.343)
Intercept	1.717	1.711	1.342	1.303	0.549	0.547	1.131	1.126	1.203	1.183
Adjusted R-squared	0.154	0.153	0.103	0.104	0.067	0.067	0.104	0.103	0.074	0.075
N	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529

Note: Coefficients are unstandardized. Standard errors are in parentheses. All models include the following control variables: mother's immigrant status, mother's age, mother's age squared, frequency of mother's attendance at religious services, if mother lived with both biological parents at age 15, mother's education, mother's household income (log), mother's employment status, mother's homeownership, mother's relationship status with child's father at birth, if mother is co-resident with a grandmother, number of children in mother's household, depression of one of mother's biological parents, depression of one of father's biological parents, prenatal smoking, child's gender, if the child was born low birth weight, child's age, and child's temperament at the 12-month wave. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] ADHD: Attention Deficit Hyperactivity Disorder; ODD: Oppositional Defiant Disorder.

Table 4.9. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave, with Interactions by Maternal Education.

	Anxious/depressed behaviors		Withdrawn behaviors		ADHD behaviors[a]		Aggressive behaviors		ODD behaviors[a]	
Variable	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Maternal depression	0.138 **	0.295 **	0.047	0.224 *	0.214 ***	0.241 *	0.137 *	0.224 *	0.109 *	0.241 *
at 12-month wave	(0.052)	(0.091)	(0.053)	(0.094)	(0.054)	(0.096)	(0.053)	(0.094)	(0.054)	(0.095)
Paternal depression	0.083	0.084	0.034	0.033	0.117	0.117	0.176 *	0.175 *	0.147 *	0.145 *
at 12-month wave	(0.068)	(0.068)	(0.069)	(0.069)	(0.071)	(0.071)	(0.070)	(0.070)	(0.070)	(0.070)
Education										
Less than high school (reference)	---	---	---	---	---	---	---	---	---	---
High school diploma	-0.130 *	-0.087	-0.157 **	-0.124 *	0.003	0.007	0.003	0.029	0.022	0.054
(includes GED)	(0.052)	(0.056)	(0.053)	(0.057)	(0.054)	(0.059)	(0.053)	(0.058)	(0.054)	(0.058)
Some college	-0.268 ***	-0.234 ***	-0.325 ***	-0.272 ***	0.023	-0.030	-0.007	0.013	0.038	0.078
	(0.054)	(0.058)	(0.055)	(0.060)	(0.057)	(0.061)	(0.055)	(0.060)	(0.056)	(0.061)
College	-0.390 ***	-0.345 ***	-0.370 ***	-0.326 ***	-0.112	-0.100	-0.054	-0.037	0.033	0.051
	(0.083)	(0.086)	(0.085)	(0.088)	(0.087)	(0.091)	(0.086)	(0.089)	(0.086)	(0.090)
Maternal depression * education interactions										
Depression * less than high school (reference)		---		---		---		---		---
Depression * high school		-0.249		-0.187		-0.025		-0.155		-0.184
		(0.132)		(0.135)		(0.139)		(0.136)		(0.137)
Depression * some college		-0.187		-0.296 *		-0.038		-0.112		-0.222
		(0.124)		(0.127)		(0.130)		(0.127)		(0.129)
Depression * college		-0.336		-0.320		-0.108		-0.085		-0.055
		(0.207)		(0.212)		(0.218)		(0.213)		(0.215)
Intercept	1.717	1.705	1.342	1.326	0.549	0.552	1.131	1.116	1.203	1.175
Adjusted R-squared	0.154	0.155	0.103	0.104	0.067	0.066	0.104	0.103	0.074	0.075
N	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529

Note: Coefficients are unstandardized. Standard errors are in parentheses. All models include the following control variables: mother's race, mother's immigrant status, mother's age, mother's age squared, frequency of mother's attendance at religious services, if mother lived with both biological parents at age 15, mother's household income (log), mother's employment status, mother's homeownership, mother's relationship status with child's father at birth, if mother is co-resident with a grandmother, number of children in mother's household, depression of one of mother's biological parents, depression of one of father's biological parents, prenatal smoking, child's gender, if the child was born low birth weight, child's age, and child's temperament at the 12-month wave. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] ADHD: Attention Deficit Hyperactivity Disorder; ODD: Oppositional Defiant Disorder.

Table 4.10. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave, with Interactions by Maternal Household Income.

	Anxious/depressed behaviors		Withdrawn behaviors		ADHD behaviors[a]		Aggressive behaviors		ODD behaviors[a]	
Variable	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Maternal depression	0.138 **	0.136	0.047	0.443	0.214 ***	0.727 *	0.137 *	0.859 *	0.109 *	0.822 *
at 12-month wave	(0.052)	(0.033)	(0.053)	(0.336)	(0.054)	(0.344)	(0.053)	(0.337)	(0.054)	(0.340)
Paternal depression	0.083	0.083	0.034	0.036	0.117	0.119	0.176 *	0.179 *	0.147 *	0.150 *
at 12-month wave	(0.068)	(0.068)	(0.069)	(0.069)	(0.071)	(0.071)	(0.070)	(0.070)	(0.070)	(0.070)
Log of household income	-0.058 ***	-0.058 ***	-0.060 ***	-0.052 **	-0.036 *	-0.026	-0.030	-0.016	-0.023	-0.009
	(0.015)	(0.016)	(0.015)	(0.017)	(0.016)	(0.017)	(0.016)	(0.017)	(0.016)	(0.017)
Maternal depression *		0.001		-0.041		-0.054		-0.075 *		-0.074 *
household income		(0.034)		(0.035)		(0.035)		(0.035)		(0.035)
Intercept	1.717	1.717	1.342	1.272	0.549	0.459	1.131	1.005	1.203	1.078
Adjusted R-squared	0.154	0.154	0.103	0.103	0.067	0.068	0.104	0.105	0.074	0.076
N	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529

Note: Coefficients are unstandardized. Standard errors are in parentheses. All models include the following control variables: mother's race, mother's immigrant status, mother's age, mother's age squared, frequency of mother's attendance at religious services, if mother lived with both biological parents at age 15, mother's education, mother's employment status, mother's homeownership, mother's relationship status with child's father at birth, if mother is co-resident with a grandmother, number of children in mother's household, depression of one of mother's biological parents, depression of one of father's biological parents, prenatal smoking, child's gender, if the child was born low birth weight, child's age, and child's temperament at the 12-month wave. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] ADHD: Attention Deficit Hyperactivity Disorder; ODD: Oppositional Defiant Disorder.

Table 4.11. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave, with Interactions by Parents' Relationship Status at Baseline.

	Anxious/depressed behaviors		Withdrawn behaviors		ADHD behaviors[a]		Aggressive behaviors		ODD behaviors[a]	
Variable	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Maternal depression	0.138 **	0.009	0.047	-0.048	0.214 ***	-0.004	0.137 *	-0.046	0.109 *	-0.051
at 12-month wave	(0.052)	(0.114)	(0.053)	(0.117)	(0.054)	(0.120)	(0.053)	(0.117)	(0.054)	(0.118)
Paternal depression	0.083	0.084	0.034	0.036	0.117	0.120	0.176 *	0.178 *	0.147 *	0.150 *
at 12-month wave	(0.068)	(0.068)	(0.069)	(0.069)	(0.071)	(0.071)	(0.070)	(0.070)	(0.070)	(0.070)
Relationship status at birth										
Married (reference)	---	---	---	---	---	---	---	---	---	---
Cohabiting	0.206 ***	0.191 **	0.016	0.004	0.070	0.036	0.088	0.064	0.074	0.038
	(0.058)	(0.062)	(0.059)	(0.063)	(0.061)	(0.064)	(0.059)	(0.063)	(0.060)	(0.064)
Romantically involved	0.238 ***	0.193 **	0.094	0.067	0.106	0.057	0.115	0.068	0.110	0.080
	(0.064)	(0.068)	(0.066)	(0.070)	(0.067)	(0.071)	(0.066)	(0.070)	(0.066)	(0.070)
Not in a relationship	0.233 **	0.245 **	0.162 *	0.157	0.146	0.113	0.184 *	0.160	0.183 *	0.171 *
	(0.075)	(0.082)	(0.077)	(0.084)	(0.079)	(0.086)	(0.077)	(0.084)	(0.078)	(0.085)
Maternal depression * relationship status interactions										
Depression * married (reference)		---		---		---		---		---
Depression * cohabiting		0.120		0.092		0.247		0.177		0.243
		(0.143)		(0.146)		(0.150)		(0.147)		(0.148)
Depression * romantically		0.283 *		0.174		0.318 *		0.302 *		0.197
involved		(0.144)		(0.148)		(0.151)		(0.148)		(0.150)
Depression * not in a relationship		-0.001		0.063		0.226		0.179		0.108
		(0.169)		(0.173)		(0.177)		(0.173)		(0.175)
Intercept	1.717	1.743	1.342	1.365	0.549	0.615	1.131	1.181	1.203	1.258
Adjusted R-squared	0.154	0.155	0.103	0.102	0.067	0.068	0.104	0.104	0.074	0.074
N	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529

Note: Coefficients are unstandardized. Standard errors are in parentheses. All models include the following control variables: mother's race, mother's immigrant status, mother's age, mother's age squared, frequency of mother's attendance at religious services, if mother lived with both biological parents at age 15, mother's education, mother's household income (log), mother's employment status, mother's homeownership, if mother is co-resident with a grandmother, number of children in mother's household, depression of one of mother's biological parents, depression of one of father's biological parents, prenatal smoking, child's gender, if the child was born low birth weight, child's age, and child's temperament at the 12-month wave. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] ADHD: Attention Deficit Hyperactivity Disorder; ODD: Oppositional Defiant Disorder.

Table 5.1. Means and Standard Deviations of Additional Variables Included in Analyses.

Variable	Valid N	Mean	S.D	Min	Max
Maternal parenting behaviors					
Parenting stress (y3)[a]	2,525	2.252	0.666	1.000	4.000
Neglect (ih)	2,526	0.027	0.091	0.000	1.000
Psychological aggression (ih)	2,527	0.376	0.188	0.000	1.000
Physical assault (ih)	2,527	0.343	0.226	0.000	1.000
Engagement (y3)	2,525	4.991	0.913	0.000	7.000

[a] y3 = 30-month survey; ih = 36-month In-Home survey.

Table 5.2. Means of Maternal Parenting Behaviors, by Maternal Major Depressive Disorder (MDD) at 12-Month Wave.

Variable	**Depressed**	**Not depressed**
Maternal parenting behaviors		
Parenting stress	2.448 ***	2.215
Neglect	0.048 ***	0.024
Psychological aggression	0.403 **	0.371
Physical assault	0.358	0.341
Engagement	4.894 *	4.985
N	408	2,121

Note: Symbols compare differences in means of maternal parenting behaviors between mothers who report MDD during the 12-month wave and mothers who do not report MDD during the 12-month wave. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 5.3. Means of Maternal Parenting Behaviors, by Maternal Major Depressive Disorder (MDD) at 30-Month Wave.

Variable	**Depressed**	**Not depressed**
Maternal parenting behaviors		
Parenting stress	2.535 ***	2.176
Neglect	0.049 ***	0.021
Psychological aggression	0.416 ***	0.365
Physical assault	0.380 ***	0.334
Engagement	4.855 ***	5.027
N	541	1,987

Note: Symbols compare differences in means of maternal parenting behaviors between mothers who report MDD during the 30-month wave and mothers who do not report MDD during the 30-month wave. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 5.4. OLS Regression Models Predicting Maternal Parenting Behaviors, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave.

	Parenting stress		Neglect		Psychological aggression		Physical assault		Engagement	
Variable	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Maternal depression	0.234 ***	0.170 ***	0.025 ***	0.019 ***	0.032 **	0.012	0.017	-0.005	-0.115 *	-0.065
at 12-month wave	(0.036)	(0.037)	(0.005)	(0.005)	(0.010)	(0.010)	(0.012)	(0.012)	(0.049)	(0.050)
Paternal depression		0.051		0.003		-0.001		0.021		0.043
at 12-month wave		(0.048)		(0.007)		(0.013)		(0.016)		(0.066)
Intercept	2.215	1.598	0.024	0.027	0.371	0.324	0.341	0.256	5.010	5.608
Adjusted R-squared	0.016	0.050	0.010	0.021	0.004	0.065	0.000	0.085	0.002	0.048
N	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529

Note: Coefficients are unstandardized. Standard errors are in parentheses. Model 2 includes the following control variables: mother's race, mother's immigrant status, mother's age, mother's age squared, frequency of mother's attendance at religious services, if mother lived with both biological parents at age 15, mother's education, mother's household income (log), mother's employment status, mother's homeownership, mother's relationship status with child's father at birth, if mother is co-resident with a grandmother, number of children in mother's household, depression of one of mother's biological parents, depression of one of father's biological parents, prenatal smoking, child's gender, if the child was born low birth weight, child's age, and child's temperament at the 12-month wave. All coefficients are displayed in Appendices 5.2 through 5.6. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 5.5. OLS Regression Models Predicting Maternal Parenting Behaviors, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave, with Interactions by Maternal Race.

	Parenting stress		Neglect		Psychological aggression		Physical assault		Engagement	
Variable	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Maternal depression	0.170 ***	0.220 ***	0.019 ***	0.384 ***	0.012	0.041	0.005	0.018	-0.065	-0.049
at 12-month wave	(0.037)	(0.076)	(0.005)	(0.011)	(0.010)	(0.021)	(0.012)	(0.025)	(0.050)	(0.104)
Paternal depression	0.051	0.048	0.003	0.002	-0.001	-0.002	0.021	0.020	0.043	0.042
at 12-month wave	(0.048)	(0.048)	(0.007)	(0.007)	(0.013)	(0.013)	(0.016)	(0.016)	(0.066)	(0.066)
Race										
White (reference)	---	---	---	---	---	---	---	---	---	---
Black	0.089 *	0.098 *	0.008	0.013 *	0.036 **	0.042 ***	0.082 ***	0.087 ***	-0.167 **	-0.161 **
	(0.039)	(0.042)	(0.005)	(0.006)	(0.011)	(0.012)	(0.013)	(0.014)	(0.053)	(0.057)
Hispanic	0.049	0.062	0.010	0.014	0.002	0.008	-0.002	0.003	-0.046	-0.044
	(0.045)	(0.048)	(0.006)	(0.007)	(0.013)	(0.014)	(0.015)	(0.016)	(0.062)	(0.066)
Other race	0.123	0.127	0.010	0.012	0.044	0.048 *	0.052	0.049	0.220 *	0.187
	(0.080)	(0.086)	(0.011)	(0.012)	(0.022)	(0.024)	(0.027)	(0.029)	(0.109)	(0.117)
Maternal depression * race interactions										
Depression * white (reference)		---		---		---		---		---
Depression * black		-0.058		-0.026 *		0.036		-0.031		0.035
		(0.089)		(0.012)		(0.025)		(0.030)		(0.123)
Depression * Hispanic		-0.083		-0.026		-0.038		-0.033		-0.019
		(0.107)		(0.015)		(0.030)		(0.036)		(0.146)
Depression * other race		-0.022		-0.004		-0.027		0.029		0.256
		(0.233)		(0.032)		(0.065)		(0.078)		(0.320)
Intercept	1.598	1.585	0.027	0.021	0.324	0.317	0.256	0.250	5.608	5.604
Adjusted R-squared	0.050	0.049	0.021	0.022	0.065	0.065	0.085	0.085	0.048	0.047
N	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529

Note: Coefficients are unstandardized. Standard errors are in parentheses. All models include the following control variables: mother's immigrant status, mother's age, mother's age squared, frequency of mother's attendance at religious services, if mother lived with both biological parents at age 15, mother's education, mother's household income (log), mother's employment status, mother's homeownership, mother's relationship status with child's father at birth, if mother is co-resident with a grandmother, number of children in mother's household, depression of one of mother's biological parents, depression of one of father's biological parents, prenatal smoking, child's gender, if the child was born low birth weight, child's age, and child's temperament at the 12-month wave. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 5.6. OLS Regression Models Predicting Maternal Parenting Behaviors, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave, with Interactions by Maternal Education.

	Parenting stress		Neglect		Psychological aggression		Physical assault		Engagement	
Variable	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Maternal depression	0.170 ***	0.174 **	0.019 ***	0.028 **	0.012	0.008	-0.005	-0.013	-0.065	0.037
at 12-month wave	(0.037)	(0.065)	(0.005)	(0.009)	(0.010)	(0.018)	(0.012)	(0.022)	(0.050)	(0.089)
Paternal depression	0.051	0.050	0.003	0.003	-0.001	-0.001	0.021	0.021	0.043	0.044
at 12-month wave	(0.048)	(0.048)	(0.007)	(0.007)	(0.013)	(0.013)	(0.016)	(0.016)	(0.066)	(0.066)
Education										
Less than high school (reference)	---	---	---	---	---	---	---	---	---	---
High school diploma	-0.084 *	-0.086 *	-0.005	-0.003	0.010	0.011	0.016	0.017	0.038	0.064
(includes GED)	(0.036)	(0.040)	(0.005)	(0.005)	(0.010)	(0.011)	(0.012)	(0.013)	(0.050)	(0.054)
Some college	-0.129 ***	-0.122 **	-0.009	-0.006	0.008	0.005	0.006	0.005	0.108 *	0.130 *
	(0.038)	(0.041)	(0.005)	(0.006)	(0.011)	(0.012)	(0.013)	(0.014)	(0.052)	(0.057)
College	-0.029	-0.038	-0.009	-0.008	-0.028	-0.030	-0.018	-0.029	0.221 **	0.254 **
	(0.059)	(0.061)	(0.008)	(0.008)	(0.017)	(0.017)	(0.020)	(0.020)	(0.081)	(0.084)
Maternal depression * education interactions										
Depression * less than high school (reference)		---		---		---		---		---
Depression * high school		0.016		-0.009		-0.011		-0.010		-0.150
		(0.093)		(0.013)		(0.026)		(0.031)		(0.128)
Depression * some college		-0.043		-0.018		0.018		0.008		-0.123
		(0.088)		(0.012)		(0.025)		(0.029)		(0.120)
Depression * college		0.097		-0.003		0.022		0.121 *		-0.253
		(0.146)		(0.020)		(0.041)		(0.049)		(0.201)
Intercept	1.598	1.589	0.027	0.025	0.324	0.323	0.256	0.248	5.608	5.604
Adjusted R-squared	0.050	0.050	0.021	0.021	0.065	0.065	0.085	0.087	0.048	0.048
N	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529

Note: Coefficients are unstandardized. Standard errors are in parentheses. All models include the following control variables: mother's race, mother's immigrant status, mother's age, mother's age squared, frequency of mother's attendance at religious services, if mother lived with both biological parents at age 15, mother's household income (log), mother's employment status, mother's homeownership, mother's relationship status with child's father at birth, if mother is co-resident with a grandmother, number of children in mother's household, depression of one of mother's biological parents, depression of one of father's biological parents, prenatal smoking, child's gender, if the child was born low birth weight, child's age, and child's temperament at the 12-month wave. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 5.7. OLS Regression Models Predicting Maternal Parenting Behaviors, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave, with Interactions by Maternal Household Income.

	Parenting stress		Neglect		Psychological aggression		Physical assault		Engagement	
Variable	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Maternal depression	0.170 ***	0.164	0.019 ***	0.042	0.012	0.047	-0.005	0.059	-0.065	0.097
at 12-month wave	(0.037)	(0.232)	(0.005)	(0.032)	(0.010)	(0.065)	(0.012)	(0.077)	(0.050)	(0.318)
Paternal depression	0.051	0.051	0.003	0.004	-0.001	0.000	0.021	0.022	0.043	0.044
at 12-month wave	(0.048)	(0.048)	(0.007)	(0.007)	(0.013)	(0.013)	(0.012)	(0.016)	(0.066)	(0.066)
Log of household income	0.011	0.011	-0.002	-0.002	0.001	0.002	0.004	0.005	-0.013	-0.010
	(0.011)	(0.012)	(0.001)	(0.002)	(0.003)	(0.003)	(0.004)	(0.004)	(0.015)	(0.016)
Maternal depression * income		0.001		-0.002		-0.004		-0.007		-0.017
		(0.024)		(0.003)		(0.007)		(0.008)		(0.033)
Intercept	1.598	1.599	0.027	0.023	0.324	0.318	0.256	0.245	5.608	5.579
Adjusted R-squared	0.050	0.050	0.021	0.021	0.065	0.065	0.085	0.085	0.048	0.048
N	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529

Note: Coefficients are unstandardized. Standard errors are in parentheses. All models include the following control variables: mother's race, mother's immigrant status, mother's age, mother's age squared, frequency of mother's attendance at religious services, if mother lived with both biological parents at age 15, mother's education, mother's employment status, mother's homeownership, mother's relationship status with child's father at birth, if mother is co-resident with a grandmother, number of children in mother's household, depression of one of mother's biological parents, depression of one of father's biological parents, prenatal smoking, child's gender, if the child was born low birth weight, child's age, and child's temperament at the 12-month wave. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 5.8. OLS Regression Models Predicting Maternal Parenting Behaviors, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave, with Interactions by Parents' Relationship Status at Baseline.

	Parenting stress		Neglect		Psychological aggression		Physical assault		Engagement	
Variable	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Maternal depression	0.170 ***	0.077	0.019 ***	0.025 *	0.012	0.027	-0.005	0.011	-0.065	-0.056
at 12-month wave	(0.037)	(0.081)	(0.005)	(0.011)	(0.010)	(0.023)	(0.012)	(0.027)	(0.050)	(0.111)
Paternal depression	-0.011	-0.010	0.003	0.002	0.002	0.002	0.021 *	0.021 *	-0.013	-0.013
at 12-month wave	(0.032)	(0.032)	(0.004)	(0.044)	(0.009)	(0.009)	(0.011)	(0.011)	(0.044)	(0.044)
Relationship status at birth										
Married (reference)	---	---	---	---	---	---	---	---	---	---
Cohabiting	-0.108 **	-0.118 **	0.010	0.008	0.013	-0.012	0.002	0.003	0.035	0.037
	(0.041)	(0.043)	(0.006)	(0.006)	(0.011)	(0.012)	(0.014)	(0.014)	(0.056)	(0.060)
Romantically involved	-0.045	-0.067	0.016 *	0.019 **	-0.008	-0.007	0.006	0.009	0.095	0.098
	(0.045)	(0.048)	(0.006)	(0.007)	(0.013)	(0.013)	(0.015)	(0.016)	(0.062)	(0.066)
Not in a relationship	-0.002	-0.029	0.014	0.017 *	-0.001	0.012	0.011	0.017	-0.079	-0.083
	(0.053)	(0.058)	(0.007)	(0.008)	(0.015)	(0.016)	(0.018)	(0.019)	(0.073)	(0.079)
Maternal depression * relationship status interactions										
Depression * married (reference)		---		---		---		---		---
Depression * cohabiting		0.075		0.013		-0.010		-0.007		-0.012
		(0.101)		(0.014)		(0.028)		(0.034)		(0.138)
Depression * romantically		0.139		-0.024		-0.004		-0.024		-0.023
involved		(0.102)		(0.014)		(0.029)		(0.034)		(0.140)
Depression * not in a relationship		0.155		-0.017		-0.062		-0.033		0.014
		(0.119)		(0.017)		(0.033)		(0.040)		(0.164)
Intercept	1.598	1.625	0.027	0.027	0.324	0.318	0.256	0.252	5.608	5.607
Adjusted R-squared	0.050	0.050	0.021	0.024	0.065	0.066	0.085	0.084	0.048	0.047
N	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529

Note: Coefficients are unstandardized. Standard errors are in parentheses. All models include the following control variables: mother's race, mother's immigrant status, mother's age, mother's age squared, frequency of mother's attendance at religious services, if mother lived with both biological parents at age 15, mother's education, mother's household income (log), mother's employment status, mother's homeownership, if mother is co-resident with a grandmother, number of children in mother's household, depression of one of mother's biological parents, depression of one of father's biological parents, prenatal smoking, child's gender, if the child was born low birth weight, child's age, and child's temperament at the 12-month wave. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 5.9. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave and Maternal Parenting Behaviors.

	Anxious/depressed behaviors						
Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Maternal depression	0.138 **	0.104 *	0.122 *	0.128 *	0.140 **	0.138 **	0.099
at 12-month wave	(0.052)	(0.051)	(0.052)	(0.051)	(0.051)	(0.052)	(0.051)
Paternal depression	0.083	0.073	0.080	0.083	0.072	0.083	0.067
at 12-month wave	(0.068)	(0.067)	(.068	(0.067)	(0.067)	(0.068)	(0.066)
Parenting stress		0.200 ***					0.167 ***
		(0.028)					(0.029)
Neglect			0.825 ***				0.384
			(0.204)				(0.206)
Psychological aggression				0.764 ***			0.541 ***
				(0.100)			(0.118)
Physical assault					0.520 ***		0.197 *
					(0.085)		(0.099)
Engagement						0.011	0.046 *
						(0.021)	(0.021)
Intercept	1.716	1.397	1.694	1.468	1.583	1.656	0.956
Adjusted R-squared	0.154	0.170	0.159	0.173	0.166	0.154	0.188
N	2,529	2,529	2,529	2,529	2,529	2,529	2,529

	Withdrawn behaviors						
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Maternal depression	0.047	0.017	0.023	0.040	0.050	0.045	0.004
at 12-month wave	(0.053)	(0.053)	(0.053)	(0.053)	(0.053)	(0.053)	(0.052)
Paternal depression	0.033	0.024	0.028	0.040	0.021	0.034	0.017
at 12-month wave	(0.069)	(0.069)	(0.069)	(0.069)	(0.069)	(0.069)	(0.068)
Parenting stress		0.180 ***					0.134 ***
		(0.029)					(0.029)
Neglect			1.316 ***				0.954 ***
			(0.208)				(0.212)
Psychological aggression				0.670 ***			0.279 *
				(0.103)			(0.121)
Physical assault					0.532 ***		0.275 **
					(0.087)		(0.102)
Engagement						-0.030	0.001
						(0.021)	(0.021)
Intercept	1.342	1.054	1.306	1.145	1.205	1.508	0.938
Adjusted R-squared	0.103	0.116	0.117	0.115	0.116	0.103	0.134
N	2,529	2,529	2,529	2,529	2,529	2,529	2,529

(Table 5.9 continued)

	ADHD behaviors[a]						
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Maternal depression	0.214 ***	0.164 **	0.197 ***	0.197 ***	0.210 ***	0.209 ***	0.164 **
at 12-month wave	(0.054)	(0.053)	(0.054)	(0.053)	(0.053)	(0.054)	(0.052)
Paternal depression	0.115	0.100	0.112	0.115	0.094	0.118	0.094
at 12-month wave	(0.071)	(0.070)	(0.071)	(0.069)	(0.069)	(0.071)	(0.068)
Parenting stress		0.290 ***					0.221 ***
		(0.029)					(0.029)
Neglect			0.921 ***				0.160
			(0.214)				(0.210)
Psychological aggression				1.317 ***			0.868 ***
				(0.103)			(0.120)
Physical assault					0.992 ***		0.487 ***
					(0.087)		(0.101)
Engagement						-0.070 **	-0.015
						(0.022)	(0.021)
Intercept	0.549	0.086	0.524	0.122	0.294	0.942	-0.132
Adjusted R-squared	0.067	0.102	0.074	0.124	0.113	0.071	0.155
N	2,529	2,529	2,529	2,529	2,529	2,529	2,529

	Aggressive behaviors						
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Maternal depression	0.137 *	0.085	0.118 *	0.116 *	0.142 **	0.132 *	0.086
at 12-month wave	(0.053)	(0.052)	(0.053)	(0.051)	(0.051)	(0.053)	(0.051)
Paternal depression	0.172 *	0.156 *	0.169 *	0.172 **	0.146 *	0.175 *	0.148 *
at 12-month wave	(0.070)	(0.068)	(0.069)	(0.066)	(0.067)	(0.069)	(0.065)
Parenting stress		0.306 ***					0.222 ***
		(0.029)					(0.028)
Neglect			1.020 ***				0.116
			(0.209)				(0.201)
Psychological aggression				1.631 ***			1.103 ***
				(0.099)			(0.114)
Physical assault					1.229 ***		0.626 ***
					(0.084)		(0.096)
Engagement						-0.073 ***	-0.008
						(0.021)	(0.020)
Intercept	1.131	0.642	1.104	0.602	0.816	1.540	0.302
Adjusted R-squared	0.104	0.143	0.112	0.192	0.174	0.107	0.228
N	2,529	2,529	2,529	2,529	2,529	2,529	2,529

(Table 5.9 continued)

	ODD behaviors[a]						
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Maternal depression at 12-month wave	0.109 * (0.054)	0.063 (0.053)	0.093 (0.054)	0.089 (0.051)	0.114 * (0.052)	0.106 * (0.054)	0.065 (0.051)
Paternal depression at 12-month wave	0.143 * (0.070)	0.129 (0.069)	0.140 * (0.070)	0.143 * (0.067)	0.118 (0.068)	0.145 * (0.070)	0.120 (0.066)
Parenting stress		0.272 *** (0.029)					0.195 *** (0.028)
Neglect			0.865 *** (0.212)				0.002 (0.205)
Psychological aggression				1.605 *** (0.100)			1.143 *** (0.116)
Physical assault					1.170 *** (0.085)		0.582 *** (0.098)
Engagement						-0.045 * (0.021)	0.016 (0.020)
Intercept	1.202	0.768	1.179	0.682	0.903	1.457	0.281
Adjusted R-squared	0.074	0.106	0.080	0.161	0.139	0.076	0.189
N	2,529	2,529	2,529	2,529	2,529	2,529	2,529

Note: Coefficients are unstandardized. Standard errors are in parentheses. All models include the following control variables: mother's race, mother's immigrant status, mother's age, mother's age squared, frequency of mother's attendance at religious services, if mother lived with both biological parents at age 15, mother's education, mother's household income (log), mother's employment status, mother's homeownership, mother's relationship status with child's father at birth, if mother is co-resident with a grandmother, number of children in mother's household, depression of one of mother's biological parents, depression of one of father's biological parents, prenatal smoking, child's gender, if the child was born low birth weight, child's age, and child's temperament at the 12-month wave. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] ADHD: Attention Deficit Hyperactivity Disorder; ODD: Oppositional Defiant Disorder.

Table 5.10. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Maternal Major Depressive Disorder (MDD) Over Time and Maternal Parenting Behaviors.

	Anxious/depressed behaviors		Withdrawn behaviors		ADHD behaviors[a]		Aggressive behaviors		ODD behaviors[a]	
Variable	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Maternal depression over time[b]										
Chronic depression	0.284 ***	0.206 **	0.131	0.042	0.367 ***	0.253 ***	0.341 ***	0.221 ***	0.332 ***	0.229 ***
	(0.068)	(0.068)	(0.070)	(0.069)	(0.071)	(0.069)	(0.070)	(0.066)	(0.070)	(0.067)
Depression develops	0.174 **	0.103	0.058	-0.017	0.208 ***	0.098	0.234 ***	0.115 *	0.238 ***	0.134 *
	(0.057)	(0.057)	(0.059)	(0.059)	(0.060)	(0.058)	(0.059)	(0.056)	(0.059)	(0.057)
Depression remits	0.039	0.024	-0.024	-0.042	0.120	0.106	-0.007	-0.018	-0.056	-0.064
	(0.072)	(0.071)	(0.074)	(0.073)	(0.076)	(0.072)	(0.074)	(0.069)	(0.075)	(0.070)
No depression (reference)	---	---	---	---	---	---	---	---	---	---
Paternal depression	0.083	0.068	0.033	0.017	0.110	0.094	0.171 *	0.148 *	0.141 *	0.120
at 12-month wave	(0.068)	(0.066)	(0.069)	(0.068)	(0.071)	(0.068)	(0.069)	(0.065)	(0.070)	(0.066)
Parenting stress		0.157 ***		0.135 ***		0.212 ***		0.210 ***		0.180 ***
		(0.029)		(0.030)		(0.030)		(0.028)		(0.029)
Neglect		0.341		0.911 ***		0.122		0.069		-0.033
		(0.208)		(0.214)		(0.212)		(0.203)		(0.206)
Psychological aggression		0.537 ***		0.284 *		0.865 ***		1.096 ***		1.130 ***
		(0.118)		(0.121)		(0.120)		(0.114)		(0.116)
Physical assault		0.197 *		0.277 **		0.486 ***		0.626 ***		0.581 ***
		(0.099)		(0.102)		(0.101)		(0.096)		(0.098)
Engagement		0.047 *		0.001		-0.014		-0.007		0.019
		(0.021)		(0.021)		(0.021)		(0.020)		(0.020)
Intercept	1.697	0.956	1.337	0.940	0.525	-0.131	1.101	0.299	1.168	0.275
Adjusted R-squared	0.158	0.189	0.103	0.133	0.073	0.156	0.113	0.231	0.086	0.193
N	2,528	2,528	2,528	2,528	2,528	2,528	2,528	2,528	2,528	2,528

Note: Coefficients are unstandardized. Standard errors are in parentheses. All models include the following control variables: mother's race, mother's immigrant status, mother's age, mother's age squared, frequency of mother's attendance at religious services, if mother lived with both biological parents at age 15, mother's education, mother's household income (log), mother's employment status, mother's homeownership, mother's relationship status with child's father at birth, if mother is co-resident with a grandmother, number of children in mother's household, depression of one of mother's biological parents, depression of one of father's biological parents, prenatal smoking, child's gender, if the child was born low birth weight, child's age, and child's temperament at the 12-month wave. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] ADHD: Attention Deficit Hyperactivity Disorder; ODD: Oppositional Defiant Disorder.

[b] Chronic depression: mother depressed at both 12-month and 30-month waves; depression develops: mother not depressed at 12-month wave, depressed at 30-month wave; depression remits: mother depressed at 12-month wave, not depressed at 30-month wave; no depression: mother not depressed at 12-month or 30-month wave.

Table 6.1. Means and Standard Deviations of Additional Variables Included in Analyses.

Variable	Valid N	Mean	S.D	Min	Max
Relationship quality					
Supportive behaviors (y1)[a]	2,351	2.048	1.170	0.000	3.000
Supportive behaviors (y3)	2,515	1.991	1.210	0.000	3.000
Hostile behaviors (reverse coded, y1)	2,351	2.164	1.216	0.000	3.000
Hostile behaviors (reverse coded, y3)	2,515	2.119	1.261	0.000	3.000
Shared responsibility in parenting (y1)	2,426	2.964	1.023	1.000	4.000
Shared responsibility in parenting (y3)	2,355	2.829	1.015	1.000	4.000
Cooperation in parenting (y1)	2,345	3.612	0.561	1.000	4.000
Cooperation in parenting (y3)	2,353	3.424	0.769	1.000	4.000

[a] y1 = 12-month survey; y3 = 30-month survey.

Table 6.2. Means of Relationship Quality with Current Partner, by Maternal Major Depressive Disorder (MDD) Over Time.

Variable	Chronic depression	Depression develops	Depression remits	No depression
Relationship quality				
Supportive behaviors (y1)[a]	1.865 **	1.898 **	1.631 ***	2.133
Supportive behaviors (y3)	1.714 ***	1.661 ***	1.964	2.086
Hostile behaviors (reverse coded, y1)	1.968 **	1.985 ***	1.728 ***	2.258
Hostile behaviors (reverse coded, y3)	1.854 ***	1.806 ***	2.095	2.209
Shared responsibility in parenting (y1)	2.626 ***	2.856 ***	2.539 ***	3.065
Shared responsibility in parenting (y3)	2.383 ***	2.568 ***	2.501 ***	2.962
Cooperation in parenting (y1)	3.473 ***	3.532 ***	3.391 ***	3.662
Cooperation in parenting (y3)	3.062 ***	3.227 ***	3.212 ***	3.523
N	224	317	184	1,803

Note: Symbols compare differences in means of relationship quality with current partner between mothers with chronic depression (mothers who are depressed at both the 12-month and 30-month waves), mothers with depression that develops over time (not depressed at the 12-month wave but depressed at the 30-month wave), and mothers with depression that remits over time (depressed at the 12-month wave but not depressed at the 30-month wave) to mothers who never report depression. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] y1 = 12-month survey; y3 = 30-month survey.

Table 6.3. OLS Regression Models Predicting Relationship Quality with Current Partner at 30-Month Wave, Regressed on Maternal Major Depressive Disorder (MDD) Over Time.

	Supportive behaviors			Hostile behaviors (reverse coded)			Shared responsibility in parenting			Cooperation in parenting		
Variable	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Maternal depression over time[a]												
Chronic depression	-0.368 ***	-0.105 ***	-0.107 ***	-0.352 ***	-0.078 ***	-0.079 ***	-0.542 ***	-0.220 ***	-0.185 ***	-0.434 ***	-0.233 ***	-0.220 ***
	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####
Depression develops	-0.419 ***	-0.097 ***	-0.097 ***	-0.397 ***	-0.057 ***	-0.057 ***	-0.361 ***	-0.115 *	-0.115 *	-0.272 ***	-0.124 **	-0.115 **
	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####
Depression remits	-0.123	-0.039	-0.028	-0.114	-0.021	-0.015	-0.432 ***	-0.162 **	-0.083	-0.290 ***	-0.113 *	-0.065
	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####
No depression (reference)	---	---	---	---	---	---	---	---	---	---	---	---
Paternal depression at 12-month wave		-0.044	-0.037		-0.027	-0.023		-0.086	-0.051		-0.077	-0.050
		#####	#####		#####	#####		#####	#####		#####	#####
Lagged measure of dependent variable			0.043 ***			0.022 ***			0.284 ***			0.351 ***
			#####			#####			#####			#####
Intercept	2.083	2.647	2.576	2.205	2.942	2.909	2.925	2.436	1.747	3.498	3.577	2.364
Adjusted R-squared	0.017	0.929	0.930	0.014	0.965	0.965	0.035	0.451	0.502	0.040	0.319	0.371
N	2,528	2,528	2,528	2,528	2,528	2,528	2,528	2,528	2,528	2,528	2,528	2,528

Note: Coefficients are unstandardized. Standard errors are in parentheses. Models 2 and 3 include the following control variables: mother's race, mother's immigrant status, mother's age, mother's age squared, frequency of mother's attendance at religious services, if mother lived with both biological parents at age 15, mother's education, mother's household income (log), mother's employment status, mother's homeownership, mother's current relationship status, if mother is co-resident with a grandmother, number of children in mother's household, disagreements at baseline, companionship at baseline, depression of one of mother's biological parents, depression of one of father's biological parents, prenatal smoking, child's gender, if the child was born low birth weight, child's age, and child's temperament at the 12-month wave. All coefficients are displayed in Appendices 6.2 through 6.5. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] Chronic depression: mother depressed at both 12-month and 30-month waves; depression develops: mother not depressed at 12-month wave, depressed at 30-month wave; depression remits: mother depressed at 12-month wave, not depressed at 30-month wave; no depression: mother not depressed at 12-month or 30-month wave.

Table 6.4. OLS Regression Models Predicting Relationship Quality with Current Partner at 30-Month Wave, Regressed on Maternal Major Depressive Disorder (MDD) Over Time, with Interactions by Maternal Race.

	Supportive behaviors		Hostile behaviors (reverse coded)		Shared responsibility in parenting		Cooperation in parenting	
Variable	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Maternal depression over time[a]								
Chronic depression	-0.105 ***	-0.134 **	-0.078 ***	-0.041	-0.220 ***	-0.197	-0.233 ***	-0.323 ***
	(0.024)	(0.048)	(0.018)	(0.035)	(0.058)	(0.115)	(0.046)	(0.092)
Depression develops	-0.097 ***	-0.233 ***	-0.057 ***	-0.095 **	0.115 *	-0.162	-0.124 **	-0.090
	(0.020)	(0.044)	(0.015)	(0.032)	(0.049)	(0.106)	(0.039)	(0.084)
Depression remits	-0.039	-0.090	-0.021	-0.024	-0.162 **	-0.104	-0.113 *	-0.050
	(0.026)	(0.056)	(0.019)	(0.041)	(0.062)	(0.135)	(0.049)	(0.107)
No depression (reference)	---	---	---	---	---	---	---	---
Paternal depression	-0.044	-0.042	-0.027	-0.028	-0.086	-0.092	0.077	-0.075
at 12-month wave	(0.024)	(0.024)	(0.022)	(0.018)	(0.058)	(0.058)	(0.046)	(0.046)
Race								
White (reference)	---	---	---	---	---	---	---	---
Black	0.002	-0.036	-0.002	-0.011	0.140 **	0.145 **	0.096 **	0.084 *
	(0.019)	(0.022)	(0.014)	(0.016)	(0.046)	(0.052)	(0.036)	(0.041)
Hispanic	-0.001	-0.011	-0.032	-0.017	0.044	0.038	-0.021	-0.001
	(0.022)	(0.025)	(0.016)	(0.018)	(0.053)	(0.060)	(0.042)	(0.048)
Other race	-0.011	-0.001	-0.080 **	-0.070 *	0.202 *	0.203	0.047	0.081
	(0.040)	(0.045)	(0.029)	(0.033)	(0.096)	(0.109)	(0.076)	(0.087)
Maternal depression * race interactions								
Chronic depression * white (reference)		---		---		---		---

(Table 6.4 continued)

Chronic depression * black		0.076		-0.008		-0.003		0.171
		(0.057)		(0.042)		(0.137)		(0.109)
Chronic depression * Hispanic		-0.023		-0.135 **		-0.037		0.038
		(0.069)		(0.051)		(0.167)		(0.133)
Chronic depression * other race		-0.229		-0.216 *		-0.557		-0.289
		(0.146)		(0.108)		(0.354)		(0.281)
Depression develops * white (reference)		---		---		---		---
Depression develops * black		0.195 ***		0.020		0.027		-0.028
		(0.051)		(0.037)		(0.123)		(0.098)
Depression develops * Hispanic		0.124 *		-0.030		0.124		-0.085
		(0.063)		(0.046)		(0.152)		(0.121)
Depression develops * other race		0.054		0.089		0.278		0.014
		(0.123)		(0.090)		(0.297)		(0.236)
Depression remits * white (reference)		---		---		---		---
Depression remits * black		0.096		0.020		-0.093		-0.026
		(0.066)		(0.048)		(0.158)		(0.126)
Depression remits * Hispanic		0.001		-0.030		-0.049		-0.178
		(0.076)		(0.056)		(0.184)		(0.146)
Depression remits * other race		0.025		-0.030		0.191		-0.268
		(0.176)		(0.129)		(0.426)		(0.339)
Intercept	2.647	2.685	2.942	2.953	2.436	2.416	3.577	3.578
Adjusted R-squared	0.929	0.929	0.965	0.965	0.451	0.450	0.319	0.319
N	2,528	2,528	2,528	2,528	2,528	2,528	2,528	2,528

Note: Coefficients are unstandardized. Standard errors are in parentheses. All models include the following control variables: mother's immigrant status, mother's age, mother's age squared, frequency of mother's attendance at religious services, if mother lived with both biological parents at age 15, mother's education, mother's household income (log), mother's employment status, mother's homeownership, mother's current relationship status, if mother is co-resident with a grandmother, number of children in mother's household, disagreements at baseline, companionship at baseline, depression of one of mother's biological parents, depression of one of father's biological parents, prenatal smoking, child's gender, if the child was born low birth weight, child's age, and child's temperament at the 12-month wave. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] Chronic depression: mother depressed at both 12-month and 30-month waves; depression develops: mother not depressed at 12-month wave, depressed at 30-month wave; depression remits: mother depressed at 12-month wave, not depressed at 30-month wave; no depression: mother not depressed at 12-month or 30-month wave.

Table 6.5. OLS Regression Models Predicting Relationship Quality with Current Partner at 30-Month Wave, Regressed on Maternal Major Depressive Disorder (MDD) Over Time, with Interactions by Maternal Education.

	Supportive behaviors		Hostile behaviors (reverse coded)		Shared responsibility in parenting		Cooperation in parenting	
Variable	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Maternal depression over time[a]								
Chronic depression	-0.105 ***	-0.157 ***	-0.078 ***	-0.159 ***	-0.220	-0.186	-0.233	-0.317
	(0.024)	(0.041)	(0.018)	(0.030)	(0.058)	(0.100)	(0.046)	(0.079)
Depression develops	-0.097 ***	-0.106 **	-0.057 ***	-0.100 ***	-0.115	-0.131	-0.124	-0.195
	(0.020)	(0.035)	(0.015)	(0.026)	(0.049)	(0.085)	(0.039)	(0.068)
Depression remits	-0.039	-0.009	-0.021	-0.015	-0.162	-0.206	-0.113	-0.202
	(0.026)	(0.047)	(0.019)	(0.034)	(0.062)	(0.113)	(0.049)	(0.090)
No depression (reference)	---	---	---	---	---	---	---	---
Paternal depression	-0.044	-0.041	-0.027	-0.026	-0.086	-0.094	-0.077	-0.077
at 12-month wave	(0.024)	(0.024)	(0.018)	(0.018)	(0.058)	(0.058)	(0.046)	(0.046)
Education								
Less than high school (reference)	---	---	---	---	---	---	---	---
High school diploma	-0.006	-0.013	0.002	-0.017	-0.088	-0.085	-0.020	-0.064
(includes GED)	(0.018)	(0.021)	(0.013)	(0.016)	(0.044)	(0.051)	(0.035)	(0.041)
Some college	0.001	-0.011	0.007	-0.008	-0.139	-0.130	-0.054	-0.081
	(0.019)	(0.022)	(0.014)	(0.016)	(0.046)	(0.053)	(0.036)	(0.042)
College degree or higher	-0.036	0.044	0.020	-0.005	-0.111	-0.158	-0.021	-0.058
	(0.029)	(0.031)	(0.021)	(0.023)	(0.069)	(0.075)	(0.055)	(0.059)
Maternal depression * education interactions								
Chronic depression		---		---		---		---
* less than high school (reference)								

(Table 6.5 continued)

Chronic depression * high school		0.073		0.103 *		-0.168		0.100
		(0.062)		(0.046)		(0.150)		(0.120)
Chronic depression * some college		0.114 *		0.107 **		-0.045		0.130
		(0.056)		(0.041)		(0.134)		(0.107)
Chronic depression * college degree		-0.112		0.214 **		0.293		0.113
		(0.097)		(0.072)		(0.236)		(0.187)
Depression develops * less than high school (reference)		---		---		---		---
Depression develops * high school		0.036		0.085 *		-0.015		0.152
		(0.051)		(0.038)		(0.124)		(0.099)
Depression develops * some college		0.025		0.038		-0.007		0.063
		(0.049)		(0.036)		(0.118)		(0.094)
Depression develops * college		-0.114		0.080		0.286		0.095
		(0.083)		(0.061)		(0.200)		(0.159)
Depression remits * less than high school (reference)		---		---		---		---
Depression remits * high school		-0.063		-0.018		0.133		0.182
		(0.065)		(0.048)		(0.156)		(0.124)
Depression remits * some college		-0.036		0.080		-0.067		0.045
		(0.064)		(0.061)		(0.154)		(0.123)
Depression remits * college		0.026		0.062		0.315		0.239
		(0.103)		(0.076)		(0.249)		(.198
Intercept	2.647	2.661	2.942	2.949	2.436	2.402	3.577	3.584
Adjusted R-squared	0.929	0.929	0.965	0.965	0.451	0.451	0.319	0.319
N	2,528	2,528	2,528	2,528	2,528	2,528	2,528	2,528

Note: Coefficients are unstandardized. Standard errors are in parentheses. All models include the following control variables: mother's race, mother's immigrant status, mother's age, mother's age squared, frequency of mother's attendance at religious services, if mother lived with both biological parents at age 15, mother's household income (log), mother's employment status, mother's homeownership, mother's current relationship status, if mother is co-resident with a grandmother, number of children in mother's household, disagreements at baseline, companionship at baseline, depression of one of mother's biological parents, depression of one of father's biological parents, prenatal smoking, child's gender, if the child was born low birth weight, child's age, and child's temperament at the 12-month wave. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] Chronic depression: mother depressed at both 12-month and 30-month waves; depression develops: mother not depressed at 12-month wave, depressed at 30-month wave; depression remits: mother depressed at 12-month wave, not depressed at 30-month wave; no depression: mother not depressed at 12-month or 30-month wave.

Table 6.6. OLS Regression Models Predicting Relationship Quality with Current Partner at 30-Month Wave, Regressed on Maternal Major Depressive Disorder (MDD) Over Time, with Interactions by Maternal Household Income.

	Supportive behaviors		Hostile behaviors (reverse coded)		Shared responsibility in parenting		Cooperation in parenting	
Variable	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Maternal depression over time[a]								
Chronic depression	-0.105 ***	0.030	-0.078 ***	-0.080	-0.220 ***	-0.765 *	-0.233 ***	-0.446
	(0.024)	(0.141)	(0.018)	(0.104)	(0.058)	(0.341)	(0.046)	(0.271)
Depression develops	-0.097 ***	0.180	-0.057 ***	-0.106	-0.115 *	-0.357	-0.124 **	-0.388
	(0.020)	(0.131)	(0.015)	(0.096)	(0.049)	(0.316)	(0.039)	(0.251)
Depression remits	-0.039	-0.025	-0.021	-0.062	-0.162 **	-1.160 **	-0.113 *	-0.667
	(0.026)	(0.180)	(0.019)	(0.133)	(0.062)	(0.435)	(0.049)	(0.346)
No depression (reference)	---	---	---	---	---	---	---	---
Paternal depression	-0.044	-0.043	-0.027	-0.027	-0.086	-0.090	-0.077	-0.079
at 12-month wave	(0.024)	(0.024)	(0.018)	(0.018)	(0.058)	(0.058)	(0.046)	(0.046)
Log of household income	0.004	0.010	-0.002	-0.003	0.019	0.002	-0.003	-0.013
	(0.005)	(0.006)	(0.004)	(0.004)	(0.013)	(0.015)	(0.010)	(0.012)
Maternal depression * household income interactions								
Chronic depression * income		-0.014		0.001		0.057		0.022
		(0.015)		(0.011)		(0.035)		(0.028)
Depression develops * income		-0.029 *		0.005		0.025		0.028
		(0.014)		(0.010)		(0.033)		(0.026)
Depression remits * income		-0.001		0.004		0.103 *		0.057
		(0.019)		(0.014)		(0.045)		(0.036)
Intercept	2.647	2.592	2.942	2.950	2.436	2.583	3.577	3.665
Adjusted R-squared	0.929	0.929	0.965	0.965	0.451	0.452	0.319	0.320
N	2,528	2,528	2,528	2,528	2,528	2,528	2,528	2,528

Note: Coefficients are unstandardized. Standard errors are in parentheses. All models include the following control variables: mother's race, mother's immigrant status, mother's age, mother's age squared, frequency of mother's attendance at religious services, if mother lived with both biological parents at age 15, mother's education, mother's employment status, mother's homeownership, mother's current relationship status, if mother is co-resident with a grandmother, number of children in mother's household, disagreements at baseline, companionship at baseline, depression of one of mother's biological parents, depression of one of father's biological parents, prenatal smoking, child's gender, if the child was born low birth weight, child's age, and child's temperament at the 12-month wave. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] Chronic depression: mother depressed at both 12-month and 30-month waves; depression develops: mother not depressed at 12-month wave, depressed at 30-month wave; depression remits: mother depressed at 12-month wave, not depressed at 30-month wave; no depression: mother not depressed at 12-month or 30-month wave.

Table 6.7. OLS Regression Models Predicting Relationship Quality with Current Partner at 30-Month Wave, Regressed on Maternal Major Depressive Disorder (MDD) Over Time, with Interactions by Maternal Relationship Status.

	Supportive behaviors		Hostile behaviors (reverse coded)		Shared responsibility in parenting		Cooperation in parenting	
Variable	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Maternal depression over time[a]								
Chronic depression	-0.105 ***	-0.202 ***	-0.078 ***	-0.171 ***	-0.220 ***	-0.163	-0.233 ***	-0.204 **
	(0.024)	(0.035)	(0.018)	(0.026)	(0.058)	(0.085)	(0.046)	(0.068)
Depression develops	-0.097 ***	-0.166 ***	-0.057 ***	-0.090 ***	-0.115 *	-0.018	-0.124 **	-0.139 *
	(0.020)	(0.030)	(0.015)	(0.021)	(0.049)	(0.071)	(0.039)	(0.056)
Depression remits	-0.039	-0.087 *	-0.021	-0.045	-0.162 **	-0.065	-0.113 *	-0.033
	(0.026)	(0.037)	(0.019)	(0.207)	(0.062)	(0.090)	(0.049)	(0.072)
No depression (reference)	---	---	---	---	---	---	---	
Paternal depression	-0.044	-0.040	-0.027	-0.025	-0.086	-0.090	-0.077	-0.076
at 12-month wave	(0.024)	(0.024)	(0.018)	(0.017)	(0.080)	(0.058)	(0.046)	(0.046)
Relationship status								
Partner is biological father (reference)	---	---	---	---	---	---	---	---
Partner is social father	0.178 ***	0.154 ***	0.065 ***	0.046 **	-1.325 ***	-1.258 ***	-0.803 ***	-0.773 ***
	(0.019)	(0.023)	(0.014)	(0.017)	(0.046)	(0.056)	(0.037)	(0.044)
No partner	-2.589 ***	-2.645 ***	-2.809 ***	-2.845 ***	-1.291 ***	-1.251 ***	-0.706 ***	-0.703 ***
	(0.017)	(0.020)	(0.012)	(0.015)	(0.041)	(0.048)	(0.032)	(0.038)
Maternal depression * relationship status interactions								
Chronic depression * biological father (reference)		---		---		---		---
Chronic depression * social father		0.120 *		0.154		-1.100		-1.050
		(0.058)		(0.043)		(0.141)		(0.112)

(Table 6.7 continued)

Chronic depression * no partner		0.229 ***		0.182 ***		-0.120		-0.010
		(0.054)		(0.039)		(0.130)		(0.103)
Depression develops * biological father (reference)		---		---		---		---
Depression develops * social father		0.054		0.012		-0.366 **		-0.086
		(0.052)		(0.039)		(0.127)		(0.101)
Depression develops * no partner		0.188 ***		0.102 **		-0.074		-0.093
		(0.045)		(0.033)		(0.109)		(0.087)
Depression remits * biological father (reference)		---		---		---		---
Depression remits * social father		0.094		0.044		-0.096		-0.068
		(0.060)		(0.044)		(0.147)		(0.117)
Depression remits * no partner		0.093		0.057		-0.292		-0.241 *
		(0.062)		(0.045)		(0.149)		(0.119)
Intercept	2.647	2.669	2.942	2.956	2.436	2.394	3.577	3.556
Adjusted R-squared	0.929	0.930	0.965	0.965	0.451	0.453	0.319	0.320
N	2,528	2,528	2,528	2,528	2,528	2,528	2,528	2,528

Note: Coefficients are unstandardized. Standard errors are in parentheses. All models include the following control variables: mother's race, mother's immigrant status, mother's age, mother's age squared, frequency of mother's attendance at religious services, if mother lived with both biological parents at age 15, mother's education, mother's household income (log), mother's employment status, mother's homeownership, if mother is co-resident with a grandmother, number of children in mother's household, disagreements at baseline, companionship at baseline, depression of one of mother's biological parents, depression of one of father's biological parents, prenatal smoking, child's gender, if the child was born low birth weight, child's age, and child's temperament at the 12-month wave. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] Chronic depression: mother depressed at both 12-month and 30-month waves; depression develops: mother not depressed at 12-month wave, depressed at 30-month wave; depression remits: mother depressed at 12-month wave, not depressed at 30-month wave; no depression: mother not depressed at 12-month or 30-month wave.

Table 6.8. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave and Maternal Reports of Relationship Quality with Current Partner.

	Anxious/depressed behaviors					
Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Maternal depression	0.117 *	0.114 *	0.109 *	0.114 *	0.111 *	0.106 *
at 12-month wave	(0.052)	(0.052)	(0.052)	(0.052)	(0.052)	(0.052)
Paternal depression	0.069	0.067	0.063	0.067	0.066	0.063
at 12-month wave	(0.068)	(0.068)	(0.068)	(0.068)	(0.068)	(0.068)
Supportive behaviors		-0.049				0.056
		(0.057)				(0.069)
Hostile behaviors			-0.203 **			-0.235 *
			(0.077)			(0.093)
Shared responsibility in parenting				-0.017		0.010
				(0.024)		(0.030)
Cooperation in parenting					-0.041	-0.040
					(0.030)	(0.038)
Intercept	1.908	2.080	2.506	1.949	2.055	2.570
Adjusted R-squared	0.156	0.156	0.158	0.156	0.156	0.157
N	2,529	2,529	2,529	2,529	2,529	2,529

	Withdrawn behaviors					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Maternal depression	0.052	0.041	0.044	0.051	0.041	0.036
at 12-month wave	(0.053)	(0.054)	(0.053)	(0.054)	(0.054)	(0.054)
Paternal depression	0.041	0.033	0.037	0.041	0.036	0.031
at 12-month wave	(0.070)	(0.070)	(0.070)	(0.070)	(0.070)	(0.070)
Supportive behaviors		-0.193 ***				-0.168 *
		(0.058)				(0.070)
Hostile behaviors			-0.175 *			-0.041
			(0.079)			(0.095)
Shared responsibility in parenting				-0.003		0.056
				(0.024)		(0.031)
Cooperation in parenting					-0.067 *	-0.092 *
					(0.030)	(0.039)
Intercept	1.540	2.052	2.055	1.546	1.780	2.299
Adjusted R-squared	0.103	0.106	0.104	0.102	0.104	0.108
N	2,529	2,529	2,529	2,529	2,529	2,529

(Table 6.8 continued)

	ADHD behaviors[a]					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Maternal depression	0.197 ***	0.181 ***	0.180 **	0.187 ***	0.180 ***	0.171 **
at 12-month wave	(0.055)	(0.054)	(0.055)	(0.055)	(0.055)	(0.055)
Paternal depression	0.108	0.096	0.103	0.104	0.100	0.092
at 12-month wave	(0.071)	(0.071)	(0.071)	(0.071)	(0.071)	(0.071)
Supportive behaviors		-0.286 ***				-0.263 ***
		(0.059)				(0.072)
Hostile behaviors			-0.216 **			0.140
			(0.081)			(0.097)
Shared responsibility in parenting				-0.057 *		0.003
				(0.025)		(0.031)
Cooperation in parenting					-0.108 ***	-0.086 *
					(0.031)	(0.039)
Intercept	0.592	1.350	1.227	0.733	0.978	1.548
Adjusted R-squared	0.071	0.079	0.073	0.072	0.075	0.081
N	2,529	2,529	2,529	2,529	2,529	2,529

	Aggressive behaviors					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Maternal depression	0.114 *	0.098	0.104	0.102	0.090	0.080
at 12-month wave	(0.053)	(0.053)	(0.053)	(0.053)	(0.053)	(0.053)
Paternal depression	0.162 *	0.149 *	0.155 *	0.156 *	0.150 *	0.141 *
at 12-month wave	(0.070)	(0.069)	(0.070)	(0.070)	(0.069)	(0.069)
Supportive behaviors		-0.297 ***				-0.247 ***
		(0.058)				(0.070)
Hostile behaviors			-0.253 **			-0.019
			(0.079)			(0.095)
Shared responsibility in parenting				-0.071 **		0.021
				(0.024)		(0.031)
Cooperation in parenting					-0.158 ***	-0.150 ***
					(0.030)	(0.038)
Intercept	1.190	1.980	1.934	1.364	1.756	2.385
Adjusted R-squared	0.109	0.118	0.113	0.112	0.119	0.124
N	2,529	2,529	2,529	2,529	2,529	2,529

(Table 6.8 continued)

	ODD behaviors[a]					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Maternal depression	0.113 *	0.072	0.077	0.073	0.061	0.055
at 12-month wave	(0.054)	(0.054)	(0.054)	(0.054)	(0.054)	(0.054)
Paternal depression	0.127	0.116	0.122	0.121	0.115	0.109
at 12-month wave	(0.070)	(0.070)	(0.070)	(0.070)	(0.070)	(0.070)
Supportive behaviors		-0.241 ***				-0.205 **
		(0.059)				(0.071)
Hostile behaviors			-0.184 *			0.021
			(0.080)			(0.096)
Shared responsibility in parenting				-0.069 **		0.019
				(0.024)		(0.031)
Cooperation in parenting					-0.156 ***	-0.153 ***
					(0.031)	(0.039)
Intercept	1.246	1.886	1.786	1.415	1.806	2.229
Adjusted R-squared	0.081	0.087	0.082	0.083	0.090	0.093
N	2,529	2,529	2,529	2,529	2,529	2,529

Note: Coefficients are unstandardized. Standard errors are in parentheses. All models include the following control variables: mother's race, mother's immigrant status, mother's age, mother's age squared, frequency of mother's attendance at religious services, if mother lived with both biological parents at age 15, mother's education, mother's household income (log), mother's employment status, mother's homeownership, mother's current relationship status, if mother is co-resident with a grandmother, number of children in mother's household, disagreements at baseline, companionship at baseline, depression of one of mother's biological parents, depression of one of father's biological parents, prenatal smoking, child's gender, if the child was born low birth weight, child's age, and child's temperament at the 12-month wave. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] ADHD: Attention Deficit Hyperactivity Disorder; ODD: Oppositional Defiant Disorder.

Table 6.9. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Maternal Major Depressive Disorder (MDD) Over Time and Maternal Reports of Relationship Quality with Current Partner.

	Anxious/depressed behaviors		Withdrawn behaviors		ADHD behaviors[a]		Aggressive behaviors		ODD behaviors[a]	
Variable	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Maternal depression over time[b]										
Chronic depression	0.260 ***	0.244 ***	0.131	0.102	0.350 ***	0.308 ***	0.319 ***	0.266 ***	0.306 ***	0.260
	(0.068)	(0.069)	(0.070)	(0.071)	(0.071)	(0.072)	(0.070)	(0.070)	(0.070)	(0.071)
Depression develops	0.156 **	0.147 *	0.054	0.032	0.197 **	0.165 **	0.221 ***	0.183 **	0.221 ***	0.189
	(0.058)	(0.058)	(0.059)	(0.060)	(0.061)	(0.061)	(0.059)	(0.059)	(0.060)	(0.060)
Depression remits	0.019	0.014	-0.014	-0.022	0.103	0.086	-0.031	-0.053	-0.080	-0.100
	(0.073)	(0.073)	(0.075)	(0.075)	(0.076)	(0.076)	(0.074)	(0.074)	(0.075)	(0.075)
No depression (reference)	---	---	---	---	---	---	---	---	---	---
Paternal depression	0.066	0.066	-0.019	0.033	0.021	0.095 ***	0.070	0.145 *	0.080	0.112
at 12-month wave	(0.045)	(0.068)	(0.047)	(0.070)	(0.048)	(0.071)	(0.047)	(0.069)	(0.047)	(0.070)
Supportive behaviors		0.069		-0.161 *		-0.250		-0.232 ***		-0.191
		(0.069)		(0.070)		(0.072)		(0.070)		(0.071)
Hostile behaviors		-0.223 *		-0.042		0.029		0.001		0.043
		(0.093)		(0.095)		(0.097)		(0.095)		(0.095)
Shared responsibility in parenting		0.009		0.058		0.001		0.019		0.016
		(0.030)		(0.031)		(0.031)		(0.030)		(0.031)
Cooperation in parenting		-0.034		-0.092 *		-0.079 *		-0.141 ***		-0.143
		(0.038)		(0.039)		(0.039)		(0.038)		(0.039)
Intercept	1.913	2.487	1.548	2.284	0.597	1.452	1.193	2.264	1.243	2.092
Adjusted R-squared	0.160	0.161	0.103	0.107	0.076	0.084	0.118	0.131	0.091	0.101
N	2,528	2,528	2,528	2,528	2,528	2,528	2,528	2,528	2,528	2,528

Note: Coefficients are unstandardized. Standard errors are in parentheses. All models include the following control variables: mother's race, mother's immigrant status, mother's age, mother's age squared, frequency of mother's attendance at religious services, if mother lived with both biological parents at age 15, mother's education, mother's household income (log), mother's employment status, mother's homeownership, mother's current relationship status, if mother is co-resident with a grandmother, number of children in mother's household, disagreements at baseline, companionship at baseline, depression of one of mother's biological parents, depression of one of father's biological parents, prenatal smoking, child's gender, if the child was born low birth weight, child's age, and child's temperament at the 12-month wave. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] ADHD: Attention Deficit Hyperactivity Disorder; ODD: Oppositional Defiant Disorder.

[b] Chronic depression: mother depressed at both 12-month and 30-month waves; depression develops: mother not depressed at 12-month wave, depressed at 30-month wave; depression remits: mother depressed at 12-month wave, not depressed at 30-month wave; no depression: mother not depressed at 12-month or 30-month wave.

Table 7.1. Means and Standard Deviations of Additional Variables Included in Analyses.

Variable	Valid N	Mean	S.D	Min	Max
Social support					
Perceptions of instrumental support (y1)[a]	2,529	0.677	0.303	0.000	1.000
Perceptions of instrumental support (y3)	2,529	0.660	0.309	0.000	1.000
Perceptions of neighborhood support (ih)	2,514	3.476	0.999	1.000	5.000
Receipt of financial support (y1)	2,523	0.415	0.493	0.000	1.000
Receipt of financial support (y3)	2,525	0.297	0.457	0.000	1.000
Co-residence with grandparent (y1)	2,521	0.199	0.399	0.000	1.000
Co-residence with grandparent (y3)	2,515	0.153	0.361	0.000	1.000

[a] y1 = 12-month survey; y3 = 30-month survey; ih = 36-month In-Home survey.

Table 7.2. Means of Social Support, by Maternal Major Depressive Disorder (MDD) Over Time.

Variable	Chronic depression	Depression develops	Depression remits	No depression
Social support				
Perceptions of instrumental support (y1)[a]	0.554 ***	0.614 ***	0.564 ***	0.715
Perceptions of instrumental support (y3)	0.525 ***	0.585 ***	0.570 ***	0.706
Perceptions of neighborhood support (ih)	3.290 ***	3.184 ***	3.234 ***	3.576
Receipt of financial support (y1)	0.552 ***	0.487 ***	0.484 **	0.378
Receipt of financial support (y3)	0.438 ***	0.392 ***	0.321	0.260
Co-residence with grandparent (y1)	0.220	0.166	0.277 **	0.194
Co-residence with grandparent (y3)	0.176	0.163	0.141	0.150
N	224	317	184	1,803

Note: Symbols compare differences in means of social support between mothers with chronic depression (mothers who are depressed at both the 12-month and 30-month waves), mothers with depression that develops over time (not depressed at the 12-month wave but depressed at the 30-month wave), and mothers with depression that remits over time (depressed at the 12-month wave but not depressed at the 30-month wave) to mothers who never report depression. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] y1 = 12-month survey; y3 = 30-month survey; ih = 36-month In-Home survey.

Table 7.3. OLS Regression Models Predicting Maternal Social Support at 30-Month Wave, Regressed on Maternal Major Depressive Disorder (MDD) Over Time.

	Instrumental support			Neighborhood support		Financial support			Co-residence with grandparent		
Variable	Model 1	Model 2	Model 3	Model 1	Model 2	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Maternal depression over time[a]											
Chronic depression	-0.182 ***	-0.132 ***	-0.070 ***	-0.287 ***	-0.126	2.200 ***	1.886 ***	1.676 ***	1.282	1.228	1.171
	(0.021)	(0.020)	(0.017)	(0.070)	(0.068)	(0.145)	(0.157)	(0.164)	(0.183)	(0.201)	(0.218)
Depression develops	-0.122 ***	-0.077 ***	-0.045 **	-0.390 ***	-0.266 ***	1.841 ***	1.627 ***	1.558 ***	1.192	1.183	1.367
	(0.018)	(0.017)	(0.014)	(0.060)	(0.057)	(0.127)	(0.134)	(0.140)	(0.161)	(0.173)	(0.185)
Depression remits	-0.137 ***	-0.101 ***	-0.040 *	-0.337 ***	-0.197 **	1.335	1.112	1.046	0.914	0.729	0.583 *
	(0.023)	(0.021)	(0.018)	(0.076)	(0.072)	(0.167)	(0.174)	(0.182)	(0.222)	(0.237)	(0.256)
No depression (reference)	---	---	---	---	---	---	---	---	---	---	---
Paternal depression at 12-month wave		-0.019	0.002		-0.170 *		1.218	1.191		1.678 **	1.495 *
		(0.020)	(0.002)		(0.067)		(0.160)	(0.167)		(0.189)	(0.206)
Lagged measure of dependent variable[b]			0.541 ***					3.745 ***			7.933 ***
			(0.017)					(0.099)			(0.135)
Intercept	0.707	0.774	0.465	3.574	2.627	-1.040	1.732	-0.236	-1.715	-0.276	-1.242
Adjusted R-squared	0.046	0.233	0.449	0.024	0.158	0.015	0.065	0.123	0.001	0.096	0.206
Log likelihood	n/a	n/a	n/a	n/a	n/a	-1,517	-1,440	-1,346	-1,101	-997	-875
N	2,528	2,528	2,528	2,528	2,528	2,528	2,528	2,528	2,528	2,528	2,528

Note: The models predicting perceived instrumental support and perceived neighborhood support use OLS regression. Coefficients are unstandardized. Standard errors are in parentheses. The models predicting received financial support and grandparent in household use logistic regression. Odds ratios are presented. Model 2 includes the following control variables: mother's race, mother's immigrant status, mother's age, mother's age squared, frequency of mother's attendance at religious services, if mother lived with both biological parents at age 15, mother's education, mother's household income (log), mother's employment status, mother's homeownership, mother's relationship status with child's father at birth, if mother is co-resident with a grandmother, number of children in mother's household, depression of one of mother's biological parents, depression of one of father's biological parents, prenatal smoking, child's gender, if the child was born low birth weight, child's age, and child's temperament at the 12-month wave. All coefficients are displayed in Appendices 7.2 through 7.5. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] Chronic depression: mother depressed at both 12-month and 30-month waves; depression develops: mother not depressed at 12-month wave, depressed at 30-month wave; depression remits: mother depressed at 12-month wave, not depressed at 30-month wave; no depression: mother not depressed at 12-month or 30-month wave.

[b] Neighborhood support is only available at the 36-month In-Home wave.

Table 7.4. OLS Regression Models Predicting Maternal Social Support at 30-Month Wave, Regressed on Maternal Major Depressive Disorder (MDD) Over Time, with Interactions by Maternal Education.

	Instrumental support		Neighborhood support		Financial support		Co-residence with grandparent	
Variable	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Maternal depression over time[a]								
Chronic depression	-0.132 ***	-0.161 ***	-0.126	.-326 *	1.886 ***	3.086 ***	1.228	1.871
	(0.020)	(0.040)	(0.068)	(0.135)	(0.157)	(0.311)	(0.201)	(0.416)
Depression develops	-0.077 ***	-0.038	-0.266 ***	-0.263 *	1.627 ***	2.890 ***	1.183	1.092
	(0.017)	(0.037)	(0.057)	(0.124)	(0.134)	(0.289)	(0.173)	(0.426)
Depression remits	-0.101 ***	-0.108 *	-0.197 **	-0.415 **	1.112	2.085 *	0.729	1.580
	(0.021)	(0.047)	(0.072)	(0.158)	(0.174)	(0.373)	(0.237)	(0.517)
No depression (reference)	---	---	---	---	---	---	---	---
Paternal depression	-0.019	-0.017	-0.170 *	-0.158 *	1.260	1.223	1.678 **	1.616 *
at 12-month wave	(0.020)	(0.020)	(0.067)	(0.067)	(0.160)	(0.161)	(0.189)	(0.190)
Race								
White (reference)	---	---	---	---	---	---	---	---
Black	-0.083 ***	-0.082 ***	-0.322 ***	-0.385 ***	1.130	1.444 *	1.082	1.141
	(0.016)	(0.018)	(0.055)	(0.062)	(0.135)	(0.161)	(0.182)	(0.216)
Hispanic	-0.037 *	-0.037	-0.170 **	-0.185 **	0.870	1.065	1.536 *	1.921 **
	(0.019)	(0.021)	(0.063)	(0.071)	(0.160)	(0.189)	(0.200)	(0.233)
Other race	-0.104 *	-0.087 *	-0.070	-0.031	1.334	1.693	1.255	1.259
	(0.033)	(0.038)	(0.112)	(0.128)	(0.288)	(0.340)	(0.360)	(0.428)
Maternal depression * race interactions								
Chronic depression * white (reference)		---		---		---		---

(Table 7.4 continued)

Chronic depression * black		0.054		0.349 *		0.521		0.669
		(0.048)		(0.161)		(0.370)		(0.487)
Chronic depression * Hispanic		0.018		0.084		0.490		0.484
		(0.058)		(0.196)		(0.476)		(0.583)
Chronic depression * other race		-0.121		-0.154		0.933		n/a
		(0.123)		(0.415)		(0.940)		
Depression develops * white (reference)		---		---		---		---
Depression develops * black		-0.063		0.009		0.478 *		1.471
		(0.043)		(0.144)		(0.336)		(0.476)
Depression develops * Hispanic		-0.003		0.073		0.571		0.405
		(0.053)		(0.179)		(0.429)		(0.629)
Depression develops * other race		-0.019		-0.572		0.174		1.043
		(0.103)		(0.348)		(0.933)		(1.021)
Depression remits * white (reference)		---		---		---		---
Depression remits * black		0.023		0.376 *		0.410 *		0.332
		(0.055)		(0.185)		(0.440)		(0.629)
Depression remits * Hispanic		-0.010		0.014		0.527		0.372
		(0.064)		(0.216)		(0.529)		(0.678)
Depression remits * other race		-0.131		0.552		0.985		4.318
		(0.148)		(0.499)		(1.128)		(1.229)
Constant	0.774	0.772	2.627	2.690	1.732	1.461	-0.276	-0.223
Adjusted R-squared	0.233	0.233	0.158	0.161	0.065	0.069	0.096	0.103
Log likelihood	n/a	n/a	n/a	n/a	-1,440	-1,433	-997	-988
N	2,528	2,528	2,528	2,528	2,528	2,528	2,528	2,528

Note: Coefficients are unstandardized. Standard errors are in parentheses. All models include the following control variables: mother's immigrant status, mother's age, mother's age squared, frequency of mother's attendance at religious services, if mother lived with both biological parents at age 15, mother's education, mother's household income (log), mother's employment status, mother's homeownership, mother's relationship status with child's father at birth, if mother is co-resident with a grandmother, number of children in mother's household, depression of one of mother's biological parents, depression of one of father's biological parents, prenatal smoking, child's gender, if the child was born low birth weight, child's age, and child's temperament at the 12-month wave. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] Chronic depression: mother depressed at both 12-month and 30-month waves; depression develops: mother not depressed at 12-month wave, depressed at 30-month wave; depression remits: mother depressed at 12-month wave, not depressed at 30-month wave; no depression: mother not depressed at 12-month or 30-month wave.

Table 7.5. OLS Regression Models Predicting Maternal Social Support at 30-Month Wave, Regressed on Maternal Major Depressive Disorder (MDD) Over Time, with Interactions by Maternal Education.

	Instrumental support		Neighborhood support		Financial support		Co-residence with grandparent	
Variable	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Maternal depression over time[a]								
Chronic depression	-0.132 ***	-0.136 ***	-0.126	-0.029	1.886 ***	1.448	1.228	1.411
	(0.020)	(0.035)	(0.068)	(0.117)	(0.157)	(0.274)	(0.201)	(0.327)
Depression develops	-0.077 ***	-0.097 ***	-0.266 ***	-0.278 **	1.627 ***	1.659 *	1.183	1.564
	(0.017)	(0.030)	(0.057)	(0.100)	(0.134)	(0.233)	(0.173)	(0.283)
Depression remits	-0.101 ***	-0.067	-0.197 **	-0.254	1.112	1.087	0.729	0.878
	(0.021)	(0.039)	(0.072)	(0.132)	(0.174)	(0.318)	(0.237)	(0.413)
No depression (reference)	---	---	---	---	---	---	---	---
Paternal depression	-0.019	-0.020	-0.170 *	-0.170 *	1.260	1.238	1.678 **	1.674 **
at 12-month wave	(0.020)	(0.020)	(0.067)	(0.067)	(0.160)	(0.161)	(0.189)	(0.190)
Education								
Less than high school (reference)	---	---	---	---	---	---	---	---
High school diploma	0.052 ***	0.064 ***	-0.074	-0.094	0.871	0.852	1.218	1.271
(includes GED)	(0.015)	(0.018)	(0.051)	(0.060)	(0.128)	(0.154)	(0.152)	(0.182)
Some college	0.074 ***	0.068 ***	0.080	0.098	1.308 *	1.272	1.116	1.325
	(0.016)	(0.019)	(0.054)	(0.063)	(0.131)	(0.155)	(0.163)	(0.191)
College degree or higher	0.142 ***	0.125 ***	0.198 *	0.213 *	1.325	1.178	0.873	0.941
	(0.025)	(0.026)	(0.083)	(0.089)	(0.214)	(0.234)	(0.311)	(0.333)
Maternal depression * education interactions								
Chronic depression		---		---		---		---
* less than high school (reference)								

(Table 7.5 continued)

Chronic depression * high school		-0.060		-0.051		0.730		0.704
		(0.052)		(0.177)		(0.439)		(0.526)
Chronic depression * some college		0.031		-0.131		1.806		0.786
		(0.047)		(0.158)		(0.366)		(0.454)
Chronic depression * college		0.100		-0.586 *		3.586 *		1.923
		(0.082)		(0.277)		(0.634)		(0.894)
Depression develops * less than high school (reference)		---		---		---		---
Depression develops * high school		-0.028		0.060		1.032		1.170
		(0.043)		(0.146)		(0.347)		(0.402)
Depression develops * some college		0.064		0.009		0.817		0.360 *
		(0.041)		(0.139)		(0.323)		(0.450)
Depression develops * college		0.102		-0.097		1.654		n/a
		(0.070)		(0.235)		(0.544)		
Depression remits * less than high school (reference)		---		---		---		---
Depression remits * high school		-0.067		0.229		1.407		0.647
		(0.054)		(0.184)		(0.439)		(0.586)
Depression remits * some college		-0.071		-0.108		0.811		0.846
		(0.054)		(0.181)		(0.440)		(0.586)
Depression remits * college		0.128		0.343		0.580		1.383
		(0.087)		(0.292)		(0.865)		(1.193)
Constant	0.774	0.766	2.627	2.614	1.732	1.672	-0.276	-0.419
Adjusted R-squared	0.233	0.235	0.158	0.159	0.065	0.069	0.096	0.099
Log likelihood	n/a	n/a	n/a	n/a	-1,440	-1,433	-997	-990
N	2,528	2,528	2,528	2,528	2,528	2,528	2,528	2,528

Note: Coefficients are unstandardized. Standard errors are in parentheses. All models include the following control variables: mother's race, mother's immigrant status, mother's age, mother's age squared, frequency of mother's attendance at religious services, if mother lived with both biological parents at age 15, mother's household income (log), mother's employment status, mother's homeownership, mother's relationship status with child's father at birth, if mother is co-resident with a grandmother, number of children in mother's household, depression of one of mother's biological parents, depression of one of father's biological parents, prenatal smoking, child's gender, if the child was born low birth weight, child's age, and child's temperament at the 12-month wave. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] Chronic depression: mother depressed at both 12-month and 30-month waves; depression develops: mother not depressed at 12-month wave, depressed at 30-month wave; depression remits: mother depressed at 12-month wave, not depressed at 30-month wave; no depression: mother not depressed at 12-month or 30-month wave.

Table 7.6. OLS Regression Models Predicting Maternal Social Support at 30-Month Wave, Regressed on Maternal Major Depressive Disorder (MDD) Over Time, with Interactions by Maternal Household Income.

	Instrumental support		Neighborhood support		Financial support		Co-residence with grandparent	
Variable	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Maternal depression over time[a]								
Chronic depression	-0.132 ***	-0.001	-0.126	0.627	1.886 ***	1.132	1.228	,838
	(0.020)	(0.119)	(0.068)	(0.401)	(0.157)	(0.932)	(0.201)	(1.376)
Depression develops	-0.077 ***	-0.341 **	-0.266 ***	-0.466	1.627 ***	0.561	1.183	6.132
	(0.017)	(0.110)	(0.057)	(0.371)	(0.134)	(0.886)	(0.173)	(1.059)
Depression remits	-0.101 ***	-0.136	-0.197 **	-0.539	1.112	0.043 *	0.729	0.562
	(0.021)	(0.151)	(0.072)	(0.511)	(0.174)	(1.483)	(0.237)	(1.994)
No depression (reference)	---	---	---	---	---	---	---	---
Paternal depression	-0.019	-0.019	-0.170 *	-0.169 *	1.260	1.247	1.678 **	1.680 **
at 12-month wave	(0.020)	(0.020)	(0.067)	(0.067)	(0.160)	(0.160)	(0.189)	(0.189)
Log of household income	0.034 ***	0.032 ***	0.028	0.032	1.002	0.962	1.150 **	1.182 **
	(0.004)	(0.005)	(0.015)	(0.017)	(0.036)	(0.042)	(0.049)	(0.061)
Maternal depression * household income interactions								
Chronic depression * income		-0.014		-0.079		1.054		1.041
		(0.012)		(0.041)		(0.096)		(0.142)
Depression develops * income		0.028 *		0.021		1.117		0.840
		(0.011)		(0.038)		(0.091)		(0.111)
Depression remits * income		0.004		0.036		1.400 *		1.028
		(0.016)		(0.053)		(0.151)		(0.206)

(Table 7.6 continued)

Constant	0.774	0.795	2.627	2.574	1.732	2.083	-0.276	-0.532
Adjusted R-squared	0.233	0.234	0.158	0.159	0.065	0.067	0.096	0.097
Log likelihood	n/a	n/a	n/a	n/a	-1,440	-1,437	-997	-996
N	2,528	2,528	2,528	2,528	2,528	2,528	2,528	2,528

Note: Coefficients are unstandardized. Standard errors are in parentheses. All models include the following control variables: mother's race, mother's immigrant status, mother's age, mother's age squared, frequency of mother's attendance at religious services, if mother lived with both biological parents at age 15, mother's education, mother's employment status, mother's homeownership, mother's relationship status with child's father at birth, if mother is co-resident with a grandmother, number of children in mother's household, depression of one of mother's biological parents, depression of one of father's biological parents, prenatal smoking, child's gender, if the child was born low birth weight, child's age, and child's temperament at the 12-month wave. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] Chronic depression: mother depressed at both 12-month and 30-month waves; depression develops: mother not depressed at 12-month wave, depressed at 30-month wave; depression remits: mother depressed at 12-month wave, not depressed at 30-month wave; no depression: mother not depressed at 12-month or 30-month wave.

Table 7.7. OLS Regression Models Predicting Maternal Social Support at 30-Month Wave, Regressed on Maternal Major Depressive Disorder (MDD) Over Time, with Interactions by Parents' Relationship Status at Baseline.

	Instrumental support		Neighborhood support		Financial support		Co-residence with grandparent	
Variable	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Maternal depression over time[a]								
Chronic depression	-0.132 ***	-0.157 ***	-0.136	-0.197	1.886 ***	2.768 **	1.228	1.678
	(0.020)	(0.044)	(0.068)	(0.148)	(0.157)	(0.350)	(0.201)	(0.526)
Depression develops	-0.077 ***	-0.068	-0.266 ***	-0.131	1.627 ***	2.726 **	1.183	0.558
	(0.017)	(0.038)	(0.057)	(0.128)	(0.134)	(0.306)	(0.173)	(0.747)
Depression remits	-0.101 ***	-0.075	-0.197 **	-0.325 *	1.112	1.455	0.729	0.873
	(0.021)	(0.048)	(0.072)	(0.163)	(0.174)	(0.421)	(0.237)	(0.763)
No depression (reference)	---	---	---	---	---	---	---	---
Paternal depression	-0.019	-0.018	-0.170 *	-0.173 *	1.260	1.259	1.678 **	1.683 **
at 12-month wave	(0.020)	(0.020)	(0.067)	(0.067)	(0.160)	(0.160)	(0.189)	(0.189)
Relationship status at birth								
Married (reference)	---	---	---	---	---	---	---	---
Cohabiting	-0.092 ***	-0.083 ***	-0.124 *	-0.133 *	1.181	1.398	1.492	1.502
	(0.017)	(0.019)	(0.057)	(0.064)	(0.152)	(0.178)	(0.213)	(0.240)
Romantically involved	-0.073 ***	-0.081 ***	-0.190 **	-0.147 *	1.460 *	1.730 **	3.212 ***	3.169 ***
	(0.019)	(0.021)	(0.063)	(0.071)	(0.162)	(0.188)	(0.220)	(0.246)
Not in a relationship	-0.101 ***	-0.102 ***	-0.255 ***	-0.315 ***	1.484 *	1.638 *	3.050 ***	2.803 ***
	(0.022)	(0.026)	(0.074)	(0.087)	(0.185)	(0.225)	(0.242)	(0.281)
Maternal depression * relationship status interactions								
Chronic depression * married (reference)		---		---		---		---

(Table 7.7 continued)

Chronic depression * cohabiting		-0.019		0.101		0.726		0.670
		(0.054)		(0.184)		(0.431)		(0.638)
Chronic depression * romantically involved		0.106		-0.016		0.482		0.646
		(0.056)		(0.190)		(0.443)		(0.609)
Chronic depression * not in a relationship		0.002		0.258		0.747		0.883
		(0.065)		(0.218)		(0.504)		(0.665)
Depression develops * married (reference)		---		---		---		---
Depression develops * cohabiting		-0.030		-0.074		0.486		2.029
		(0.046)		(0.156)		(0.374)		(0.800)
Depression develops * romantically involved		0.007		-0.416 *		0.590		2.539
		(0.049)		(0.166)		(0.390)		(0.794)
Depression develops * not in a relationship		0.008		0.085		0.557		2.106
		(0.058)		(0.196)		(0.459)		(0.847)
Depression remits * married (reference)		---		---		---		---
Depression remits * cohabiting		-0.046		0.131		0.595		0.731
		(0.062)		(0.208)		(0.535)		(0.911)
Depression remits * romantically involved		-0.034		0.168		0.719		0.682
		(0.060)		(0.203)		(0.506)		(0.844)
Depression remits * not in a relationship		0.003		0.189		1.005		1.330
		(0.071)		(0.241)		(0.590)		(0.897)
Constant	0.774	0.759	2.627	2.643	1.732	1.596	-0.276	-0.266
Adjusted R-squared	0.233	0.233	0.158	0.160	0.065	0.067	0.096	0.097
Log likelihood	n/a	n/a	n/a	n/a	-1,440	-1,436	-997	-995
N	2,528	2,528	2,528	2,528	2,528	2,528	2,528	2,528

Note: Coefficients are unstandardized. Standard errors are in parentheses. All models include the following control variables: mother's race, mother's immigrant status, mother's age, mother's age squared, frequency of mother's attendance at religious services, if mother lived with both biological parents at age 15, mother's education, mother's household income (log), mother's employment status, mother's homeownership, if mother is co-resident with a grandmother, number of children in mother's household, depression of one of mother's biological parents, depression of one of father's biological parents, prenatal smoking, child's gender, if the child was born low birth weight, child's age, and child's temperament at the 12-month wave. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] Chronic depression: mother depressed at both 12-month and 30-month waves; depression develops: mother not depressed at 12-month wave, depressed at 30-month wave; depression remits: mother depressed at 12-month wave, not depressed at 30-month wave; no depression: mother not depressed at 12-month or 30-month wave.

Table 7.8. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave, with Interactions by Maternal Social Support.

	Anxious/depressed behaviors		
Variable	Model 1	Model 2	Model 3
Maternal depression at 12-month wave	0.146 **	0.110 *	0.109
	(0.052)	(0.052)	(0.179)
Paternal depression at 12-month wave	0.095	0.075	0.077
	(0.068)	(0.068)	(0.068)
Instrumental support		-0.273 ***	-0.237 **
		(0.069)	(0.075)
Neighborhood support		-0.068 ***	-0.075 ***
		(0.020)	(0.023)
Financial support		0.009	0.029
		(0.042)	(0.046)
Co-residence with grandparent		0.046	0.027
		(0.053)	(0.058)
Maternal depression * social support			
Depression * instrumental support			-0.189
			(0.163)
Depression * neighborhood support			0.038
			(0.049)
Depression * financial support			-0.106
			(0.106)
Depression * co-residence with grandparent			0.133
			(0.137)
Intercept	1.835	2.194	2.186
Adjusted R-squared	0.151	0.160	0.160
N	2,529	2,529	2,529

(Table 7.8 continued)

	Withdrawn behaviors		
	Model 1	Model 2	Model 3
Maternal depression at 12-month wave	0.045	0.008	0.142
	(0.053)	(0.053)	(0.183)
Paternal depression at 12-month wave	0.030	0.008	0.010
	(0.069)	(0.069)	(0.069)
Instrumental support		-0.316 ***	-0.283 ***
		(0.070)	(0.077)
Neighborhood support		-0.049 *	-0.047 *
		(0.021)	(0.023)
Financial support		-0.003	-0.004
		(0.043)	(0.047)
Co-residence with grandparent		0.102	0.096
		(0.054)	(0.059)
Maternal depression * social support			
Depression * instrumental support			-0.180
			(0.167)
Depression * neighborhood support			-0.014
			(0.050)
Depression * financial support			0.023
			(0.108)
Depression * co-residence with grandparent			0.045
			(0.140)
Intercept	1.312	1.638	1.613
Adjusted R-squared	0.103	0.113	0.112
N	2,529	2,529	2,529

(Table 7.8 continued)

	ADHD behaviors[a]		
	Model 1	Model 2	Model 3
Maternal depression at 12-month wave	0.220 ***	0.180 ***	0.032
	(0.054)	(0.054)	(0.186)
Paternal depression at 12-month wave	0.123	0.091	0.082
	(0.071)	(0.071)	(0.071)
Instrumental support		-0.234 **	-0.267 ***
		(0.072)	(0.078)
Neighborhood support		-0.111 ***	-0.109 ***
		(0.021)	(0.024)
Financial support		0.064	0.074
		(0.044)	(0.048)
Co-residence with grandparent		0.080	0.013
		(0.055)	(0.060)
Maternal depression * social support			
Depression * instrumental support			0.155
			(0.170)
Depression * neighborhood support			0.006
			(0.051)
Depression * financial support			-0.065
			(0.110)
Depression * co-residence with grandparent			0.394 **
			(0.143)
Intercept	0.632	1.009	1.019
Adjusted R-squared	0.066	0.081	0.083
N	2,529	2,529	2,529

(Table 7.8 continued)

	Aggressive behaviors		
	Model 1	Model 2	Model 3
Maternal depression at 12-month wave	0.141 **	0.100	0.112
	(0.053)	(0.053)	(0.182)
Paternal depression at 12-month wave	0.178 *	0.144 *	0.135
	(0.070)	(0.069)	(0.069)
Instrumental support		-0.196 **	-0.215 **
		(0.070)	(0.077)
Neighborhood support		-0.132 ***	-0.124 ***
		(0.021)	(0.023)
Financial support		0.101 *	0.119 *
		(0.043)	(0.047)
Co-residence with grandparent		0.054	-0.008
		(0.054)	(0.059)
Maternal depression * social support			
Depression * instrumental support			0.085
			(0.166)
Depression * neighborhood support			-0.026
			(0.050)
Depression * financial support			-0.092
			(0.108)
Depression * co-residence with grandparent			0.366 **
			(0.140)
Intercept	1.194	1.576	1.558
Adjusted R-squared	0.103	0.123	0.124
N	2,529	2,529	2,529

(Table 7.8 continued)

	ODD behaviors[a]		
	Model 1	Model 2	Model 3
Maternal depression at 12-month wave	0.112 *	0.076	0.107
	(0.054)	(0.054)	(0.184)
Paternal depression at 12-month wave	0.147 *	0.118	0.109
	(0.070)	(0.070)	(0.070)
Instrumental support		-0.161 *	-0.183 *
		(0.071)	(0.077)
Neighborhood support		-0.108 ***	-0.098 ***
		(0.021)	(0.023)
Financial support		0.128 **	0.154 **
		(0.043)	(0.047)
Co-residence with grandparent		0.024	-0.047
		(0.055)	(0.060)
Maternal depression * social support			
Depression * instrumental support			0.099
			(0.168)
Depression * neighborhood support			-0.032
			(0.051)
Depression * financial support			-0.132
			(0.109)
Depression * co-residence with grandparent			0.416 **
			(0.141)
Intercept	1.247	1.530	1.506
Adjusted R-squared	0.074	0.089	0.091
N	2,529	2,529	2,529

Note: Coefficients are unstandardized. Standard errors are in parentheses. All models include the following control variables: mother's race, mother's immigrant status, mother's age, mother's age squared, frequency of mother's attendance at religious services, if mother lived with both biological parents at age 15, mother's education, mother's household income (log), mother's employment status, mother's homeownership, mother's relationship status with child's father at birth, if mother is co-resident with a grandmother, number of children in mother's household, depression of one of mother's biological parents, depression of one of father's biological parents, prenatal smoking, child's gender, if the child was born low birth weight, child's age, and child's temperament at the 12-month wave. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] ADHD: Attention Deficit Hyperactivity Disorder; ODD: Oppositional Defiant Disorder.

Figure 2.1. Conceptual Framework for Examining Relationship between Parental Depression and Children's Behavior.

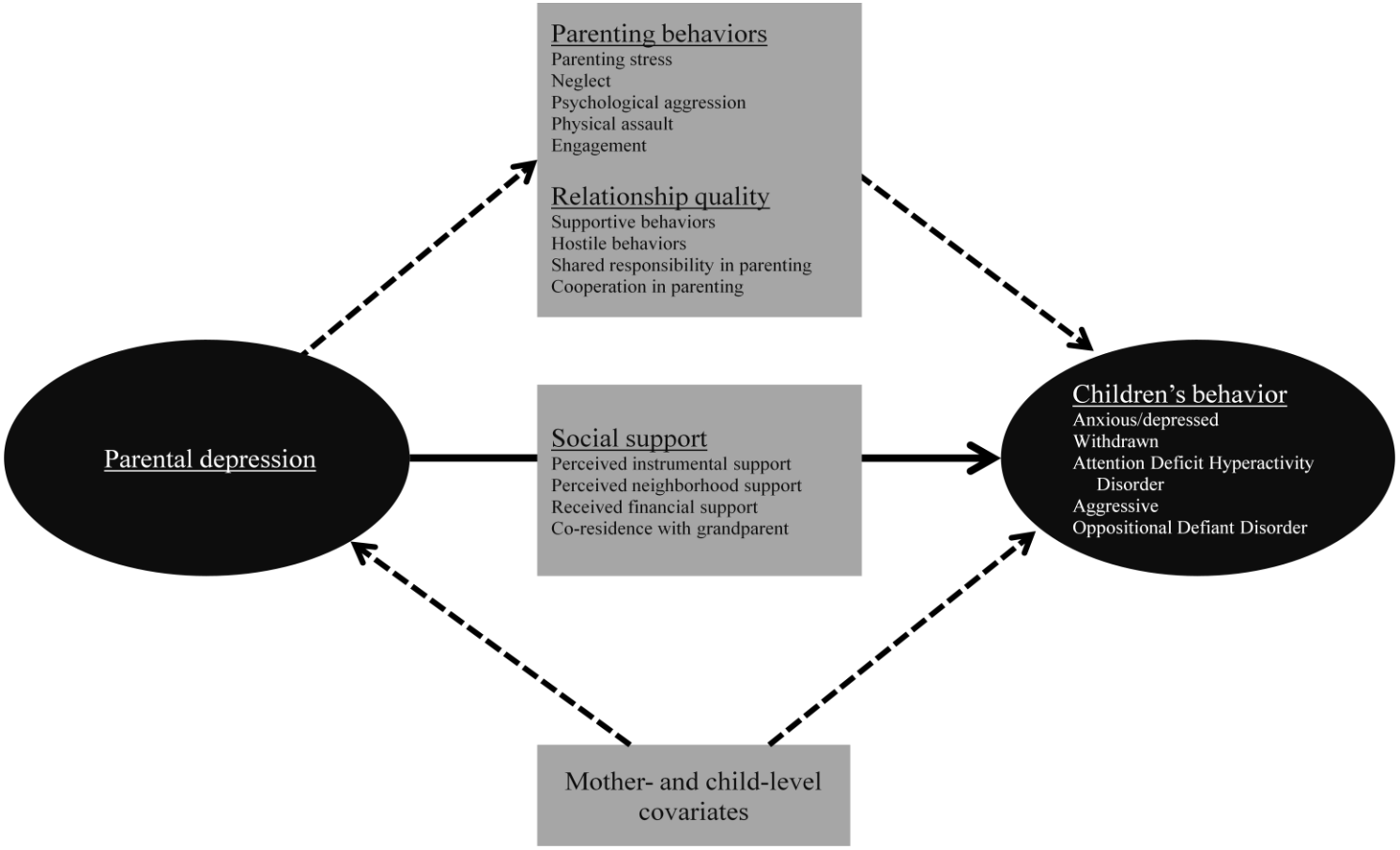
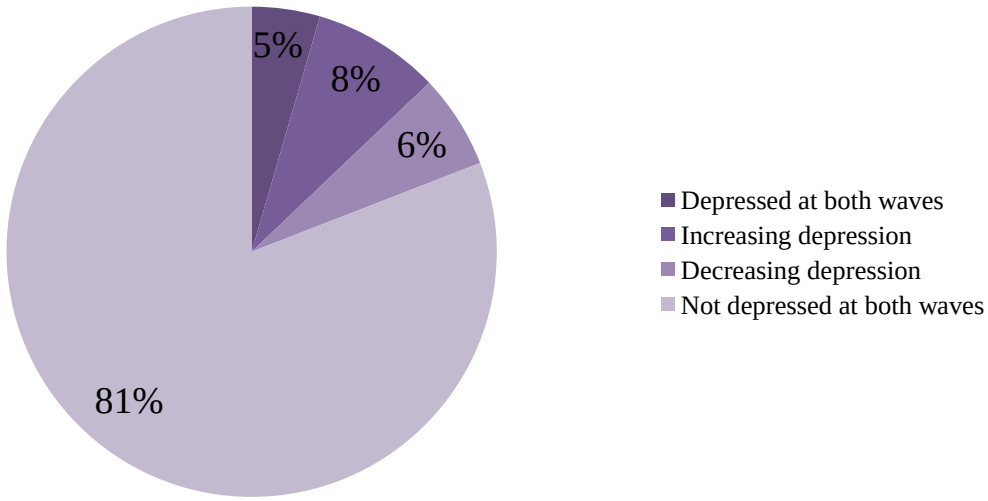


Figure 3.4. Frequency of Major Depressive Disorder (MDD) among Fathers at 12- and 30-Month Waves (N = 1,989).



Appendix 3.1. Description of Individual Items that Comprise Behavioral Outcomes.

Variable	α[a]
Anxious/depressed behaviors[b]	0.628
Clings to adults or is too dependent	
Feelings are easily hurt	
Gets too upset when separated from parents	
Looks unhappy without good reason	
Has nervous movements or is high strung or tense	
Is self-conscious or easily embarrassed	
Too fearful or anxious	
Unhappy, sad, or depressed	
Withdrawn behaviors	0.673
Acts too young for age	
Avoids looking others in the eye	
Does not answer when spoken to	
Refuses to participate in games or activities	
Seems unresponsive to affection	
Shows little attention toward people	
Shows little interest in things around him/her	
Withdrawn or does get involved with others	
ADHD behaviors	0.723
Cannot concentrate or cannot pay attention for long	
Cannot sit still, is restless or hyperactive	
Cannot stand waiting and wants everything now	
Demands must be met immediately	
Gets into everything	
Quickly shifts from one activity to another	
Aggressive behaviors	0.881
Cannot concentrate or cannot pay attention for long	
Cannot stand waiting; wants everything now	
Is defiant	
Demands must be met immediately	
Destroys things belonging to his/her family or other children	
Is disobedient	
Does not feel guilty after misbehaving	
Is easily frustrated	
Gets in many fights	
Has angry moods	
Hits others	
Physically attacks people	
Punishment does not change his/her behavior	
Screams a lot	
Is selfish or will not share	
Is stubborn, sullen, or irritable	

(Appendix 3.1 continued)

Has temper tantrums or a hot temper	
Is uncooperative	
Wants a lot of attention	
ODD behaviors	0.772
Is defiant	
Is disobedient	
Has angry moods	
Is stubborn, sullen, or irritable	
Has temper tantrums or a hot temper	
Is uncooperative	

[a] Cronbach's alpha reported for Analytic Sample B.
[b] Response categories for all items include the following: 0 = not true; 1 = somewhat or sometimes true; 2 = very true or often true.

Appendix 4.1. Means of Individual Items that Comprise Behavioral Outcomes, by Parental Major Depressive Disorder (MDD) at 12-Month Wave.

Variable	Both parents depressed	Only mother depressed	Only father depressed	Neither depressed
Anxious/depressed behaviors *(0 = not true, 1 = sometimes true, 2 = very true or often true)*				
Clings to adults or is too dependent	0.804 *	0.565	0.523	0.544
Feelings are easily hurt	1.174 *	1.133 ***	1.105 **	0.930
Gets too upset when separated from parents	0.804	0.812 ***	0.762 *	0.619
Looks unhappy without good reason	0.370 ***	0.125	0.110	0.104
Has nervous movements or is high strung or tense	0.413 ***	0.251 **	0.227	0.172
Is self-conscious or easily embarrassed	0.609	0.592 **	0.459	0.457
Too fearful or anxious	0.435 *	0.373 **	0.337	0.276
Unhappy, sad, or depressed	0.196 ***	0.055	0.052	0.042
Withdrawn behaviors *(0 = not true, 1 = sometimes true, 2 = very true or often true)*				
Acts too young for age	0.261 *	0.149	0.093	0.139
Avoids looking others in the eye	0.478 *	0.298	0.267	0.288
Does not answer when spoken to	0.761 **	0.592 *	0.517	0.514
Refuses to participate in games or activities	0.261	0.137	0.198	0.157
Seems unresponsive to affection	0.130	0.110	0.081	0.076
Shows little attention toward people	0.348	0.278	0.326	0.268
Shows little interest in things around him/her	0.196	0.259	0.238	0.239
Withdrawn or does get involved with others	0.283 ***	0.129	0.157 *	0.098
ADHD behaviors[a] *(0 = not true, 1 = sometimes true, 2 = very true or often true)*				
Cannot concentrate or cannot pay attention for long	0.717 ***	0.553 **	0.413	0.417
Cannot sit still, is restless or hyperactive	1.130 ***	0.988 ***	0.860	0.745
Cannot stand waiting and wants everything now	1.152	1.137 *	0.820	1.024
Demands must be met immediately	1.370	1.341 **	1.267	1.217
Gets into everything	1.370 **	1.176 ***	1.128 *	1.007
Quickly shifts from one activity to another	1.239 ***	1.027 ***	0.820	0.801

(Appendix 4.1 continued)

Aggressive behaviors *(0 = not true, 1 = sometimes true, 2 = very true or often true)*				
Cannot concentrate or cannot pay attention for long	0.717 ***	0.553 **	0.413	0.551
Cannot stand waiting; wants everything now	1.370 **	1.176 ***	1.128 *	1.007
Is defiant	1.065 ***	0.808 *	0.767	0.704
Demands must be met immediately	1.239 ***	1.027 ***	0.820	0.801
Destroys things belonging to his/her family or other children	0.565 **	0.420 **	0.407 *	0.312
Is disobedient	0.717	0.620	0.587	0.551
Does not feel guilty after misbehaving	0.609	0.675 **	0.587	0.554
Is easily frustrated	1.087 ***	0.749	0.762	0.674
Gets in many fights	0.261	1.960	0.244 *	0.166
Has angry moods	0.848 **	0.706 **	0.663	0.570
Hits others	0.804 **	0.635 *	0.703 **	0.544
Physically attacks people	0.130	0.157	0.163	0.113
Punishment does not change his/her behavior	0.674	0.655 **	0.628 *	0.519
Screams a lot	0.804 **	0.573	0.599	0.504
Is selfish or will not share	0.870 ***	0.627	0.640	0.563
Is stubborn, sullen, or irritable	0.891 **	0.713	0.686	0.627
Has temper tantrums or a hot temper	1.043 ***	0.902 ***	0.808 *	0.700
Is uncooperative	0.739 **	0.557 *	0.535	0.468
Wants a lot of attention	1.543 **	1.424 ***	1.390 *	1.257
ODD behaviors[a] *(0 = not true, 1 = sometimes true, 2 = very true or often true)*				
Is defiant	1.065 ***	0.808 *	0.767	0.704
Is disobedient	0.717	0.620	0.587	0.551
Has angry moods	0.848 **	0.706 **	0.663	0.570
Is stubborn, sullen, or irritable	0.891 **	0.714	0.686	0.627
Has temper tantrums or a hot temper	1.043 ***	0.902 ***	0.808 *	0.700
Is uncooperative	0.739 **	0.557 *	0.535	0.468
N	46	255	172	1,516

Note: Symbols compare both parents depressed, only mother depressed, and only father depressed to neither depressed. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] ADHD: Attention Deficit Hyperactivity Disorder; ODD: Oppositional Defiant Disorder.

Appendix 4.2. OLS Regression Models Predicting Children's Anxious/Depressed Behaviors at 36-Month In-Home Wave, Regressed on Parental Major Depressive Disorder (MDD) at 12-Month Wave.

	Anxious/depressed behaviors	
Variable	Model 1	Model 2
Parental depression at 12-month wave		
Both parents depressed	0.671 ***	0.421 **
	(0.014)	(0.135)
Only mother depressed	0.308 ***	0.136 *
	(0.065)	(0.062)
Only father depressed	0.174	0.015
	(0.078)	(0.073)
Neither parent depressed (reference)	---	---
Race		
White (reference)		---
Black		0.107
		(0.059)
Hispanic		0.148 *
		(0.068)
Other race		0.222
		(0.119)
Immigrant		0.130
		(0.076)
Age		-0.076
		(0.056)
Age squared		0.001
		(0.001)
Frequency of attendance at religious services		
At least once a week (reference)		---
Several times a month		-0.023
		(0.066)
Several times a year or hardly ever		-0.054
		(0.053)
Never		0.027
		(0.072)
Lived with both biological parents at age 15		0.034
		(0.045)
Education		
Less than high school (reference)		---

(Appendix 4.2 continued)

High school diploma (includes GED)		-0.108
		(0.058)
Some college		-0.229 ***
		(0.060)
College degree or higher		-0.329 ***
		(0.089)
Log of household income		-0.099 ***
		(0.019)
Employed		0.049
		(0.042)
Homeowner		-0.001
		(0.044)
Relationship status at birth		
Married (reference)		---
Cohabiting		0.201 ***
		(0.060)
Romantically involved but not living together		0.196 **
		(0.069)
Not in a relationship		0.320 ***
		(0.097)
Co-resident with child's grandmother		0.157 **
		(0.058)
Number of children		0.027
		(0.016)
Either of mother's parents depressed		0.172 ***
		(0.044)
Either of father's parents depressed		0.093 *
		(0.047)
Prenatal smoking		0.001
		(0.055)
Child is male		0.023
		(0.040)
Child born low birth weight		0.061
		(0.070)
Child age, in months		0.039
		(0.055)
Child temperament		-0.270 ***
		(0.027)
Intercept	-0.114	1.814
Adjusted R-squared	0.020	0.171
N	1,989	1,989

Note: Coefficients are unstandardized. Standard errors are in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Appendix 4.3. OLS Regression Models Predicting Children's Withdrawn Behaviors at 36-Month In-Home Wave, Regressed on Parental Major Depressive Disorder (MDD) at 12-Month Wave.

	Withdrawn behaviors	
Variable	Model 1	Model 2
Parental depression at 12-month wave		
Both parents depressed	0.442 **	0.291 *
	(0.142)	(0.137)
Only mother depressed	0.082	-0.033
	(0.064)	(0.062)
Only father depressed	0.047	-0.055
	(0.077)	(0.074)
Neither parent depressed (reference)	---	---
Race		
White (reference)		---
Black		0.045
		(0.060)
Hispanic		0.124
		(0.069)
Other race		0.033
		(0.120)
Immigrant		0.161 *
		(0.077)
Age		0.068
		(0.056)
Age squared		-0.001
		(0.001)
Frequency of attendance at religious services		
At least once a week (reference)		---
Several times a month		0.055
		(0.067)
Several times a year or hardly ever		0.067
		(0.054)
Never		0.159 *
		(0.073)
Lived with both biological parents at age 15		0.027
		(0.046)
Education		
Less than high school (reference)		---

(Appendix 4.3 continued)

High school diploma (includes GED)		-0.134 *
		(0.058)
Some college		-0.298 ***
		(0.060)
College degree or higher		-0.280 **
		(0.090)
Log of household income		-0.085 ***
		(0.019)
Employed		-0.042
		(0.043)
Homeowner		-0.009
		(0.045)
Relationship status at birth		
Married (reference)		---
Cohabiting		0.022
		(0.060)
Romantically involved but not living together		0.038
		(0.070)
Not in a relationship		0.208 *
		(0.098)
Co-resident with child's grandmother		-0.054
		(0.058)
Number of children		0.024
		(0.012)
Either of mother's parents depressed		0.123 **
		(0.045)
Either of father's parents depressed		0.001
		(0.047)
Prenatal smoking		-0.063
		(0.056)
Child is male		0.116 **
		(0.041)
Child born low birth weight		0.081
		(0.071)
Child age, in months		-0.067
		(0.055)
Child temperament		-0.221 ***
		(0.028)
Intercept	-0.102	1.611
Adjusted R-squared	0.004	0.114
N	1,989	1,989

Note: Coefficients are unstandardized. Standard errors are in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Appendix 4.4. OLS Regression Models Predicting Children's Attention Deficit Hyperactivity Disorder (ADHD) Behaviors at 36-Month In-Home Wave, Regressed on Parental Major Depressive Disorder (MDD) at 12-Month Wave.

	ADHD behaviors	
Variable	Model 1	Model 2
Parental depression at 12-month wave		
Both parents depressed	0.623 ***	0.440 **
	(0.146)	(0.001)
Only mother depressed	0.357 ***	0.209 **
	(0.066)	(0.067)
Only father depressed	0.138	0.070
	(0.078)	(0.078)
Neither parent depressed (reference)	---	---
Race		
White (reference)		---
Black		0.100
		(0.063)
Hispanic		0.061
		(0.073)
Other race		-0.086
		(0.127)
Immigrant		0.013
		(0.081)
Age		0.013
		(0.060)
Age squared		-0.001
		(0.001)
Frequency of attendance at religious services		
At least once a week (reference)		---
Several times a month		0.058
		(0.070)
Several times a year or hardly ever		0.107
		(0.057)
Never		0.174 *
		(0.077)
Lived with both biological parents at age 15		-0.018
		(0.048)
Education		
Less than high school (reference)		---

(Appendix 4.4 continued)

High school diploma (includes GED)		-0.002
		(0.062)
Some college		0.027
		(0.064)
College degree or higher		-0.076
		(0.095)
Log of household income		-0.035
		(0.020)
Employed		0.037
		(0.046)
Homeowner		-0.030
		(0.048)
Relationship status at birth		
Married (reference)		---
Cohabiting		0.075
		(0.064)
Romantically involved but not living together		0.062
		(0.074)
Not in a relationship		0.167
		(0.104)
Co-resident with child's grandmother		0.089
		(0.062)
Number of children		-0.009
		(0.018)
Either of mother's parents depressed		0.207 ***
		(0.048)
Either of father's parents depressed		0.040
		(0.050)
Prenatal smoking		0.118 *
		(0.059)
Child is male		0.108 *
		(0.043)
Child born low birth weight		0.031
		(0.007)
Child age, in months		0.016
		(.0590
Child temperament		-1.540 ***
		(0.029)
Intercept	-0.107	0.075
Adjusted R-squared	0.021	0.068
N	1,989	1,989

Note: Coefficients are unstandardized. Standard errors are in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Appendix 4.5. OLS Regression Models Predicting Children's Aggressive Behaviors at 36-Month In-Home Wave, Regressed on Parental Major Depressive Disorder (MDD) at 12-Month Wave.

	Aggressive behaviors	
Variable	Model 1	Model 2
Parental depression at 12-month wave		
Both parents depressed	0.709 ***	0.441 **
	(0.142)	(0.139)
Only mother depressed	0.305 ***	0.129 *
	(0.064)	(0.064)
Only father depressed	0.213 **	0.122
	(0.077)	(0.075)
Neither parent depressed (reference)	---	---
Race		
White (reference)		---
Black		0.002
		(0.061)
Hispanic		-0.002
		(0.070)
Other race		0.033
		(0.122)
Immigrant		-0.101
		(0.078)
Age		0.071
		(0.057)
Age squared		0.001
		(0.001)
Frequency of attendance at religious services		
At least once a week (reference)		---
Several times a month		-0.060
		(0.068)
Several times a year or hardly ever		0.044
		(0.055)
Never		0.093
		(0.074)
Lived with both biological parents at age 15		-0.011
		(0.046)
Education		
Less than high school (reference)		---

(Appendix 4.5 continued)

High school diploma (includes GED)		0.020
		(0.059)
Some college		0.021
		(0.061)
College degree or higher		0.019
		(0.092)
Log of household income		-0.043 *
		(0.019)
Employed		0.033
		(0.044)
Homeowner		0.015
		(0.046)
Relationship status at birth		
Married (reference)		---
Cohabiting		0.110
		(0.061)
Romantically involved but not living together		0.064
		(0.071)
Not in a relationship		0.265 **
		(0.099)
Co-resident with child's grandmother		0.081
		(0.059)
Number of children		0.017
		(0.017)
Either of mother's parents depressed		0.242 ***
		(0.046)
Either of father's parents depressed		0.088
		(0.048)
Prenatal smoking		0.168
		(0.057)
Child is male		0.135 **
		(0.041)
Child born low birth weight		0.055
		(0.072)
Child age, in months		-0.056
		(0.056)
Child temperament		-0.240 ***
		(0.028)
Intercept	-0.105	0.836
Adjusted R-squared	0.022	0.104
N	1,989	1,989

Note: Coefficients are unstandardized. Standard errors are in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Appendix 4.6. OLS Regression Models Predicting Children's Oppositional Defiant Disorder (ODD) Behaviors at 36-Month In-Home Wave, Regressed on Parental Major Depressive Disorder (MDD) at 12-Month Wave.

	ODD behaviors	
Variable	Model 1	Model 2
Parental depression at 12-month wave		
Both parents depressed	0.633 ***	0.379 **
	(0.144)	(0.142)
Only mother depressed	0.258 ***	0.115 *
	(0.065)	(0.065)
Only father depressed	0.161 *	0.010
	(0.077)	(0.077)
Neither parent depressed (reference)	---	---
Race		
White (reference)		---
Black		-0.162 **
		(0.062)
Hispanic		-0.137
		(0.071)
Other race		0.065
		(0.125)
Immigrant		-0.104
		(0.080)
Age		0.114
		(0.058)
Age squared		-0.001
		(0.001)
Frequency of attendance at religious services		
At least once a week (reference)		---
Several times a month		-0.060
		(0.069)
Several times a year or hardly ever		0.062
		(0.056)
Never		0.089
		(0.076)
Lived with both biological parents at age 15		-0.002
		(0.047)
Education		
Less than high school (reference)		---

(Appendix 4.6 continued)

High school diploma (includes GED)		0.047
		(0.060)
Some college		0.059
		(0.063)
College degree or higher		0.098
		(0.093)
Log of household income		-0.036
		(0.020)
Employed		0.022
		(0.045)
Homeowner		0.011
		(0.047)
Relationship status at birth		
Married (reference)		---
Cohabiting		0.112
		(0.063)
Romantically involved but not living together		0.089
		(0.072)
Not in a relationship		0.303 **
		(0.101)
Co-resident with child's grandmother		0.058
		(0.060)
Number of children		-0.001
		(0.017)
Either of mother's parents depressed		0.214 ***
		(0.047)
Either of father's parents depressed		0.101 *
		(0.049)
Prenatal smoking		0.150 **
		(0.058)
Child is male		0.103
		(0.042)
Child born low birth weight		0.004
		(0.073)
Child age, in months		-0.103
		(0.057)
Child temperament		-0.219 ***
		(0.029)
Intercept	-0.117	0.974
Adjusted R-squared	0.016	0.078
N	1,989	1,989

Note: Coefficients are unstandardized. Standard errors are in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Appendix 4.7. Logistic Regression Models Predicting Children's Problem Behaviors (90th Percentile of Population) at 36-Month In-Home Wave, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave.[a]

	Anxious/depressed behaviors		Withdrawn behaviors		ADHD behaviors[b]		Aggressive behaviors		ODD behaviors[b]	
Variable	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Maternal depression	1.900 ***	1.412 *	1.331	1.079	2.141 ***	1.700 **	2.220 ***	1.636 **	2.387 ***	1.788 **
at 12-month wave	(0.143)	(0.158)	(0.157)	(0.173)	(0.151)	(0.164)	(0.144)	(0.158)	(0.159)	(0.172)
Paternal depression		1.210		1.184		1.437		1.161		1.370
at 12-month wave		(0.213)		(0.223)		(0.221)		(0.226)		(0.243)
Intercept	-2.068	0.680	-2.064	0.634	-2.319	-2.445	-2.208	0.953	-2.533	-1.237
Pseudo R-squared	0.010	0.114	0.002	0.098	0.014	0.069	0.016	0.099	0.018	0.083
Pseudo log likelihood	-945	-846	-915	-827	-828	-782	-887	-811	-736	-688
N	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529

Note: Odds ratios reported. Standard errors of coefficients are in parentheses. Model 2 includes the following control variables: mother's race, mother's immigrant status, mother's age, mother's age squared, frequency of mother's attendance at religious services, if mother lived with both biological parents at age 15, mother's education, mother's household income (log), mother's employment status, mother's homeownership, mother's relationship status with child's father at birth, if mother is co-resident with a grandmother, number of children in mother's household, depression of one of mother's biological parents, depression of one of father's biological parents, prenatal smoking, child's gender, if the child was born low birth weight, child's age, and child's temperament at the 12-month wave. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] Dependent variables are dichotomous measures that indicates whether the child displays behavioral problems at or above the 90th percentile in the population of children (with the cutoff point being T-scores of greater than or equal to 63).

[b] ADHD: Attention Deficit Hyperactivity Disorder; ODD: Oppositional Defiant Disorder.

Appendix 4.8. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Conservative Measure of Maternal Major Depressive Disorder (MDD) at 12-Month Wave.[a]

	Anxious/depressed behaviors		Withdrawn behaviors		ADHD behaviors[b]		Aggressive behaviors		ODD behaviors[b]	
Variable	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Maternal depression	0.327 ***	0.150 **	0.176 **	0.063	0.400 ***	0.265 ***	0.364 ***	0.179 **	0.281 ***	0.127 *
at 12-month wave	(0.059)	(0.057)	(0.059)	(0.058)	(0.059)	(0.060)	(0.059)	(0.058)	(0.059)	(0.059)
Paternal depression		0.100		0.004		0.110		0.149		0.123
at 12-month wave		(0.075)		(0.077)		(0.078)		(0.077)		(0.078)
Intercept	-0.046	1.707	-0.065	1.341	-0.057	0.528	-0.050	1.120	-0.075	1.200
Adjusted R-squared	0.012	0.154	0.003	0.103	0.017	0.068	0.014	0.104	0.009	0.074
N	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529

Note: Coefficients are unstandardized. Standard errors are in parentheses. Model 2 includes the following control variables: mother's race, mother's immigrant status, mother's age, mother's age squared, frequency of mother's attendance at religious services, if mother lived with both biological parents at age 15, mother's education, mother's household income (log), mother's employment status, mother's homeownership, mother's relationship status with child's father at birth, if mother is co-resident with a grandmother, number of children in mother's household, depression of one of mother's biological parents, depression of one of father's biological parents, prenatal smoking, child's gender, if the child was born low birth weight, child's age, and child's temperament at the 12-month wave. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] Respondent considered depressed if he or she reported feelings of depression or losing interest in normally pleasurable activities, for a period of at least two weeks, and answered affirmatively to having at least four of seven additional depressive symptoms.

[b] ADHD: Attention Deficit Hyperactivity Disorder; ODD: Oppositional Defiant Disorder.

Appendix 4.9. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Mother's Probability of Receiving a Major Depressive Disorder (MDD) Diagnosis at 12-Month Wave.[a]

	Anxious/depressed behaviors		Withdrawn behaviors		ADHD behaviors[b]		Aggressive behaviors		ODD behaviors[b]	
Variable	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Mother's probability of MDD diagnosis at 12-month wave	0.371 *** (0.062)	0.171 ** (0.060)	0.172 ** (0.062)	0.045 (0.062)	0.415 *** (0.062)	0.256 *** (0.063)	0.372 *** (0.062)	0.156 * (0.062)	0.294 *** (0.062)	0.115 (0.062)
Father's probability of MDD diagnosis at 12-month wave		0.098 (0.079)		0.060 (0.081)		0.151 (0.083)		0.213 ** (0.081)		0.183 * (0.082)
Intercept	-0.056	1.715	-0.066	1.342	-0.064	0.546	-0.056	1.133	-0.081	1.206
Adjusted R-squared	0.013	0.154	0.003	0.103	0.017	0.068	0.014	0.104	0.008	0.074
N	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529

Note: Coefficients are unstandardized. Standard errors are in parentheses. Model 2 includes the following control variables: mother's race, mother's immigrant status, mother's age, mother's age squared, frequency of mother's attendance at religious services, if mother lived with both biological parents at age 15, mother's education, mother's household income (log), mother's employment status, mother's homeownership, mother's relationship status with child's father at birth, if mother is co-resident with a grandmother, number of children in mother's household, depression of one of mother's biological parents, depression of one of father's biological parents, prenatal smoking, child's gender, if the child was born low birth weight, child's age, and child's temperament at the 12-month wave. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] Probability of caseness indicates the probability the respondent would have been diagnosed as having experienced a Major Depressive Episode (MDE) if he or she completed the Long-Form Composite International Diagnostic Interview (CIDI). Individuals who did not answer affirmatively to the two stem questions (about feeling depressed or losing interest in normally pleasurable activities for a period of at least two weeks) receive a probability of caseness equal to zero.

[b] ADHD: Attention Deficit Hyperactivity Disorder; ODD: Oppositional Defiant Disorder.

Appendix 4.10. OLS Regression Models Predicting Children's Behavior at 36-Month Wave, Regressed on Maternal Major Depressive Disorder (MDD) at 30-Month Wave.

	Anxious/depressed behaviors		Withdrawn behaviors		ADHD behaviors[a]		Aggressive behaviors		ODD behaviors[a]	
Variable	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Maternal depression at 30-month wave	0.351 *** (0.048)	0.210 *** (0.047)	0.184 *** (0.048)	0.075 (0.048)	0.372 *** (0.048)	0.248 *** (0.049)	0.424 *** (0.048)	0.268 *** (0.048)	0.399 *** (0.048)	0.274 *** (0.048)
Paternal depression at 30-month wave		0.026 (0.063)		0.021 (0.064)		-0.014 (0.065)		0.075 (0.064)		0.124 (0.065)
Intercept	-0.080	1.734	-0.083	1.357	-0.085	0.596	-0.095	1.146	-0.013	1.191
Adjusted R-squared	0.020	0.158	0.005	0.109	0.023	0.074	0.030	0.113	0.027	0.086
N	2,528	2,528	2,528	2,528	2,528	2,528	2,528	2,528	2,528	2,528

Note: Coefficients are unstandardized. Standard errors are in parentheses. Model 2 includes the following control variables: mother's race, mother's immigrant status, mother's age, mother's age squared, frequency of mother's attendance at religious services, if mother lived with both biological parents at age 15, mother's education, mother's household income (log), mother's employment status, mother's homeownership, mother's relationship status with child's father at birth, if mother is co-resident with a grandmother, number of children in mother's household, depression of one of mother's biological parents, depression of one of father's biological parents, prenatal smoking, child's gender, if the child was born low birth weight, child's age, and child's temperament at the 12-month wave. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] ADHD: Attention Deficit Hyperactivity Disorder; ODD: Oppositional Defiant Disorder.

Appendix 4.11. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Maternal Mental Illness Prior to Pregnancy.[a]

	Anxious/depressed behaviors		Withdrawn behaviors		ADHD behaviors[b]		Aggressive behaviors		ODD behaviors[b]	
Variable	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Maternal pre-pregnancy mental illness diagnosis	0.198 ** (0.070)	0.082 (0.068)	0.083 (0.072)	-0.009 (0.070)	0.142 * (0.070)	0.062 (0.071)	0.225 ** (0.070)	0.096 (0.070)	0.187 ** (0.070)	0.066 (0.070)
Paternal depression at 12-month wave		0.070 (0.079)		0.065 (0.082)		0.151 (0.082)		0.226 ** (0.081)		0.208 * (0.082)
Intercept	-0.003	1.727	-0.025	1.677	-0.007	0.664	-0.021	0.907	-0.056 *	0.896
Adjusted R-squared	0.004	0.140	0.000	0.117	0.002	0.068	0.005	0.110	0.003	0.080
N[c]	1,947	1,947	1,947	1,947	1,947	1,947	1,947	1,947	1,947	1,947

Note: Coefficients are unstandardized. Standard errors are in parentheses. Model 2 includes the following control variables: mother's race, mother's immigrant status, mother's age, mother's age squared, frequency of mother's attendance at religious services, if mother lived with both biological parents at age 15, mother's education, mother's household income (log), mother's employment status, mother's homeownership, mother's relationship status with child's father at birth, if mother is co-resident with a grandmother, number of children in mother's household, depression of one of mother's biological parents, depression of one of father's biological parents, prenatal smoking, child's gender, if the child was born low birth weight, child's age, and child's temperament at the 12-month wave. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] Mental illness includes including depression, schizophrenia, bipolar disorder, anxiety disorder, eating disorders, and all other DSM-IV mental illness diagnoses.

[b] ADHD: Attention Deficit Hyperactivity Disorder; ODD: Oppositional Defiant Disorder.

[c] Sample size reduced because pre-pregnancy mental illness diagnosis not available for all respondents.

Appendix 4.12. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Maternal Mental Illness Prior to Pregnancy and Maternal Major Depressive Disorder (MDD) at 12-Month Wave.[a]

	Anxious/depressed behaviors		Withdrawn behaviors		ADHD behaviors[b]		Aggressive behaviors		ODD behaviors[b]	
Variable	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Maternal depression	0.157 **	0.158 *	0.064	0.119	0.224 ***	0.270 ***	0.164 **	0.207 **	0.122 *	0.155 *
at 12-month wave	(0.059)	(0.065)	(0.062)	(0.068)	(0.062)	(0.068)	(0.061)	(0.067)	(0.061)	(0.067)
Maternal pre-pregnancy	0.057	0.059	-0.023	0.061	0.026	0.096	0.069	0.135	0.046	0.097
mental illness diagnosis	(0.068)	(0.080)	(0.071)	(0.084)	(0.071)	(0.084)	(0.070)	(0.082)	(0.071)	(0.083)
Paternal depression	0.068	0.068	0.081	0.088	0.155	0.160	0.228 **	0.234 **	0.209 *	0.213 **
at 12-month wave	(0.079)	(0.079)	(0.082)	(0.082)	(0.082)	(0.083)	(0.081)	(0.081)	(0.082)	(0.082)
Maternal depression *		-0.006		-0.291		-0.245		-0.229		-0.176
pre-pregnancy mental illness		(0.147)		(0.153)		(0.154)		(0.151)		(0.152)
Intercept	1.676	1.675	1.615	1.573	0.574	0.539	0.843	0.810	0.849	0.824
Adjusted R-squared	0.142	0.141	0.109	0.111	0.067	0.068	0.110	0.111	0.081	0.081
N[c]	1,947	1,947	1,947	1,947	1,947	1,947	1,947	1,947	1,947	1,947

Note: Coefficients are unstandardized. Standard errors are in parentheses. All models include the following control variables: mother's race, mother's immigrant status, mother's age, mother's age squared, frequency of mother's attendance at religious services, if the mother lived with both biological parents when 15 years old, mother's education, log of mother's household income, mother's employment status, mother's homeownership, mother's relationship status with father at birth, grandmother lives in mother's household, number of children in mother's household, one of mother's biological parents was depressed, one of father's biological parents was depressed, prenatal smoking, child's gender, if the child was born low birth weight, child's age, and child's temperament at 12 months. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] Mental illness includes including depression, schizophrenia, bipolar disorder, anxiety disorder, eating disorders, and all other DSM-IV mental illness diagnoses.

[b] ADHD: Attention Deficit Hyperactivity Disorder; ODD: Oppositional Defiant Disorder.

[c] Sample size reduced because pre-pregnancy mental illness diagnosis not available for all respondents.

Appendix 5.1. Means of Individual Items that Comprise Maternal Parenting Behaviors, by Maternal Major Depressive Disorder (MDD) at 12-Month Wave.

Variable	Depressed	Not depressed	α^a
Parenting stress *(1 = strongly disagree, 4 = strongly agree)*			0.633
Being a parent is harder than I thought it would be	1.887 **	2.055	
I feel trapped by responsibilities as a parent	3.182 ***	3.428	
Taking care of my children is much more work than pleasure	3.007 ***	3.235	
I often feel tired, worn out, or exhausted from raising a family	2.130 ***	2.427	
Neglect *(1 = did in past year, 0 = did not do in past year)*			0.454
Had to leave child home alone	0.022	0.012	
Were so caught up in own problems, not able to show child love	0.120 ***	0.058	
Were not able to make sure child got food he or she needed	0.037 **	0.017	
Were not able to make sure child goes to a doctor or hospital	0.044 *	0.023	
Were so drunk or high that you had a problem taking care of child	0.017 *	0.007	
Psychological aggression *(1 = did in past year, 0 = did not do in past year)*			0.482
Shouted, yelled, or screamed at child	0.852	0.821	
Threatened to spank or hit child but didn't actually do it	0.832 *	0.779	
Swore or cursed at child	0.229 **	0.172	
Called child dumb or lazy or some other name like that	0.047	0.032	
Said you would send child away or would kick child out of the house	0.059	0.051	
Physical assault *(1 = did in past year, 0 = did not do in past year)*			0.532
Spanked child on the bottom with your bare hand	0.786 *	0.723	
Hit child on the bottom with a hard object	0.256	0.233	
Slapped child on the hand, arm, or leg	0.642	0.621	
Pinched child	0.057	0.080	
Shook child	0.049	0.047	

(Appendix 5.1 continued)

Engagement *(0 = 0 days per week, 7 = 7 days per week)*			0.678
Sang songs or nursery rhymes with child	5.364	5.304	
Hugged or showed physical affection to child	6.887	6.927	
Told child that you love him/her	6.857 *	6.929	
Let child help you with simple household chores	5.221	5.314	
Played imaginary games with child	4.515	4.680	
Read stories to child	4.956 **	5.313	
Told stories to child	4.373	4.558	
Played inside with toys such as blocks or legos with child	5.477	5.607	
Told child that you appreciated something he/she did	6.369	6.383	
Took child to visit relatives	2.951	3.154	
Went to a restaurant or out to eat with child	1.640	1.741	
Assisted child with eating	2.665	2.837	
Put child to bed	6.346	6.371	
N	408	2,121	

Note: Symbols compare differences in means of maternal parenting behaviors between mothers who report MDD during the 12-month wave and mothers who do not report MDD during the 12-month wave. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] Cronbach's alpha reported for Analytic Sample B.

Appendix 5.2. OLS Regression Models Predicting Maternal Reports of Parenting Stress at 30-Month Wave, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave.

	Parenting stress	
Variable	Model 1	Model 2
Maternal depression at 12-month wave	0.234 ***	0.170 ***
	(0.036)	(0.037)
Paternal depression at 12-month wave		0.051
		(0.048)
Race		
White (reference)		---
Black		0.089 *
		(0.039)
Hispanic		0.049
		(0.045)
Other race		0.123
		(0.080)
Immigrant		0.003
		(0.049)
Age		-0.001
		(0.035)
Age squared		-0.001 *
		(0.001)
Frequency of attendance at religious services		
At least once a week (reference)		---
Several times a month		0.050
		(0.043)
Several times a year or hardly ever		0.077 *
		(0.034)
Never		0.113 *
		(0.046)
Lived with both biological parents at age 15		0.029
		(0.029)
Education		
Less than high school (reference)		---
High school diploma (includes GED)		-0.084 *
		(0.036)
Some college		0.129 ***
		(0.039)
College degree or higher		0.029
		(0.059)
Log of household income		0.011
		(0.011)

(Appendix 5.2 continued)

Employed		-0.038
		(0.028)
Homeowner		0.004
		(0.029)
Relationship status at birth		
Married (reference)		---
Cohabiting		-0.108 **
		(0.041)
Romantically involved but not living together		-0.045
		(0.045)
Not in a relationship		-0.002
		(0.053)
Co-resident with child's grandmother		-0.001
		(0.036)
Number of children		0.024 *
		(0.011)
Either of mother's parents depressed		0.144 ***
		(0.029)
Either of father's parents depressed		-0.011
		(0.032)
Prenatal smoking		0.044
		(0.035)
Child is male		-0.029
		(0.026)
Child born low birth weight		0.005
		(0.044)
Child age, in months		0.042
		(0.035)
Child temperament		-0.075 ***
		(0.017)
Intercept	2.215	1.598
Adjusted R-squared	0.016	0.050
N	2,529	2,529

Note: Coefficients are unstandardized. Standard errors are in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Appendix 5.3. OLS Regression Models Predicting Maternal Reports of Neglect at 36-Month In-Home Wave, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave.

	Neglect	
Variable	Model 1	Model 2
Maternal depression at 12-month wave	0.025 ***	0.019 ***
	(0.005)	(0.005)
Paternal depression at 12-month wave		0.003
		(0.007)
Race		
White (reference)		---
Black		0.008
		(0.005)
Hispanic		0.010
		(0.006)
Other race		0.010
		(0.011)
Immigrant		0.001
		(0.007)
Age		0.003
		(0.005)
Age squared		-0.001
		(0.001)
Frequency of attendance at religious services		
At least once a week (reference)		---
Several times a month		0.003
		(0.006)
Several times a year or hardly ever		-0.001
		(0.005)
Never		-0.002
		(0.006)
Lived with both biological parents at age 15		0.003
		(0.004)
Education		
Less than high school (reference)		---
High school diploma (includes GED)		-0.005
		(0.005)
Some college		-0.009
		(0.005)
College degree or higher		-0.009
		(0.008)
Log of household income		-0.002
		(0.001)

(Appendix 5.3 continued)

Employed		-0.006
		(0.004)
Homeowner		0.005
		(0.004)
Relationship status at birth		
Married (reference)		---
Cohabiting		0.010
		(0.006)
Romantically involved but not living together		-0.016 *
		(0.006)
Not in a relationship		0.014
		(0.007)
Co-resident with child's grandmother		0.004
		(0.005)
Number of children		0.001
		(0.001)
Either of mother's parents depressed		0.009 *
		(0.004)
Either of father's parents depressed		0.003
		(0.004)
Prenatal smoking		0.001
		(0.005)
Child is male		0.001
		(0.004)
Child born low birth weight		-0.003
		(0.006)
Child age, in months		-0.001
		(0.005)
Child temperament		-0.007 **
		(0.002)
Intercept	0.024	0.027
Adjusted R-squared	0.010	0.021
N	2,529	2,529

Note: Coefficients are unstandardized. Standard errors are in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Appendix 5.4. OLS Regression Models Predicting Maternal Reports of Psychological Aggression at 36-Month In-Home Wave, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave.

	Psychological aggression	
Variable	Model 1	Model 2
Maternal depression at 12-month wave	0.032 **	0.012
	(0.010)	(0.010)
Paternal depression at 12-month wave		-0.001
		(0.013)
Race		
White (reference)		---
Black		0.036 **
		(0.011)
Hispanic		0.002
		(0.013)
Other race		0.044
		(0.022)
Immigrant		-0.064 ***
		(0.014)
Age		-0.002
		(0.010)
Age squared		-0.001
		(0.001)
Frequency of attendance at religious services		
At least once a week (reference)		---
Several times a month		0.012
		(0.012)
Several times a year or hardly ever		0.024 *
		(0.010)
Never		0.041 **
		(0.013)
Lived with both biological parents at age 15		-0.002
		(0.008)
Education		
Less than high school (reference)		---
High school diploma (includes GED)		0.010
		(0.010)
Some college		0.008
		(0.011)
College degree or higher		-0.028
		(0.017)

(Appendix 5.4 continued)

Log of household income		0.001
		(0.003)
Employed		0.017 *
		(0.008)
Homeowner		-0.004
		(0.008)
Relationship status at birth		
Married (reference)		---
Cohabiting		-0.013
		(0.011)
Romantically involved but not living together		-0.008
		(0.013)
Not in a relationship		-0.001
		(0.015)
Co-resident with child's grandmother		0.001
		(0.010)
Number of children		0.002
		(0.003)
Either of mother's parents depressed		0.027 ***
		(0.008)
Either of father's parents depressed		0.002
		(0.009)
Prenatal smoking		0.042 ***
		(0.010)
Child is male		0.018 *
		(0.007)
Child born low birth weight		-0.024
		(0.013)
Child age, in months		0.004
		(0.010)
Child temperament		-0.009
		(0.005)
Intercept	0.371	0.324
Adjusted R-squared	0.004	0.065
N	2,529	2,529

Note: Coefficients are unstandardized. Standard errors are in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Appendix 5.5. OLS Regression Models Predicting Maternal Reports of Physical Assault at 36-Month In-Home Wave, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave.

	Physical assault	
Variable	Model 1	Model 2
Maternal depression at 12-month wave	0.017	-0.005
	(0.012)	(0.012)
Paternal depression at 12-month wave		0.021
		(0.016)
Race		
White (reference)		---
Black		0.082 ***
		(0.013)
Hispanic		-0.002
		(0.015)
Other race		0.052
		(0.027)
Immigrant		-0.069 ***
		(0.016)
Age		-0.002
		(0.012)
Age squared		-0.001
		(0.001)
Frequency of attendance at religious services		
At least once a week (reference)		---
Several times a month		-0.021
		(0.014)
Several times a year or hardly ever		-0.013
		(0.011)
Never		-0.022
		(0.015)
Lived with both biological parents at age 15		0.015
		(0.010)
Education		
Less than high school (reference)		---
High school diploma (includes GED)		0.016
		(0.012)
Some college		0.006
		(0.013)
College degree or higher		-0.018
		(0.020)

(Appendix 5.5 continued)

Log of household income		0.004
		(0.004)
Employed		0.024 *
		(0.009)
Homeowner		-0.008
		(0.010)
Relationship status at birth		
Married (reference)		---
Cohabiting		0.002
		(0.014)
Romantically involved but not living together		0.006
		(0.015)
Not in a relationship		0.011
		(0.018)
Co-resident with child's grandmother		0.009
		(0.012)
Number of children		-0.007
		(0.004)
Either of mother's parents depressed		0.020 *
		(0.010)
Either of father's parents depressed		0.021 *
		(0.011)
Prenatal smoking		0.027 *
		(0.012)
Child is male		0.036 ***
		(0.009)
Child born low birth weight		-0.027
		(0.015)
Child age, in months		0.008
		(0.012)
Child temperament		-0.023 ***
		(0.006)
Intercept	0.341	0.256
Adjusted R-squared	0.001	0.085
N	2,529	2,529

Note: Coefficients are unstandardized. Standard errors are in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Appendix 5.6. OLS Regression Models Predicting Maternal Reports of Engagement at 30-Month Wave, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave.

	Engagement	
Variable	Model 1	Model 2
Maternal depression at 12-month wave	-0.115 *	-0.065
	(0.049)	(0.050)
Paternal depression at 12-month wave		0.043
		(0.066)
Race		
White (reference)		---
Black		-0.167 **
		(0.053)
Hispanic		-0.046
		(0.062)
Other race		0.220 **
		(0.109)
Immigrant		-0.400 ***
		(0.067)
Age		0.021
		(0.049)
Age squared		0.001
		(0.001)
Frequency of attendance at religious services		
At least once a week (reference)		---
Several times a month		-0.032
		(0.059)
Several times a year or hardly ever		-0.089
		(0.047)
Never		-0.225 ***
		(0.063)
Lived with both biological parents at age 15		0.047
		(0.040)
Education		
Less than high school (reference)		---
High school diploma (includes GED)		0.038
		(0.050)
Some college		0.108 *
		(0.052)
College degree or higher		0.221 **
		(0.081)
Log of household income		-0.013
		(0.015)

(Appendix 5.6 continued)

Employed		-0.003
		(0.038)
Homeowner		0.006
		(0.040)
Relationship status at birth		
Married (reference)		---
Cohabiting		0.035
		(0.056)
Romantically involved but not living together		0.095
		(0.062)
Not in a relationship		-0.079
		(0.073)
Co-resident with child's grandmother		0.021
		(0.049)
Number of children		-0.057 ***
		(0.015)
Either of mother's parents depressed		-0.117 **
		(0.040)
Either of father's parents depressed		-0.013
		(0.044)
Prenatal smoking		0.074
		(0.048)
Child is male		-0.018
		(0.036)
Child born low birth weight		-0.054
		(0.061)
Child age, in months		-0.034
		(0.048)
Child temperament		0.061 *
		(0.024)
Intercept	5.010	5.608
Adjusted R-squared	0.002	0.048
N	2,529	2,529

Note: Coefficients are unstandardized. Standard errors are in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Appendix 5.7. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave and Maternal Parenting Behaviors, with Interactions Between Maternal Parenting Behaviors and Maternal Race.

	Anxious/depressed behaviors		Withdrawn behaviors		ADHD behaviors[a]		Aggressive behaviors		ODD behaviors[a]	
Variable	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Maternal depression	0.099	0.102 *	0.004	0.010	0.164 **	0.159 **	0.086	0.083	0.065	0.065
at 12-month wave	(0.051)	(0.051)	(0.052)	(0.053)	(0.052)	(0.052)	(0.050)	(0.050)	(0.051)	(0.051)
Paternal depression	0.067	0.064	0.017	0.019	0.094	0.092	0.148 *	0.144 *	0.120	0.119
at 12-month wave	(0.066)	(0.067)	(0.068)	(0.068)	(0.068)	(0.068)	(0.065)	(0.065)	(0.066)	(0.066)
Race										
White (reference)	---	---	---	---	---	---	---	---	---	---
Black	0.061	-0.401	-0.024	-0.136	-0.022	-0.157	-0.134 *	-0.429	-0.265 ***	-0.670
	(0.055)	(0.373)	(0.056)	(0.384)	(0.056)	(0.381)	(0.053)	(0.364)	(0.054)	(0.370)
Hispanic	0.137 *	0.208	0.097	-0.070	0.057	0.247	-0.002	-0.243	-0.130	-0.154
	(0.062)	(0.424)	(0.064)	(0.436)	(0.064)	(0.433)	(0.061)	(0.413)	(0.062)	(0.421)
Other race	0.144	0.387	0.100	-0.321	-0.101	-1.030	0.007	-0.621	-0.115	-0.437
	(0.111)	(0.837)	(0.114)	(0.860)	(0.113)	(0.855)	(0.108)	(0.816)	(0.110)	(0.830)
Parenting stress	0.167 ***	0.185 **	0.134 ***	0.087	0.221 ***	0.228 ***	0.222 ***	0.200 **	0.195 ***	0.164 *
	(0.029)	(0.068)	(0.029)	(0.070)	(0.029)	(0.069)	(0.028)	(0.066)	(0.028)	(0.067)
Neglect	0.384	-0.029	0.954 ***	0.078	0.160	0.351	0.116	0.189	0.002	-0.204
	(0.206)	(0.614)	(0.212)	(0.631)	(0.210)	(0.627)	(0.201)	(0.598)	(0.205)	(0.609)
Psychological aggression	0.541 ***	0.593 *	0.279 *	0.406	0.868 ***	0.861 ***	1.103 ***	1.124 ***	1.143 ***	1.190 ***
	(0.118)	(0.232)	(0.121)	(0.239)	(0.120)	(0.237)	(0.114)	(0.226)	(0.116)	(0.231)
Physical assault	0.197 *	0.308	2.750 **	0.453 *	0.487 ***	0.457 *	0.626 ***	0.653 **	0.582 ***	0.748 ***
	(0.099)	(0.217)	(0.102)	(0.223)	(0.101)	(0.221)	(0.096)	(0.211)	(0.098)	(0.215)
Engagement	0.046 *	-0.018	0.001	-0.022	-0.015	-0.020	-0.009	-0.053	0.016	-0.032
	(0.021)	(0.052)	(0.021)	(0.053)	(0.021)	(0.053)	(0.020)	(0.050)	(0.020)	(0.051)
Parenting behaviors * race interactions										
Stress * white (reference)		---		---		---		---		---

(Appendix 5.7 continued)

Stress * black	0.041	0.054	-0.001	0.050	0.087
	(0.078)	(0.080)	(0.079)	(0.076)	(0.077)
Stress * Hispanic	-0.136	0.062	-0.002	-0.018	-0.049
	(0.088)	(0.090)	(0.089)	(0.085)	(0.087)
Stress * other race	-0.169	0.087	-0.038	-0.071	-0.094
	(0.172)	(0.177)	(0.176)	(0.168)	(0.171)
Neglect * white (reference)	---	---	---	---	---
Neglect * black	0.557	1.145	-0.156	0.222	0.461
	(0.668)	(0.686)	(0.682)	(0.651)	(0.662)
Neglect * Hispanic	0.432	0.809	-0.267	-0.634	-0.150
	(0.733)	(0.075)	(0.749)	(0.715)	(0.728)
Neglect * other race	-1.569	-0.495	-0.663	-1.522	-1.482
	(1.488)	(1.530)	(1.520)	(1.450)	(1.477)
Aggression * white (reference)	---	---	---	---	---
Aggression * black	-0.242	-0.312	-0.019	-0.148	-0.040
	(0.286)	(0.294)	(0.292)	(0.279)	(0.284)
Aggression * Hispanic	0.225	0.139	0.051	0.205	-0.081
	(0.331)	(0.340)	(0.338)	(0.322)	(0.328)
Aggression * other race	0.411	-0.244	-0.029	-0.010	-0.083
	(0.739)	(0.760)	(0.755)	(0.721)	(0.734)
Assault * white (reference)	---	---	---	---	---
Assault * black	-0.022	-0.097	0.046	-0.060	-0.262
	(0.255)	(0.262)	(0.261)	(0.249)	(0.253)
Assault * Hispanic	-0.443	-0.512	-0.088	-0.032	-0.099
	(0.297)	(0.305)	(0.303)	(0.289)	(0.294)
Assault * other race	-0.182	-0.267	0.616	0.272	-0.288
	(0.611)	(0.628)	(0.624)	(0.596)	(0.606)
Engagement * white (reference)	---	---	---	---	---

(Appendix 5.7 continued)

Engagement * black		0.090		0.022		0.030		0.050		0.060
		(0.058)		(0.060)		(0.059)		(0.056)		(0.057)
Engagement * Hispanic		0.054		0.025		-0.035		0.047		0.040
		(0.066)		(0.068)		(0.067)		(0.064)		(0.065)
Engagement * other race		0.020		0.081		0.166		0.144		0.137
		(0.126)		(0.129)		(0.129)		(0.123)		(0.125)
Intercept	0.956	1.251	0.938	1.083	-0.132	-0.049	0.302	0.584	0.810	0.578
Adjusted R-squared	0.188	0.189	0.134	0.133	0.155	0.152	0.228	0.226	0.189	0.188
N	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529

Note: Coefficients are unstandardized. Standard errors are in parentheses. All models include the following control variables: mother's immigrant status, mother's age, mother's age squared, frequency of mother's attendance at religious services, if mother lived with both biological parents at age 15, mother's education, mother's household income (log), mother's employment status, mother's homeownership, mother's relationship status with child's father at birth, if mother is co-resident with a grandmother, number of children in mother's household, depression of one of mother's biological parents, depression of one of father's biological parents, prenatal smoking, child's gender, if the child was born low birth weight, child's age, and child's temperament at the 12-month wave. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] ADHD: Attention Deficit Hyperactivity Disorder; ODD: Oppositional Defiant Disorder.

Appendix 5.8. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave and Maternal Parenting Behaviors, with Interactions Between Maternal Parenting Behaviors and Maternal Education.

	Anxious/depressed behaviors		Withdrawn behaviors		ADHD behaviors[a]		Aggressive behaviors		ODD behaviors[a]	
Variable	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Maternal depression	0.099	0.103 *	0.004	0.011	0.164 **	0.163 **	0.086	0.085	0.065	0.064
at 12-month wave	(0.051)	(0.051)	(0.052)	(0.052)	(0.052)	(0.052)	(0.050)	(0.050)	(0.051)	(0.051)
Paternal depression	0.067	0.055	0.017	0.006	0.094	0.090	0.148 *	0.140 *	0.120	0.113
at 12-month wave	(0.066)	(0.066)	(0.068)	(0.068)	(0.068)	(0.068)	(0.065)	(0.065)	(0.066)	(0.066)
Education										
Less than high school (reference)	---	---	---	---	---	---	---	---	---	---
High school diploma	-0.124 *	-0.288	-0.149 **	0.004	0.006	0.048	0.001	0.265	0.017	0.085
(includes GED)	(0.051)	(0.339)	(0.052)	(0.349)	(0.052)	(0.347)	(0.049)	(0.331)	(0.050)	(0.338)
Some college	-0.254 ***	0.511	-0.303 ***	0.231	0.044	-0.128	0.010	0.036	0.048	0.291
	(0.053)	(0.332)	(0.054)	(0.342)	(0.054)	(0.340)	(0.052)	(0.324)	(0.053)	(0.331)
College	-0.374 ***	0.081	-0.346 ***	0.086	-0.068	-1.161 *	-0.003	-0.317	0.077	-0.106
	(0.082)	(0.525)	(0.084)	(0.540)	(0.083)	(0.537)	(0.080)	(0.513)	(0.081)	(0.522)
Parenting stress	0.167 ***	0.129 **	0.134 ***	0.124 *	0.221 ***	0.148 **	0.222 ***	0.158 ***	0.195 ***	0.132 **
	(0.029)	(0.048)	(0.029)	(0.050)	(0.029)	(0.049)	(0.028)	(0.047)	(0.028)	(0.048)
Neglect	0.384	-0.099	0.954 ***	1.064 **	0.160	0.187	0.116	0.307	0.002	0.166
	(0.206)	(0.328)	(0.212)	(0.337)	(0.210)	(0.335)	(0.201)	(0.320)	(0.205)	(0.326)
Psychological aggression	0.541 ***	0.871 ***	0.279 *	0.517 *	0.868 ***	1.132 ***	1.103 ***	1.324 ***	1.143 ***	1.369 ***
	(0.118)	(0.204)	(0.121)	(0.210)	(0.120)	(0.208)	(0.114)	(0.199)	(0.116)	(0.203)
Physical assault	0.197 *	0.142	0.275 **	0.117	0.487 ***	0.200	0.626 ***	0.439 *	0.582 ***	0.449 *
	(0.099)	(0.180)	(0.102)	(0.184)	(0.101)	(0.183)	(0.096)	(0.175)	(0.098)	(0.179)
Engagement	0.046 *	0.097 **	0.001	0.049	-0.015	-0.001	-0.008	0.029	0.016	0.053
	(0.021)	(0.035)	(0.021)	(0.036)	(0.021)	(0.036)	(0.020)	(0.035)	(0.020)	(0.035)
Parenting behaviors * education interactions										
Stress * less than high school (reference)		---		---		---		---		---

(Appendix 5.8 continued)

Stress * high school	0.096	0.055	0.088	0.074	0.099
	(0.071)	(0.073)	(0.073)	(0.070)	(0.071)
Stress * some college	0.037	-0.005	0.100	0.093	0.071
	(0.072)	(0.074)	(0.074)	(0.071)	(0.072)
Stress * college	-0.008	-0.052	0.227 *	0.186	0.157
	(0.104)	(0.106)	(0.106)	(0.101)	(0.103)
Neglect * less than high school (reference)	---	---	---	---	---
Neglect * high school	0.079	-0.328	-0.195	-0.520	-0.437
	(0.482)	(0.496)	(0.493)	(0.471)	(0.480)
Neglect * some college	1.576 **	-0.447	0.257	-0.121	-0.258
	(0.552)	(0.567)	(0.564)	(0.538)	(0.549)
Neglect * college	1.260	0.666	-0.028	0.057	0.482
	(0.957)	(0.983)	(0.977)	(0.934)	(0.952)
Aggression * less than high school (reference)	---	---	---	---	---
Aggression * high school	-0.318	-0.239	-0.443	-0.398	-0.452
	(0.300)	(0.309)	(0.307)	(0.293)	(0.299)
Aggression * some college	-0.692 *	-0.392	-0.463	-0.361	-0.297
	(0.294)	(0.303)	(0.301)	(0.287)	(0.293)
Aggression * college	-0.253	-0.352	0.069	0.027	-0.029
	(0.435)	(0.447)	(0.444)	(0.424)	(0.432)
Assault * less than high school (reference)	---	---	---	---	---
Assault * high school	0.308	0.586 *	0.422	0.376	0.355
	(0.250)	(0.257)	-0.422	(0.244)	(0.249)
Assault * some college	-0.107	0.022	0.462	0.299	0.089
	(0.253)	(0.260)	(0.259)	(0.247)	(0.252)
Assault * college	-0.007	-0.202	0.176	-0.176	-0.040
	(0.343)	(0.352)	(0.350)	(0.335)	(0.341)
Engagement * less than high school (reference)	---	---	---	---	---

(Appendix 5.8 continued)

Engagement * high school		-0.010		-0.077		-0.043		-0.081		-0.048
		(0.052)		(0.053)		(0.053)		(0.050)		(0.051)
Engagement * some college		-0.117 *		-0.074		-0.009		-0.040		-0.063
		(0.051)		(0.052)		(0.052)		(0.050)		(0.051)
Engagement * college		-0.071		-0.029		0.098		-0.013		-0.030
		(0.079)		(0.081)		(0.081)		(0.077)		(0.079)
Intercept	0.956	0.674	0.938	0.672	-0.132	-0.048	0.302	0.201	0.281	0.158
Adjusted R-squared	0.188	0.192	0.134	0.137	0.155	0.155	0.228	0.227	0.189	0.187
N	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529

Note: Coefficients are unstandardized. Standard errors are in parentheses. All models include the following control variables: mother's race, mother's immigrant status, mother's age, mother's age squared, frequency of mother's attendance at religious services, if mother lived with both biological parents at age 15, mother's household income (log), mother's employment status, mother's homeownership, mother's relationship status with child's father at birth, if mother is co-resident with a grandmother, number of children in mother's household, depression of one of mother's biological parents, depression of one of father's biological parents, prenatal smoking, child's gender, if the child was born low birth weight, child's age, and child's temperament at the 12-month wave. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] ADHD: Attention Deficit Hyperactivity Disorder; ODD: Oppositional Defiant Disorder.

Appendix 5.9. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave and Maternal Parenting Behaviors, with Interactions Between Maternal Parenting Behaviors and Maternal Household Income.

	Anxious/depressed behaviors		Withdrawn behaviors		ADHD behaviors[a]		Aggressive behaviors		ODD behaviors[a]	
Variable	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Maternal depression	0.099	0.097	0.004	0.002	0.164 **	0.163 **	0.086	0.085	0.065	0.066
at 12-month wave	(0.051)	(0.051)	(0.052)	(0.052)	(0.052)	(0.052)	(0.050)	(0.050)	(0.051)	(0.051)
Paternal depression	0.067	0.065	0.017	0.016	0.094	0.089	0.148 *	0.145 *	0.120	0.121
at 12-month wave	(0.066)	(0.066)	(0.068)	(0.068)	(0.068)	(0.068)	(0.065)	(0.065)	(0.066)	(0.066)
Log of household income	-0.060 ***	0.094	-0.061 ***	0.149	-0.041 **	-0.085	-0.036 *	-0.054	-0.028	-0.048
	(0.015)	(0.092)	(0.015)	(0.094)	(0.015)	(0.094)	(0.014)	(0.089)	(0.015)	(0.091)
Parenting stress	0.167 ***	0.180	0.134 ***	0.685 ***	0.221 ***	-0.132	0.222 ***	0.114	0.195 ***	0.138
	(0.029)	(0.191)	(0.029)	(0.196)	(0.029)	(0.195)	(0.028)	(0.186)	(0.028)	(0.190)
Neglect	0.384	-2.233	0.954 ***	-0.003	0.160	-0.926	0.116	0.049	0.002	1.064
	(0.206)	(1.169)	(0.212)	(1.200)	(0.210)	(1.191)	(0.201)	(1.139)	(0.205)	(1.160)
Psychological aggression	0.541 ***	0.730	0.279 *	0.514	0.868 ***	1.767 *	1.103 ***	1.455	1.143 ***	0.631
	(.118_	(0.842)	(0.121)	(0.864)	(0.120)	(0.858)	(0.114)	(0.821)	(0.116)	(0.836)
Physical assault	0.197 *	0.065	0.275 **	0.530	0.487 ***	0.619	0.626 ***	0.997	0.582 ***	0.843
	(0.099)	(0.645)	(0.102)	(0.662)	(0.101)	(0.657)	(0.096)	(0.629)	(0.098)	(0.640)
Engagement	0.046 *	0.354 *	0.001	0.137	-0.015	-0.015	-0.008	-0.050	0.016	0.016
	(0.021)	(0.142)	(0.021)	(0.146)	(0.021)	(0.145)	(0.020)	(0.138)	(0.020)	(0.141)
Parenting behaviors * household income interactions										
Stress * income		-0.001		-0.058 **		0.037		0.011		0.006
		(0.020)		(0.020)		(0.020)		(0.019)		(0.020)
Neglect * income		0.284 *		0.099		0.119		0.007		-0.115
		(0.124)		(0.128)		(0.127)		(0.121)		(0.124)
Aggression * income		-0.021		-0.024		-0.095		-0.037		0.053
		(0.086)		(0.089)		(0.088)		(0.084)		(0.086)
Assault * income		0.013		-0.027		-0.014		-0.038		-0.027
		(0.066)		(0.067)		(0.067)		(0.064)		(0.065)

(Appendix 5.9 continued)

Engagement * income		-0.032 *		-0.014		-0.001		0.004		0.011
		(0.015)		(0.015)		(0.015)		(0.014)		(0.014)
Intercept	0.056	-0.555	0.938	-1.054	-0.132	0.271	0.302	0.486	0.281	0.478
Adjusted R-squared	0.188	0.189	0.134	0.136	0.155	0.155	0.228	0.227	0.189	0.188
N	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529

Note: Coefficients are unstandardized. Standard errors are in parentheses. All models include the following control variables: mother's race, mother's immigrant status, mother's age, mother's age squared, frequency of mother's attendance at religious services, if mother lived with both biological parents at age 15, mother's education, mother's employment status, mother's homeownership, mother's relationship status with child's father at birth, if mother is co-resident with a grandmother, number of children in mother's household, depression of one of mother's biological parents, depression of one of father's biological parents, prenatal smoking, child's gender, if the child was born low birth weight, child's age, and child's temperament at the 12-month wave. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] ADHD: Attention Deficit Hyperactivity Disorder; ODD: Oppositional Defiant Disorder.

Appendix 5.10. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave and Maternal Parenting Behaviors, with Interactions Between Maternal Parenting Behaviors and Parents' Relationship Status at Baseline.

	Anxious/depressed behaviors		Withdrawn behaviors		ADHD behaviors[a]		Aggressive behaviors		ODD behaviors[a]	
Variable	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Maternal depression	0.099	0.096	0.004	0.002	0.164 **	0.163 **	0.086	0.088	0.065	0.065
at 12-month wave	(0.051)	(0.051)	(0.052)	(0.053)	(0.052)	(0.052)	(0.050)	(0.050)	(0.051)	(0.051)
Paternal depression	0.067	0.067	0.017	0.013	0.094	0.096	0.148 *	0.149 *	0.120	0.119
at 12-month wave	(0.066)	(0.067)	(0.068)	(0.068)	(0.068)	(0.068)	(0.065)	(0.065)	(0.066)	(0.066)
Relationship status at birth	---	---	---	---	---	---	---	---	---	---
Married (reference)										
Cohabiting	0.225 ***	-0.062	0.024	0.260	0.103	0.415	0.124 *	0.194	0.107	-0.161
	(0.057)	(0.368)	(0.058)	(0.377)	(0.058)	(0.375)	(0.055)	(0.358)	(0.056)	(0.365)
Romantically involved	0.239 ***	0.215	0.086	0.404	0.119	1.119 **	0.129 *	0.869 *	0.123 *	0.457
	(0.063)	(0.385)	(0.065)	(0.395)	(0.064)	(0.392)	(0.061)	(0.375)	(0.062)	(0.382)
Not in a relationship	0.230 **	-0.006	0.147	-0.357	1.390	0.876	0.178 *	0.281	0.180 *	0.133
	(0.073)	(0.448)	(0.075)	(0.459)	(0.075)	(0.456)	(0.071)	(0.436)	(0.073)	(0.443)
Parenting stress	0.167 ***	0.108	0.134 ***	0.138 *	0.221 ***	0.324 ***	0.222 ***	0.252 ***	0.195 ***	0.196 **
	(0.029)	(0.062)	(0.029)	(0.063)	(0.029)	(0.063)	(0.028)	(0.060)	(0.028)	(0.061)
Neglect	0.384	1.337 *	0.954 ***	0.346	0.160	0.426	0.116	0.901	0.002	0.799
	(0.206)	(0.644)	(0.212)	(0.660)	(0.210)	(0.656)	(0.201)	(0.627)	(0.205)	(0.638)
Psychological aggression	0.541 ***	0.351	0.279 *	0.394	0.868 ***	0.801 **	1.103 ***	0.915 ***	1.143 ***	0.971 ***
	(0.118)	(0.247)	(0.121)	(0.253)	(0.120)	(0.251)	(0.114)	(0.240)	(0.116)	(0.244)
Physical assault	0.197 *	0.341	0.275 **	0.133	0.487 ***	0.659 ***	0.626 ***	0.672 ***	0.582 ***	0.578 **
	(0.099)	(0.196)	(0.102)	(0.200)	(0.101)	(0.199)	(0.096)	(0.190)	(0.098)	(0.194)
Engagement	0.046 *	0.044	0.001	0.023	-0.015	0.038	-0.008	0.037	0.016	0.023
	(0.021)	(0.044)	(0.021)	(0.045)	(0.021)	(0.045)	(0.020)	(0.043)	(0.020)	(0.044)
Parenting behaviors * relationship status interactions										
Stress * married (reference)		---		---		---		---		---

(Appendix 5.10 continued)

Stress * cohabiting	0.026	-0.069	-0.103	-0.027	-0.024
	(0.078)	(0.080)	(0.080)	(0.076)	(0.078)
Stress * romantically involved	0.130	0.048	-0.151	-0.039	0.034
	(0.080)	(0.082)	(0.081)	(0.078)	(0.079)
Stress * not in a relationship	0.076	0.076	-0.129	-0.055	-0.024
	(0.098)	(0.101)	(0.100)	(0.096)	(0.098)
Neglect * married (reference)	---	---	---	---	---
Neglect * cohabiting	-1.222	0.490	-0.118	-1.054	-1.218
	(0.723)	(0.740)	(0.736)	(0.703)	(0.716)
Neglect * romantically involved	-0.998	0.706	-0.426	-0.816	-0.847
	(0.736)	(0.754)	(0.749)	(0.716)	(0.729)
Neglect * not in a relationship	-0.915	0.912	-0.337	-0.679	-0.256
	(0.823)	(0.843)	(0.838)	(0.801)	(0.815)
Aggression * married (reference)	---	---	---	---	---
Aggression * cohabiting	0.352	-0.134	0.197	0.302	0.302
	(0.314)	(0.321)	(0.319)	(0.305)	(0.310)
Aggression * romantically involved	0.186	0.141	0.063	0.135	0.274
	(0.329)	(0.337)	(0.335)	(0.320)	(0.326)
Aggression * not in a relationship	0.221	-0.679	-0.058	0.384	0.001
	(0.403)	(0.413)	(0.410)	(0.392)	(0.399)
Assault * married (reference)	---	---	---	---	---
Assault * cohabiting	-0.235	0.063	-0.373	-0.086	0.029
	(0.255)	(0.261)	(0.260)	(0.248)	(0.252)
Assault * romantically involved	0.169	0.112	-0.177	-0.129	-0.137
	(0.267)	(0.273)	(0.272)	(0.260)	(0.264)
Assault * not in a relationship	-0.112	0.748 *	-0.006	0.142	0.251
	(0.340)	(0.348)	(0.346)	(0.331)	(0.337)

(Appendix 5.10 continued)

Engagement * married (reference)		---			---			---		---
Engagement * cohabiting		0.040			-0.013			-0.007		0.046
		(0.056)			(0.057)			(0.057)		(0.055)
Engagement * romantically involved		-0.052			-0.106			-0.124 *		-0.088
		(0.059)			(0.060)			(0.060)		(0.058)
Engagement * not in a relationship		0.007			0.063			-0.086		0.003
		(0.066)			(0.067)			(0.070)		(0.065)
Intercept	0.956	1.100	0.938	0.864	-0.132	-0.685	0.302	0.025	0.281	0.266
Adjusted R-squared	0.188	0.186	0.134	0.137	0.155	0.154	0.228	0.227	0.189	0.189
N	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529

Note: Coefficients are unstandardized. Standard errors are in parentheses. All models include the following control variables: mother's race, mother's immigrant status, mother's age, mother's age squared, frequency of mother's attendance at religious services, if mother lived with both biological parents at age 15, mother's education, mother's household income (log), mother's employment status, mother's homeownership, if mother is co-resident with a grandmother, number of children in mother's household, depression of one of mother's biological parents, depression of one of father's biological parents, prenatal smoking, child's gender, if the child was born low birth weight, child's age, and child's temperament at the 12-month wave. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] ADHD: Attention Deficit Hyperactivity Disorder; ODD: Oppositional Defiant Disorder.

Appendix 6.1. Means of Individual Items that Comprise Measures of Relationship Quality with Current Partner, by Maternal Major Depressive Disorder (MDD) Over Time.

Variable	Chronic depression	Depression develops	Depression remits	No depression	α[a]
Supportive behaviors (y1)[b]					0.980
Fair and willing to compromise	1.708 *	1.764 *	1.497 ***	1.925	
Expresses love or affection	1.960 **	2.000 **	1.723 ***	2.245	
Encourages or helps you do things	1.926 **	1.923 ***	1.679 ***	2.187	
Listens when you need someone to talk to	1.901 **	1.944 **	1.673 ***	2.187	
Understands your hurts and joys	1.832 **	1.859 ***	1.585 ***	2.119	
Hostile behaviors (reverse coded, y1)					0.903
Insults or criticizes your ideas	1.748 ***	1.803 ***	1.553 ***	2.085	
Tries to keep you from seeing friends or family	2.015 **	2.025 ***	1.767 ***	2.291	
Tries to prevent you from going to work or school	2.139 *	2.071 **	1.835 ***	2.327	
Withholds money or tries to take your money	1.970 ***	2.039 ***	1.748 ***	2.326	
Shared responsibility in parenting (y1)					0.958
Looks after child when you need to do things	2.854 ***	3.085 ***	2.794 ***	3.325	
Runs errands for you like picking things up at the store	2.797 ***	3.000	2.725 ***	3.138	
Fixes things around your home, paints, or makes it look nicer	2.486 ***	2.736 **	2.275 ***	2.966	
Takes child places he needs to go, such as the doctor	2.368 ***	2.603 **	2.372 ***	2.835	
Cooperation in parenting (y1)					0.990
When father is with child, acts like the father you want	3.447 ***	3.539 ***	3.418 ***	3.677	
Can trust father to take good care of child	3.706 **	3.785	3.663 ***	3.828	
Father respects the schedules and rules you make for child	3.454 ***	3.500 ***	3.382 ***	3.658	
Father supports you in the way you want to raise child	3.454 ***	3.477 ***	3.398 ***	3.642	
You and father talk about problems that come up when raising child	3.449 *	3.482 *	3.339 ***	3.592	
Can count on father to help when you need someone to look after child	3.330 ***	3.418 ***	3.182 ***	3.585	

(Appendix 6.1 continued)

Supportive behaviors (y3)					0.983
Fair and willing to compromise	1.607 ***	1.522 ***	1.780	1.923	
Expresses love or affection	1.808 ***	1.759 ***	2.066	2.187	
Encourages or helps you do things	1.781 ***	1.698 ***	2.050	2.136	
Listens when you need someone to talk to	1.719 ***	1.686 ***	2.022	2.128	
Understands your hurts and joys	1.656 ***	1.631 ***	1.901	2.055	
Hostile behaviors (reverse coded, y3)					0.925
Insults or criticizes your ideas	1.643 ***	1.625 ***	1.917	2.043	
Tries to keep you from seeing friends or family	1.911 ***	1.857 ***	2.132	2.243	
Tries to prevent you from going to work or school	1.973 ***	1.908 ***	2.143	2.277	
Withholds money or tries to take your money	1.888 ***	1.828 ***	2.181	2.272	
Shared responsibility in parenting (y3)					0.964
Looks after child when you need to do things	2.660 ***	2.832 ***	2.767 ***	3.246	
Runs errands for you like picking things up at the store	2.360 ***	2.636 ***	2.576 ***	3.010	
Fixes things around your home, paints, or makes it look nicer	2.305 ***	2.433 ***	2.424 ***	2.835	
Takes child places he needs to go, such as the doctor	2.207 ***	2.369 ***	2.238 ***	2.756	
Cooperation in parenting (y3)					0.988
When father is with child, acts like the father you want	3.090 ***	3.286 ***	3.278 ***	3.529	
Can trust father to take good care of child	3.363 ***	3.540 ***	3.488 ***	3.734	
Father respects the schedules and rules you make for child	2.990 ***	3.228 ***	3.194 ***	3.496	
Father supports you in the way you want to raise child	3.030 ***	3.267 ***	3.201 ***	3.520	
You and father talk about problems that come up when raising child	3.147 ***	3.155 ***	3.200 ***	3.481	
Can count on father to help when you need someone to look after child	2.794 ***	2.921 ***	2.924 ***	3.386	
N	224	317	184	1,803	

Note: Symbols compare differences in means of relationship quality with current partner between mothers with chronic depression (mothers who are depressed at both the 12-month and 30-month waves), mothers with depression that develops over time (not depressed at the 12-month wave but depressed at the 30-month wave), and mothers with depression that remits over time (depressed at the 12-month wave but not depressed at the 30-month wave) to mothers who never report depression. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] Cronbach's alpha reported for Analytic Sample B.

[b] y1 = 12-month survey; y3 = 30-month survey.

Appendix 6.2. OLS Regression Models Predicting Maternal Reports of Supportive Behaviors with Current Partner at 30-Month Wave, Regressed on Maternal Major Depressive Disorder (MDD) Over Time.

	Supportive behaviors		
Variable	Model 1	Model 2	Model 3
Maternal depression over time[a]			
Chronic depression	-0.368 ***	-0.105 ***	-1.070 ***
	(0.085)	(0.024)	(0.024)
Depression develops	-0.419 ***	-0.097 ***	-0.097 ***
	(0.073)	(0.020)	(0.020)
Depression remits	-0.123	-0.039	-0.028
	(0.093)	(0.026)	(0.025)
No depression (reference)	---	---	---
Paternal depression at 12-month wave		-0.044	-0.037
		(0.024)	(0.024)
Race			
White (reference)		---	---
Black		0.002	0.005
		(0.019)	(0.019)
Hispanic		-0.001	0.004
		(0.022)	(0.022)
Other race		-0.011	-0.001
		(0.040)	(0.040)
Immigrant		-0.003	-0.007
		(0.024)	(0.024)
Age		-0.001	-0.001
		(0.018)	(0.017)
Age squared		-0.001	-0.001
		(0.001)	(0.001)
Frequency of attendance at religious services			
At least once a week (reference)		---	---
Several times a month		-0.031	-0.027
		(0.021)	(0.021)
Several times a year or hardly ever		-0.023	-0.022
		(0.017)	(0.017)
Never		-0.049 *	-0.048 *
		(0.023)	(0.023)
Lived with both biological parents at age 15		0.002	-0.001
		(0.015)	(0.015)
Education			
Less than high school (reference)		---	---

(Appendix 6.2 continued)

High school diploma (includes GED)		-0.006	-0.012
		(0.018)	(0.018)
Some college		0.001	-0.006
		(0.019)	(0.019)
College degree or higher		0.036	0.027
		(0.029)	(0.029)
Log of household income		0.004	0.001
		(0.005)	(0.005)
Employed		-0.002	0.001
		(0.014)	(0.014)
Homeowner		-0.004	-0.003
		(0.014)	(0.014)
Relationship status			
Partner is biological father (reference)		---	---
Partner is social father		0.178 ***	0.208 ***
		(0.019)	(0.020)
No partner		-2.589 ***	-2.546 ***
		(0.017)	(0.018)
Co-resident with grandmother		0.022	0.035
		(0.018)	(0.018)
Number of children		0.008	0.006
		(0.005)	(0.005)
Disagreements at baseline		-0.134 ***	-0.123 ***
		(0.018)	(0.018)
Companionship at baseline		0.023	0.005
		(0.022)	(0.022)
Either of mother's parents depressed		-0.035 *	-0.032 *
		(0.015)	(0.015)
Either of father's parents depressed		0.056 ***	0.053 ***
		(0.016)	(0.016)
Prenatal smoking		-0.005	-0.006
		(0.018)	(0.017)
Child is male		0.026 *	0.026 *
		(0.013)	(0.013)
Child born low birth weight		0.010	0.011
		(0.022)	(0.022)
Child age, in months		0.008	0.007
		(0.017)	(0.017)
Child temperament		0.012	0.012
		(0.009)	(0.009)
Supportive behaviors at 12-month wave			0.043 ***
			(0.007)
Intercept	2.083	2.647	2.576
Adjusted R-squared	0.017	0.929	0.930
N	2,528	2,528	2,528

Note: Coefficients are unstandardized. Standard errors are in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] Chronic depression: mother depressed at both 12-month and 30-month waves; depression develops: mother not depressed at 12-month wave, depressed at 30-month wave; depression remits: mother depressed at 12-month wave, not depressed at 30-month wave; no depression: mother not depressed at 12-month or 30-month wave.

Appendix 6.3. OLS Regression Models Predicting Maternal Reports of Hostile Behaviors with Current Partner at 30-Month Wave, Regressed on Maternal Major Depressive Disorder (MDD) Over Time.

	Hostile behaviors (reverse coded)		
Variable	Model 1	Model 2	Model 3
Maternal depression over time[a]			
Chronic depression	-0.352 ***	-0.078 ***	-0.079 ***
	(0.089)	(0.018)	(0.018)
Depression develops	-0.397 ***	-0.057 ***	-0.057 ***
	(0.076)	(0.015)	(0.015)
Depression remits	-0.114	-0.021	-0.015
	(0.097)	(0.019)	(0.019)
No depression (reference)	---	---	---
Paternal depression at 12-month wave		-0.027	-0.023
		(0.018)	(0.017)
Race			
White (reference)		---	---
Black		-0.002	-0.001
		(0.014)	(0.014)
Hispanic		-0.032	-0.030
		(0.016)	(0.016)
Other race		-0.080 **	-0.075 *
		(0.029)	(0.029)
Immigrant		-0.029	-0.030
		(0.018)	(0.018)
Age		0.017	0.017
		(0.013)	(0.013)
Age squared		-0.001	-0.001
		(0.001)	(0.001)
Frequency of attendance at religious services			
At least once a week (reference)		---	---
Several times a month		0.003	0.005
		(0.016)	(0.015)
Several times a year or hardly ever		0.004	0.004
		(0.012)	(0.012)
Never		0.003	0.002
		(0.017)	(0.017)
Lived with both biological parents at age 15		-0.010	-0.010
		(0.011)	(0.011)
Education			
Less than high school (reference)		---	---

(Appendix 6.3 continued)

High school diploma (includes GED)		0.002	-0.001
		(0.013)	(0.013)
Some college		0.007	0.003
		(0.014)	(0.014)
College degree or higher		0.020	0.015
		(0.021)	(0.021)
Log of household income		-0.002	-0.004
		(0.004)	(0.004)
Employed		0.032 **	0.033 **
		(0.010)	(0.010)
Homeowner		0.001	0.001
		(0.010)	(0.010)
Relationship status			
Partner is biological father (reference)		---	---
Partner is social father		0.065 ***	0.081 ***
		(0.014)	(0.014)
No partner		-2.809 ***	-2.786 ***
		(0.012)	(0.013)
Co-resident with grandmother		0.022	0.029 *
		(0.013)	(0.013)
Number of children		0.008 *	0.007
		(0.004)	(0.004)
Disagreements at baseline		-0.082 ***	-0.077 ***
		(0.013)	(0.013)
Companionship at baseline		0.012	0.004
		(0.016)	(0.016)
Either of mother's parents depressed		-0.021	-0.020
		(0.011)	(0.011)
Either of father's parents depressed		0.011	0.010
		(0.012)	(0.012)
Prenatal smoking		-0.010	-0.010
		(0.013)	(0.013)
Child is male		0.022 *	0.022 *
		(0.010)	(0.009)
Child born low birth weight		0.014	0.015
		(0.016)	(0.016)
Child age, in months		-0.016	-0.016
		(0.013)	(0.013)
Child temperament		0.010	0.010
		(0.006)	(0.006)
Hostile behaviors at 12-month wave			0.022 ***
			(0.005)
Intercept	2.205	2.942	2.909
Adjusted R-squared	0.014	0.965	0.965
N	2,528	2,528	2,528

Note: Coefficients are unstandardized. Standard errors are in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] Chronic depression: mother depressed at both 12-month and 30-month waves; depression develops: mother not depressed at 12-month wave, depressed at 30-month wave; depression remits: mother depressed at 12-month wave, not depressed at 30-month wave; no depression: mother not depressed at 12-month or 30-month wave.

Appendix 6.4. OLS Regression Models Predicting Maternal Reports of Shared Responsibility in Parenting with Current Partner at 30-Month Wave, Regressed on Maternal Major Depressive Disorder (MDD) Over Time.

	Shared responsibility in parenting		
Variable	Model 1	Model 2	Model 3
Maternal depression over time[a]			
Chronic depression	-0.542 ***	-0.220 ***	-0.185 ***
	(0.073)	(0.058)	(0.055)
Depression develops	-0.361 ***	-0.115 *	-0.115 *
	(0.063)	(0.049)	(0.047)
Depression remits	-0.432 ***	-0.162 **	-0.083
	(0.080)	(0.062)	(0.059)
No depression (reference)	---	---	---
Paternal depression at 12-month wave		-0.086	-0.051
		(0.058)	(0.055)
Race			
White (reference)		---	---
Black		0.140 **	0.108 *
		(0.046)	(0.044)
Hispanic		0.044	0.031
		(0.053)	(0.051)
Other race		0.202 *	0.177
		(0.096)	(0.091)
Immigrant		-0.128 *	-0.115 *
		(0.059)	(0.056)
Age		0.008	0.012
		(0.043)	(0.041)
Age squared		-0.001	-0.001
		(0.001)	(0.001)
Frequency of attendance at religious services			
At least once a week (reference)		---	---
Several times a month		0.007	-0.007
		(0.051)	(0.049)
Several times a year or hardly ever		0.020	-0.007
		(0.041)	(0.039)
Never		-0.038	-0.027
		(0.055)	(0.053)
Lived with both biological parents at age 15		-0.012	-0.029
		(0.035)	(0.034)
Education			
Less than high school (reference)		---	---

(Appendix 6.4 continued)

High school diploma (includes GED)		-0.088 *	-0.081
		(0.044)	(0.042)
Some college		-0.139 **	-0.126 **
		(0.046)	(0.044)
College degree or higher		-0.111	-0.093
		(0.069)	(0.066)
Log of household income		0.019	0.007
		(0.013)	(0.012)
Employed		-0.018	-0.017
		(0.033)	(0.032)
Homeowner		-0.030	-0.012
		(0.034)	(0.033)
Relationship status			
Partner is biological father (reference)		---	---
Partner is social father		-1.325 ***	-1.059 ***
		(0.046)	(0.047)
No partner		-1.291 ***	-1.062 ***
		(0.041)	(0.041)
Co-resident with grandmother		-0.066	0.003
		(0.043)	(0.041)
Number of children		0.013	0.006
		(0.013)	(0.012)
Disagreements at baseline		-0.136 **	-0.077
		(0.044)	(0.042)
Companionship at baseline		0.239 ***	0.090
		(0.052)	(0.051)
Either of mother's parents depressed		-0.040	-0.017
		(0.035)	(0.034)
Either of father's parents depressed		-0.041	-0.046
		(0.039)	(0.037)
Prenatal smoking		-0.007	-0.007
		(0.042)	(0.040)
Child is male		0.099 **	0.092 **
		(0.031)	(0.030)
Child born low birth weight		-0.043	-0.029
		(0.054)	(0.051)
Child age, in months		0.033	0.024
		(0.042)	(0.040)
Child temperament		0.042 *	0.036
		(0.021)	(0.020)
Shared responsibility in parenting at 12-month wave			0.284 ***
			(0.018)
Intercept	2.925	2.436	1.747
Adjusted R-squared	0.035	0.045	0.050
N	2,528	2,528	2,528

Note: Coefficients are unstandardized. Standard errors are in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] Chronic depression: mother depressed at both 12-month and 30-month waves; depression develops: mother not depressed at 12-month wave, depressed at 30-month wave; depression remits: mother depressed at 12-month wave, not depressed at 30-month wave; no depression: mother not depressed at 12-month or 30-month wave.

Appendix 6.5. OLS Regression Models Predicting Maternal Reports of Cooperation in Parenting with Current Partner at 30-Month Wave, Regressed on Maternal Major Depressive Disorder (MDD) Over Time.

	Cooperation in parenting		
Variable	Model 1	Model 2	Model 3
Maternal depression over time[a]			
Chronic depression	-0.434 ***	-0.233 ***	-0.220 ***
	(0.052)	(0.046)	(0.044)
Depression develops	-0.272 ***	-0.124 **	-0.115 **
	(0.045)	(0.039)	(0.037)
Depression remits	-0.290 ***	-0.113 *	-0.065
	(0.057)	(0.049)	(0.047)
No depression (reference)	---	---	---
Paternal depression at 12-month wave		-0.077	-0.050
		(0.046)	(0.044)
Race			
White (reference)		---	---
Black		0.096 **	0.080 *
		(0.036)	(0.035)
Hispanic		-0.021	-0.022
		(0.042)	(0.041)
Other race		0.047	0.044
		(0.076)	(0.073)
Immigrant		-0.022	-0.020
		(0.047)	(0.045)
Age		-0.008	-0.007
		(0.034)	(0.033)
Age squared		-0.001	-0.001
		(0.001)	(0.001)
Frequency of attendance at religious services			
At least once a week (reference)		---	---
Several times a month		0.009	0.001
		(0.041)	(0.039)
Several times a year or hardly ever		0.021	0.014
		(0.032)	(0.031)
Never		0.044	0.045
		(0.044)	(0.042)
Lived with both biological parents at age 15		-0.034	-0.034
		(0.028)	(0.027)
Education			
Less than high school (reference)		---	---

(Appendix 6.5 continued)

High school diploma (includes GED)		-0.020	-0.032
		(0.035)	(0.033)
Some college		-0.054	-0.052
		(0.036)	(0.035)
College degree or higher		-0.021	-0.033
		(0.055)	(0.053)
Log of household income		-0.003	-0.008
		(0.010)	(0.010)
Employed		-0.025	-0.006
		(0.026)	(0.025)
Homeowner		0.008	0.008
		(0.027)	(0.026)
Relationship status			
Partner is biological father (reference)		---	---
Partner is social father		-0.803 ***	-0.657 ***
		(0.037)	(0.037)
No partner		-0.706 ***	-0.592 ***
		(0.032)	(0.032)
Co-resident with grandmother		-0.082 *	-0.060
		(0.034)	(0.033)
Number of children		0.019	0.017
		(0.010)	(0.010)
Disagreements at baseline		-0.196 ***	-0.122 ***
		(0.035)	(0.034)
Companionship at baseline		0.132 **	0.079
		(0.042)	(0.040)
Either of mother's parents depressed		-0.025	-0.012
		(0.028)	(0.027)
Either of father's parents depressed		-0.020	-0.011
		(0.031)	(0.030)
Prenatal smoking		-0.031	-0.030
		(0.034)	(0.032)
Child is male		0.049 *	0.037
		(0.025)	(0.024)
Child born low birth weight		-0.057	-0.070
		(0.043)	(0.041)
Child age, in months		0.026	0.018
		(0.033)	(0.032)
Child temperament		0.014	0.006
		(0.017)	(0.016)
Cooperation in parenting at 12-month wave			0.351 ***
			(0.025)
Intercept	3.498	3.577	2.364
Adjusted R-squared	0.040	0.319	0.371
N	2,528	2,528	2,528

Note: Coefficients are unstandardized. Standard errors are in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] Chronic depression: mother depressed at both 12-month and 30-month waves; depression develops: mother not depressed at 12-month wave, depressed at 30-month wave; depression remits: mother depressed at 12-month wave, not depressed at 30-month wave; no depression: mother not depressed at 12-month or 30-month wave.

Appendix 6.6. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave and Maternal Reports of Relationship Quality with Current Partner, with Interactions Between Relationship Quality and Maternal Race.

	Anxious/depressed behaviors		Withdrawn behaviors		ADHD behaviors[a]		Aggressive behaviors		ODD behaviors[a]	
Variable	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Maternal depression	0.106 *	0.109 *	0.036	0.039	0.171 **	0.172 **	0.080	0.084	0.055	0.060
at 12-month wave	(0.052)	(0.052)	(0.054)	(0.054)	(0.055)	(0.055)	(0.053)	(0.053)	(0.054)	(0.054)
Paternal depression	0.063	0.067	0.031	0.036	0.092	0.096	0.141 *	0.144 *	0.109	0.117
at 12-month wave	(0.068)	(0.068)	(0.070)	(0.070)	(0.071)	(0.071)	(0.069)	(0.070)	(0.070)	(0.070)
Race										
White (reference)	---	---	---	---	---	---	---	---	---	---
Black	0.135 *	-0.032	0.043	0.248	0.087	0.336	-0.008	0.291	-0.155 **	0.334
	(0.054)	(0.241)	(0.055)	(0.247)	(0.056)	(0.252)	(0.055)	(0.245)	(0.056)	(0.248)
Hispanic	0.164 **	-0.203	0.111	-0.056	0.072	0.163	0.010	-0.005	-0.121	-0.029
	(0.063)	(0.281)	(0.064)	(0.288)	(0.066)	(0.293)	(0.064)	(0.286)	(0.065)	(0.289)
Other race	0.194	-0.698	0.138	0.079	-0.019	0.908	0.104	0.431	-0.013	0.184
	(0.113)	(0.586)	(0.116)	(0.601)	(0.118)	(0.612)	(0.115)	(0.597)	(0.116)	(0.604)
Supportive behaviors	0.056	-0.220	-0.168 *	-0.165	-0.263 ***	-0.417 **	-0.247 ***	-0.392	-0.205 **	-0.341 *
	(0.069)	(0.132)	(0.070)	(0.136)	(0.072)	(0.138)	(0.070)	(0.135)	(0.071)	(0.136)
Hostile behaviors	-0.235 *	0.012	-0.041	-0.029	0.014	0.119	-0.019	0.070	0.021	0.134
	(0.093)	(0.146)	(0.095)	(0.150)	(0.097)	(0.153)	(0.095)	(0.149)	(0.096)	(0.151)
Shared responsibility	0.010	0.050	0.056	0.023	0.003	0.036	0.021	0.084	0.019	0.027
in parenting	(0.030)	(0.071)	(0.031)	(0.072)	(0.031)	(0.074)	(0.031)	(0.072)	(0.031)	(0.073)
Cooperation in parenting	-0.040	-0.116	-0.092 *	-0.052	-0.086 *	-0.031	-0.150 ***	-0.121	-0.153 ***	-0.063
	(0.038)	(0.090)	(0.039)	(0.092)	(0.039)	(0.094)	(0.038)	(0.091)	(0.039)	(0.092)
Relationship quality * race interactions										
Supportive * white (reference)		---		---		---		---		---

(Appendix 6.6 continued)

Supportive * black	0.358 *	0.026	0.206	0.202	0.211
	(0.164)	(0.169)	(0.172)	(0.167)	(0.169)
Supportive * Hispanic	0.317	-0.151	0.116	0.091	0.040
	(0.188)	(0.192)	(0.196)	(0.191)	(0.193)
Supportive * other race	0.856 *	0.443	0.625	0.517	0.533
	(0.343)	(0.351)	(0.358)	(0.349)	(0.353)
Hostile * white (reference)	---	---	---	---	---
Hostile * black	-0.316 *	-0.045	-0.132	-0.130	-0.192
	(0.159)	(0.163)	(0.166)	(0.162)	(0.164)
Hostile * Hispanic	-0.251	0.098	-0.109	-0.069	-0.030
	(0.182)	(0.186)	(0.190)	(0.185)	(0.187)
Hostile * other race	-0.834 *	-0.429	-0.463	-0.406	-0.487
	(0.336)	(0.344)	(0.350)	(0.342)	(0.346)
Shared responsibility * white (reference)	---	---	---	---	---
Shared responsibility * black	-0.038	0.037	-0.048	-0.088	-0.001
	(0.078)	(0.080)	(0.082)	(0.080)	(0.081)
Shared responsibility * Hispanic	-0.083	0.051	-0.016	-0.030	-0.038
	(0.095)	(0.097)	(0.099)	(0.096)	(0.097)
Shared responsibility * other race	0.060	0.089	-0.032	-0.061	0.090
	(0.197)	(0.202)	(0.206)	(0.200)	(0.203)
Cooperation * white (reference)	---	---	---	---	---
Cooperation * black	0.066	-0.079	-0.072	-0.053	-0.147
	(0.101)	(0.104)	(0.106)	(0.103)	(0.104)
Cooperation * Hispanic	0.147	0.038	-0.013	0.020	0.003
	(0.123)	(0.126)	(0.128)	(0.125)	(0.127)
Cooperation * other race	0.208	-0.058	-0.324	-0.099	-0.151
	(0.238)	(0.244)	(0.249)	(0.243)	(0.245)

(Appendix 6.6 continued)

Intercept	2.570	2.747	2.299	2.250	1.548	1.400	2.385	2.256	2.229	1.946
Adjusted R-squared	0.157	0.158	0.108	0.106	0.081	0.080	0.124	0.123	0.093	0.092
N	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529	0.089	2,529

Note: Coefficients are unstandardized. Standard errors are in parentheses. All models include the following control variables: mother's immigrant status, mother's age, mother's age squared, frequency of mother's attendance at religious services, if mother lived with both biological parents at age 15, mother's education, mother's household income (log), mother's employment status, mother's homeownership, mother's current relationship status, if mother is co-resident with a grandmother, number of children in mother's household, disagreements at baseline, companionship at baseline, depression of one of mother's biological parents, depression of one of father's biological parents, prenatal smoking, child's gender, if the child was born low birth weight, child's age, and child's temperament at the 12-month wave. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] ADHD: Attention Deficit Hyperactivity Disorder; ODD: Oppositional Defiant Disorder.

Appendix 6.7. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave and Maternal Reports of Relationship Quality with Current Partner, with Interactions Between Relationship Quality and Maternal Education.

	Anxious/depressed behaviors		Withdrawn behaviors		ADHD behaviors[a]		Aggressive behaviors		ODD behaviors[a]	
Variable	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Maternal depression	0.106 *	0.106 *	0.036	0.033	0.171 **	0.168 **	0.080	0.078	0.055	0.052
at 12-month wave	(0.052)	(0.052)	(0.054)	(0.054)	(0.055)	(0.055)	(0.053)	(0.053)	(0.054)	(0.054)
Paternal depression	0.063	0.059	0.031	0.031	0.092	0.100	0.141 *	0.144 *	0.109	0.110
at 12-month wave	(0.068)	(0.068)	(0.070)	(0.070)	(0.071)	(0.071)	(0.069)	(0.070)	(0.070)	(0.070)
Education										
Less than high school (reference)	---	---	---	---	---	---	---	---	---	---
High school diploma	-0.121 *	-0.450 *	-0.150 **	-0.255	0.003	-0.206	0.004	-0.206	0.024	-0.174
(includes GED)	(0.052)	(0.225)	(0.053)	(0.231)	(0.054)	(0.235)	(0.053)	(0.230)	(0.053)	(0.232)
Some college	-0.273 ***	-0.941 ***	-0.321 ***	-0.698 **	0.014	-0.111	-0.015	-0.283	0.032	-0.183
	(0.054)	(0.223)	(0.055)	(0.229)	(0.056)	(0.233)	(0.055)	(0.228)	(0.056)	(0.230)
College degree or higher	-0.424 ***	-1.184 **	-0.355 ***	-0.770	-0.111	-0.024	-0.052	0.016	0.044	-0.129
	(0.082)	(0.453)	(0.084)	(0.464)	(0.086)	(0.473)	(0.083)	(0.462)	(0.084)	(0.467)
Supportive behaviors	0.056	0.179	-0.168 *	-0.204	-0.263 ***	-0.185	-0.247 ***	-0.249	-0.205 **	-0.234
	(0.069)	(0.128)	(0.070)	(0.131)	(0.072)	(0.134)	(0.070)	(0.130)	(0.071)	(0.132)
Hostile behaviors	-0.235 *	-0.392 **	-0.041	-0.028	0.014	-0.072	-0.019	-0.016	0.021	0.045
	(0.093)	(0.139)	(0.095)	(0.143)	(0.097)	(0.145)	(0.095)	(0.142)	(0.096)	(0.144)
Shared responsibility	0.010	-0.010	0.056	0.080	0.003	0.062	0.021	0.053	0.019	0.043
in parenting	(0.030)	(0.050)	(0.031)	(0.052)	(0.031)	(0.053)	(0.031)	(0.051)	(0.031)	(0.052)
Cooperation in parenting	-0.040	-0.105	-0.092 *	-0.155 *	-0.086 *	-0.161 *	-0.150 ***	-0.222 **	-0.153 ***	-0.213
	(0.038)	(0.067)	(0.039)	(0.069)	(0.039)	(0.070)	(0.038)	(0.069)	(0.039)	(0.069)
Relationship quality * education interactions										
Supportive		---		---		---		---		---
* less than high school (reference)										

(Appendix 6.7 continued)

Supportive * high school	-0.086	0.060	-0.185	-0.011	0.087
	(0.179)	(0.183)	(0.187)	(0.182)	(0.185)
Supportive * some college	-0.209	-0.011	-0.196	-0.038	0.002
	(0.174)	(0.178)	(0.181)	(0.177)	(0.179)
Supportive * college	-0.280	0.135	0.260	0.151	0.052
	(0.224)	(0.230)	(0.234)	(0.228)	(0.231)
Hostile * less than high school (reference)	---	---	---	---	---
Hostile * high school	0.151	-0.046	0.164	-0.001	-0.075
	(0.171)	(0.175)	(0.179)	(0.175)	(0.177)
Hostile * some college	0.240	0.026	0.228	0.021	-0.033
	(0.167)	(0.172)	(0.175)	(0.171)	(0.173)
Hostile * college	0.337	0.014	-0.170	-0.017	0.116
	(0.221)	(0.226)	(0.231)	(0.225)	(0.228)
Shared responsibility * less than high school (reference)	---	---	---	---	---
Shared responsibility * high school	0.014	-0.007	-0.068	-0.050	-0.053
	(0.071)	(0.073)	(0.074)	(0.073)	(0.073)
Shared responsibility * some college	0.018	-0.075	-0.127	-0.050	-0.016
	(0.069)	(0.071)	(0.072)	(0.071)	(0.072)
Shared responsibility * college	0.052	0.006	0.021	-0.011	-0.049
	(0.121)	(0.124)	(0.127)	(0.124)	(0.125)
Cooperation * less than high school (reference)	---	---	---	---	---
Cooperation * high school	0.046	0.032	0.124	0.110	0.098
	(0.094)	(0.096)	(0.098)	(0.096)	(0.097)
Cooperation * some college	0.159	0.164	0.115	0.130	0.097
	(0.094)	(0.096)	(0.098)	(0.096)	(0.097)
Cooperation * college	0.127	0.015	-0.095	-0.095	-0.022
	(0.176)	(0.180)	(0.184)	(0.179)	(0.181)

(Appendix 6.7 continued)

Intercept	2.570	2.836	2.299	2.441	1.548	1.676	2.385	2.515	2.229	2.341
Adjusted R-squared	0.157	0.159	0.108	0.106	0.081	0.080	0.124	0.122	0.093	0.091
N	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529

Note: Coefficients are unstandardized. Standard errors are in parentheses. All models include the following control variables: mother's race, mother's immigrant status, mother's age, mother's age squared, frequency of mother's attendance at religious services, if mother lived with both biological parents at age 15, mother's household income (log), mother's employment status, mother's homeownership, mother's current relationship status, if mother is co-resident with a grandmother, number of children in mother's household, disagreements at baseline, companionship at baseline, depression of one of mother's biological parents, depression of one of father's biological parents, prenatal smoking, child's gender, if the child was born low birth weight, child's age, and child's temperament at the 12-month wave. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] ADHD: Attention Deficit Hyperactivity Disorder; ODD: Oppositional Defiant Disorder.

Appendix 6.8. OLS Regression Models Predicting Children's Behavior at 36-Month In-Home Wave, Regressed on Maternal Major Depressive Disorder (MDD) at 12-Month Wave and Maternal Reports of Relationship Quality with Current Partner, with Interactions Between Relationship Quality and Maternal Household Income.

	Anxious/depressed behaviors		Withdrawn behaviors		ADHD behaviors[a]		Aggressive behaviors		ODD behaviors[a]	
Variable	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Maternal depression	0.106 *	0.111 *	0.036	0.042	0.171 **	0.169 **	0.080	0.078	0.055	0.050
at 12-month wave	(0.052)	(0.052)	(0.054)	(0.054)	(0.055)	(0.055)	(0.053)	(0.053)	(0.054)	(0.054)
Paternal depression	0.063	0.063	0.031	0.034	0.092	0.083	0.141 *	0.134	0.109	0.103
at 12-month wave	(0.068)	(0.068)	(0.070)	(0.070)	(0.071)	(0.071)	(0.069)	(0.069)	(0.070)	(0.070)
Log of household income	-0.064 ***	-0.026	-0.064 ***	-0.048	-0.038 *	-0.117 *	-0.032 *	-0.090	-0.022	-0.102
	(0.015)	(0.054)	(0.015)	(0.055)	(0.016)	(0.056)	(0.015)	9.055)	(0.015)	(0.055)
Supportive behaviors	0.056	0.208	-0.168 *	-0.006	-0.263 ***	-0.120	-0.247 ***	-0.196	-0.205 **	-0.055
	(0.069)	(0.511)	(0.070)	(0.523)	(0.072)	(0.533)	(0.070)	(0.520)	(0.071)	(0.526)
Hostile behaviors	-0.235 *	-0.337	-0.041	-0.250	0.014	-0.009	-0.019	0.046	0.021	-0.117
	(0.093)	(0.493)	(0.095)	(0.504)	(0.097)	(0.514)	(0.095)	(0.502)	(0.096)	(0.507)
Shared responsibility	0.010	0.296	0.056	0.425 *	0.003	-0.022	0.021	-0.157	0.019	-0.207
in parenting	(0.030)	(0.172)	(0.031)	(0.176)	(0.031)	(0.179)	(0.031)	(0.175)	(0.031)	(0.177)
Cooperation in parenting	-0.040	-0.158	-0.092 *	-0.284	-0.086 *	-0.364	-0.150 ***	-0.250	-0.153 ***	-0.229
	(0.038)	(0.222)	(0.039)	(0.227)	(0.039)	(0.231)	(0.038)	(0.226)	(0.039)	(0.228)
Relationship quality * household income interactions										
Supportive * income		-0.015		-0.017		-0.015		-0.005		-0.015
		(0.051)		(0.052)		(0.053)		(0.052)		(0.053)
Hostile * income		0.011		0.022		0.002		-0.007		0.013
		(0.049)		(0.050)		(0.051)		(0.050)		(0.050)
Shared responsibility * income		-0.030		-0.039 *		0.003		0.019		0.024
		(0.018)		(0.018)		(0.019)		(0.018)		(0.018)
Cooperation * income		0.012		0.020		0.029		0.008		0.008
		(0.023)		(0.024)		(0.024)		(0.024)		(0.024)

(Appendix 6.8 continued)

Intercept	2.570	2.187	2.229	2.125	1.548	2.293	2.385	2.849	2.229	3.009
Adjusted R-squared	0.157	0.158	0.108	0.108	0.081	0.081	0.124	0.124	0.093 .	0.093
N	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529	2,529

Note: Coefficients are unstandardized. Standard errors are in parentheses. All models include the following control variables: mother's race, mother's immigrant status, mother's age, mother's age squared, frequency of mother's attendance at religious services, if mother lived with both biological parents at age 15, mother's education, mother's employment status, mother's homeownership, mother's current relationship status, if mother is co-resident with a grandmother, number of children in mother's household, disagreements at baseline, companionship at baseline, depression of one of mother's biological parents, depression of one of father's biological parents, prenatal smoking, child's gender, if the child was born low birth weight, child's age, and child's temperament at the 12-month wave. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] ADHD: Attention Deficit Hyperactivity Disorder; ODD: Oppositional Defiant Disorder.

Appendix 7.1. Means of Individual Items that Comprise Perceptions of Instrumental and Neighborhood Support, by Maternal Major Depressive Disorder (MDD) Over Time.

Variable	Chronic depression	Depression develops	Depression remits	No depression	α[a]
Instrumental support (1 = yes, 0 = no)					0.8
Loan for $200 (y1)	0.741 ***	0.773 ***	0.739 ***	0.869	
Loan for $1,000 (y1)	0.415 **	0.407 ***	0.353 ***	0.531	
Place to live (y1)	0.714 ***	0.823 **	0.761 ***	0.883	
Child care (y1)	0.772 ***	0.858 ***	0.772 ***	0.922	
Cosigner for $1,000 (y1)	0.442 ***	0.505 ***	0.467 ***	0.653	
Cosigner for $5,000 (y1)	0.241 ***	0.318 ***	0.293 ***	0.435	
Instrumental support (1 = yes, 0 = no)					0.81
Loan for $200 (y3)	0.696 ***	0.760 ***	0.772 **	0.866	
Loan for $1,000 (y3)	0.335 ***	0.385 ***	0.375 ***	0.525	
Place to live (y3)	0.688 ***	0.741 ***	0.755 ***	0.879	
Child care (y3)	0.790 ***	0.852 **	0.788 ***	0.901	
Cosigner for $1,000 (y3)	0.406 ***	0.467 ***	0.462 ***	0.629	
Cosigner for $5,000 (y3)	0.232 ***	0.303 ***	0.266 ***	0.441	
Neighborhood support (1 = strongly disagree, 5 = strongly agree)					0.81
People around here are willing to help their neighbors (ih)	3.570 ***	3.489 ***	3.601 ***	3.914	
This is a close-knit neighborhood (ih)	3.345 **	3.082 ***	3.366 *	3.616	
People in this neighborhood can be trusted (ih)	3.118 **	2.890 ***	3.082 **	3.411	
People in this neighborhood generally get along with each other (reverse coded, ih)	3.389 ***	3.454 **	3.251 ***	3.691	
People in this neighborhood do not share the same values (reverse coded, ih))	3.036 *	3.003 **	2.863 ***	3.246	
N	224	317	184	1,803	

Note: Symbols compare differences in means of social support between mothers with chronic depression (mothers who are depressed at both the 12-month and 30-month waves), mothers with depression that develops over time (not depressed at the 12-month wave but depressed at the 30-month wave), and mothers with depression that remits over time (depressed at the 12-month wave but not depressed at the 30-month wave) to mothers who never report depression. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] Cronbach's alpha reported for Analytic Sample B.

Appendix 7.2. OLS Regression Models Predicting Perceived Instrumental Support at 30-Month Wave, Regressed on Maternal Major Depressive Disorder (MDD) Over Time.

	Instrumental support	
Variable	Model 1	Model 2
Maternal depression over time[a]		
Chronic depression	---	---
Depression develops	-0.182 ***	-0.132 ***
	(0.021)	(0.020)
Depression remits	-0.122 ***	-0.077 ***
	(0.018)	(0.017)
No depression (reference)	-0.137 ***	-0.101 ***
	(0.023)	(0.021)
Paternal depression at 12-month wave		-0.019
		(0.020)
Race		
White (reference)		---
Black		-0.083 ***
		(0.016)
Hispanic		-0.037 *
		(0.019)
Other race		-0.104 **
		(0.033)
Immigrant		-0.042 *
		(0.020)
Age		0.013
		(0.015)
Age squared		0.001 *
		(0.001)
Frequency of attendance at religious services		
At least once a week (reference)		---
Several times a month		0.003
		(0.018)
Several times a year or hardly ever		0.007
		(0.014)
Never		-0.039 *
		(0.019)
Lived with both biological parents at age 15		0.029 *
		(0.012)
Education		
Less than high school (reference)		---

(Appendix 7.2 continued)

High school diploma (includes GED)		0.052 ***
		(0.015)
Some college		0.074 ***
		(0.016)
College degree or higher		0.142 ***
		(0.025)
Log of household income		0.034 ***
		(0.004)
Employed		0.019
		(0.012)
Homeowner		0.062 ***
		(0.012)
Relationship status at birth		
Married (reference)		---
Cohabiting		-0.092 ***
		(0.017)
Romantically involved but not living together		-0.073 ***
		(0.019)
Not in a relationship		-0.101 ***
		(0.022)
Number of children		-0.011 *
		(0.004)
Either of mother's parents depressed		-0.022
		(0.012)
Either of father's parents depressed		-0.017
		(0.013)
Prenatal smoking		-0.017
		(0.015)
Child is male		-0.008
		(0.011)
Child born low birth weight		0.006
		(0.019)
Child age, in months		-0.032 *
		(0.015)
Child temperament		0.019 *
		(0.007)
Intercept	0.707	0.774
Adjusted R-squared	0.046	0.233
N	2,528	2,528

Note: Coefficients are unstandardized. Standard errors are in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] Chronic depression: mother depressed at both 12-month and 30-month waves; depression develops: mother not depressed at 12-month wave, depressed at 30-month wave; depression remits: mother depressed at 12-month wave, not depressed at 30-month wave; no depression: mother not depressed at 12-month or 30-month wave.

Appendix 7.3. OLS Regression Models Predicting Perceived Neighborhood Support at 30-Month Wave, Regressed on Maternal Major Depressive Disorder (MDD) Over Time.

	Neighborhood support	
Variable	Model 1	Model 2
Maternal depression over time[a]		
Chronic depression	---	---
Depression develops	-0.287 ***	-0.126
	(0.070)	(0.068)
Depression remits	-0.390 ***	-0.266 ***
	(0.060)	(0.057)
No depression (reference)	-0.337 ***	-0.197 **
	(0.076)	(0.072)
Paternal depression at 12-month wave		-0.170 *
		(0.067)
Race		
White (reference)		---
Black		-0.322 ***
		(0.055)
Hispanic		-0.170 **
		(0.063)
Other race		-0.070
		(0.112)
Immigrant		-0.173 *
		(0.069)
Age		0.009
		(0.050)
Age squared		-0.001
		(0.001)
Frequency of attendance at religious services		
At least once a week (reference)		---
Several times a month		-0.022
		(0.060)
Several times a year or hardly ever		0.036
		(0.048)
Never		-0.216 ***
		(0.065)
Lived with both biological parents at age 15		0.064
		(0.041)
Education		
Less than high school (reference)		---

(Appendix 7.3 continued)

High school diploma (includes GED)		-0.074
		(0.051)
Some college		0.080
		(0.054)
College degree or higher		0.198 *
		(0.083)
Log of household income		0.028
		(0.015)
Employed		0.057
		(0.039)
Homeowner		0.148 ***
		(0.041)
Relationship status at birth		
Married (reference)		---
Cohabiting		-0.124 *
		(0.057)
Romantically involved but not living together		-0.190 **
		(0.063)
Not in a relationship		-0.255 ***
		(0.074)
Number of children		-0.037 *
		(0.015)
Either of mother's parents depressed		-0.125 **
		(0.041)
Either of father's parents depressed		0.004
		(0.045)
Prenatal smoking		-0.019
		(0.050)
Child is male		0.001
		(0.037)
Child born low birth weight		0.064
		(0.063)
Child age, in months		0.024
		(0.048)
Child temperament		0.129 ***
		(0.025)
Intercept	3.574	2.627
Adjusted R-squared	0.024	0.158
N	2,528	2,528

Note: Coefficients are unstandardized. Standard errors are in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] Chronic depression: mother depressed at both 12-month and 30-month waves; depression develops: mother not depressed at 12-month wave, depressed at 30-month wave; depression remits: mother depressed at 12-month wave, not depressed at 30-month wave; no depression: mother not depressed at 12-month or 30-month wave.

Appendix 7.4. Logistic Regression Models Predicting Received Financial Support at 30-Month Wave, Regressed on Maternal Major Depressive Disorder (MDD) Over Time.

	Financial support	
Variable	Model 1	Model 2
Maternal depression over time[a]		
Chronic depression	---	---
Depression develops	2.200 ***	1.886 ***
	(0.145)	(0.157)
Depression remits	1.841 ***	1.627 ***
	(0.127)	(0.134)
No depression (reference)	1.335	1.112
	(0.167)	(0.174)
Paternal depression at 12-month wave		1.260
		(0.160)
Race		
White (reference)		---
Black		1.130
		(0.135)
Hispanic		0.870
		(0.160)
Other race		1.334
		(0.288)
Immigrant		0.551 **
		(0.200)
Age		0.841
		(0.125)
Age squared		1.002
		(0.001)
Frequency of attendance at religious services		
At least once a week (reference)		---
Several times a month		0.935
		(0.152)
Several times a year or hardly ever		0.999
		(0.121)
Never		0.705 *
		(0.165)
Lived with both biological parents at age 15		1.111
		(0.104)
Education		
Less than high school (reference)		---

(Appendix 7.4 continued)

High school diploma (includes GED)		0.871
		(0.128)
Some college		1.308 *
		(0.131)
College degree or higher		1.325
		(0.214)
Log of household income		1.002
		(0.036)
Employed		0.913
		(0.097)
Homeowner		1.061
		(0.101)
Relationship status at birth		
Married (reference)		---
Cohabiting		1.181
		(0.152)
Romantically involved but not living together		1.460 *
		(0.162)
Not in a relationship		1.484 *
		(0.185)
Number of children		0.946
		(0.038)
Either of mother's parents depressed		1.235 *
		(0.101)
Either of father's parents depressed		1.218
		(0.111)
Prenatal smoking		1.228
		(0.120)
Child is male		0.964
		(0.091)
Child born low birth weight		1.057
		(0.153)
Child age, in months		0.952
		(0.122)
Child temperament		0.999
		(0.061)
Intercept	-1.040	1.732
Pseudo R-squared	0.015	0.065
Log likelihood	-1,517	-1,440
N	2,528	2,528

Note: Odds ratios are presented. Standard errors are in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] Chronic depression: mother depressed at both 12-month and 30-month waves; depression develops: mother not depressed at 12-month wave, depressed at 30-month wave; depression remits: mother depressed at 12-month wave, not depressed at 30-month wave; no depression: mother not depressed at 12-month or 30-month wave.

Appendix 7.5. Logistic Regression Models Predicting Co-Residence with a Grandparent at 30-Month Wave, Regressed on Maternal Major Depressive Disorder (MDD) Over Time.

	Co-residence with grandparent	
Variable	Model 1	Model 2
Maternal depression over time[a]		
Chronic depression	---	---
Depression develops	1.282	1.228
	(0.183)	(0.201)
Depression remits	1.192	1.183
	(0.161)	(0.173)
No depression (reference)	0.914	0.729
	(0.222)	(0.237)
Paternal depression at 12-month wave		1.678 **
		(0.189)
Race		
White (reference)		---
Black		1.082
		(0.182)
Hispanic		1.536 *
		(0.200)
Other race		1.255
		(0.360)
Immigrant		1.660 *
		(0.210)
Age		0.985
		(0.157)
Age squared		1.002
		(0.001)
Frequency of attendance at religious services		
At least once a week (reference)		---
Several times a month		1.186
		(0.194)
Several times a year or hardly ever		1.112
		(0.159)
Never		1.272
		(0.201)
Lived with both biological parents at age 15		1.273
		(0.129)

(Appendix 7.5 continued)

Education		
Less than high school (reference)		---
High school diploma (includes GED)		1.218
		(0.152)
Some college		1.116
		(0.163)
College degree or higher		0.873
		(0.311)
Log of household income		1.150 **
		(0.049)
Employed		0.824
		(0.122)
Homeowner		1.481 **
		(0.123)
Relationship status at birth		
Married (reference)		---
Cohabiting		1.492
		(0.213)
Romantically involved but not living together		3.212 ***
		(0.220)
Not in a relationship		3.050 ***
		(0.242)
Number of children		0.943
		(0.048)
Either of mother's parents depressed		0.953
		(0.131)
Either of father's parents depressed		0.812
		(0.150)
Prenatal smoking		1.355 *
		(0.151)
Child is male		0.936
		(0.116)
Child born low birth weight		1.121
		(0.191)
Child age, in months		1.146
		(0.152)
Child temperament		0.841
		(0.076)
Intercept	-1.715	-0.276
Pseudo R-squared	0.001	0.096
Log likelihood	-1,101	-997
N	2,528	2,528

Note: Odds ratios are presented. Standard errors are in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] Chronic depression: mother depressed at both 12-month and 30-month waves; depression develops: mother not depressed at 12-month wave, depressed at 30-month wave; depression remits: mother depressed at 12-month wave, not depressed at 30-month wave; no depression: mother not depressed at 12-month or 30-month wave.

Appendix 7.6. Logistic Regression Models Predicting Individual Measures of Perceptions of Instrumental Support at 30-Month Wave, Regressed on Maternal Major Depressive Disorder (MDD) Over Time.

	Loan for $200		Loan for $1,000		Place to live		Child care		Cosigner for $1,000		Cosigner for $5,000	
Variable	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Maternal depression over time[a]												
Chronic depression	0.356 ***	0.395 ***	0.455 ***	0.545 ***	0.303 ***	0.336 ***	0.415 ***	0.480 ***	0.403 ***	0.504 ***	0.383 ***	0.480 ***
	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####
Depression develops	0.492 ***	0.576 ***	0.566 ***	0.687 **	0.394 ***	0.449 ***	0.633 **	0.781	0.515 ***	0.637 ***	0.551 ***	0.704 *
	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####
Depression remits	0.524 ***	0.587 **	0.542 ***	0.633 **	0.425 ***	0.463 ***	0.410 ***	0.445 ***	0.505 ***	0.569 ***	0.460 ***	0.530 **
	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####
No depression (reference)	---	---	---	---	---	---	---	---	---	---	---	---
Intercept	1.864	2.527	0.101	-1.397	1.984	3.583	2.205	3.675	0.530	1.767	-0.237	-0.360
Pseudo R-squared	0.015	0.111	0.037	0.140	0.037	0.134	0.019	0.101	0.021	0.122	0.020	0.179
Log likelihood	-1,723	-1,022	-1,088	-1,505	-1,088	-978	-926	-850	-1,686	-1,512	-1,660	-1,391
N	2,528	2,528	2,528	2,528	2,528	2,528	2,528	2,528	2,528	2,528	2,528	2,528

Note: Odds ratios are presented. Standard errors are in parentheses. Model 2 includes the following control variables: mother's race, mother's immigrant status, mother's age, mother's age squared, frequency of mother's attendance at religious services, if mother lived with both biological parents at age 15, mother's education, mother's household income (log), mother's employment status, mother's homeownership, mother's relationship status with child's father at birth, if mother is co-resident with a grandmother, number of children in mother's household, depression of one of mother's biological parents, depression of one of father's biological parents, prenatal smoking, child's gender, if the child was born low birth weight, child's age, and child's temperament at the 12-month wave. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[a] Chronic depression: mother depressed at both 12-month and 30-month waves; depression develops: mother not depressed at 12-month wave, depressed at 30-month wave; depression remits: mother depressed at 12-month wave, not depressed at 30-month wave; no depression: mother not depressed at 12-month or 30-month wave.

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