

The Longitudinal Effects of Unintended Pregnancy  
on Maternal Mental Health and Parenting Behaviors

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## Abstract

### The Longitudinal Effects of Unintended Pregnancy on Maternal Mental Health and Parenting Behaviors

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This dissertation examines associations between unintended pregnancy and future maternal mental health and parenting behaviors. Put simply, I examine whether a mother who self-reports her pregnancy as being unintended at her child's birth will have longstanding differences in mental health and parenting behaviors as her child ages. Drawing on two separate sources of data, I examine these associations taking into account three different ways of measuring unintended pregnancy. Drawing on the Fragile Families and Child Wellbeing Study (FFCWS), unintended pregnancy is measured as such when mothers report, "yes," to a question asking them whether they considered an abortion prior to their child's birth. In many respects, consideration of an abortion is the most definitive measure of unintended pregnancy, since it could result in termination of the pregnancy altogether; yet, it is the least utilized in the research literature. More commonly, researchers adopt measures of unintendedness by asking mothers whether or not their pregnancies were "mistimed" or "unwanted." Drawing on the Building Strong Families (BSF) Project, unintended pregnancy is measured by two questions regarding whether the mother wanted a child with the biological father and whether the pregnancy came sooner, at about the right time, or later than she wanted (mistimed pregnancy). Appreciating the potential influence that the biological father may have on the experience of an unintended pregnancy and later parenting and mental health, all analytic models are conducted separately by family structure at the child's birth (single mothers and mothers cohabiting with the child's biological father).

Results across the FFCW and BSF Project show that both considering an abortion and having an unwanted pregnancy were associated with considerable longstanding risk for maternal mental health and parenting behaviors, especially for mothers who report cohabiting with their child's biological father at baseline. Within both sources of data, unintended pregnancy was associated with increased parenting stress, less engagement in parenting activities, and increased likelihood of spanking for cohabiting mothers. Notably, these identified associations remained relatively unchanged when utilizing propensity score pair matching techniques. Results from moderation analyses with the FFCWS reveal that maternal education moderates the association between considering an abortion and maternal mental health and parenting behaviors. Results from moderation analyses with the BSF Project reveal that assignment to a BSF Program altered associations between unwanted pregnancy and engagement in parenting and spanking behaviors. There was no negative link between cohabiting mother's unwanted pregnancy and engagement in parenting for those mothers assigned to the BSF program, whereas there was a negative link in the control group. Similarly, if single mothers were assigned to the BSF treatment and reported that their pregnancy was unwanted, they were less likely to spank their three-year-old children. These findings suggest the possibility that an organized program could alter longitudinal associations between unintended pregnancy and parenting behaviors, even if the program is not targeting experiences of unintended pregnancy specifically.

## TABLE OF CONTENTS

	Page
List of Tables	iv
List of Figures	viii
List of Appendix Tables	ix
List of Appendix Figures	xii
Acknowledgments	xiv
Dedication	xv
Introduction.....	1
Defining Pregnancy Intention .....	1
Considering Abortion.....	2
Deciding to Carry an Unintended Pregnancy to Term.....	2
Potential Consequences of Unintended Pregnancies .....	3
The Present Research .....	4
Chapter 1: BACKGROUND.....	7
Understanding Pregnancy Intention .....	7
Correlates of Unintended Pregnancies .....	8
Potential Consequences of Unintended Pregnancies .....	8
Maternal Depressive Symptomology .....	10
Perinatal Health Behaviors .....	11
Relationship with Biological Father .....	11
Relationship with Child.....	12
Effects on Child Outcomes.....	13
Moderating Factors for Unintended Pregnancy Effects.....	14
Limitations of the Research Literature.....	16
Current Dissertation’s Contribution to the Research Literature.....	17
Implications for Policy and Therapy.....	18
Chapter 2: THEORETICAL BACKGROUND AND HYPOTHESES:.....	21
Theoretical Framework .....	21

Research Questions and Hypotheses .....	22
Research Questions for FFCWS.....	22
Research Questions for BSF.....	28
Chapter 3: METHODS .....	32
Data and Measures .....	32
Fragile Families and Child Wellbeing Study .....	32
Analytic sample .....	33
Missing data.....	36
Independent variable measured at child’s birth.....	36
Dependent variables measured at child age 1.....	37
Dependent variables measured at child age 3.....	40
Control variables measured at child’s birth.....	45
Changes in relationship with the child's biological father over the first three years .....	54
Building Strong Families Project .....	58
Analytic sample.....	58
Independent variables measured at application to BSF program. ....	62
Dependent variables measured at child age 3.....	62
Control variables measured at application to the BSF program.....	66
Changes in relationship with the child’s biological father over the first three years of life..	71
Analytic Strategy.....	73
Analyses using FFCWS.....	73
Analyses using BSF Evaluation .....	95
Chapter 4: RESULTS .....	105
FFCWS.....	105
Covariates Associated with Considering Abortion .....	105
Covariates for Mother’s Consideration of Abortion Exclusive of Father’s Consideration.	107
Covariates for Mother’s and Father’s Consideration of Abortion.....	109
Consideration of Abortion and Changes in Relationship Status .....	110
Consideration of Abortion and Age 1 Outcomes .....	115
Consideration of Abortion and Age 3 Outcomes .....	126

Propensity Score Analysis .....	145
Moderation Analysis .....	147
Categories of Consideration of Abortion .....	151
BSF Project .....	153
Covariates Associated with Unwanted and Mistimed Pregnancy .....	153
Unwanted Pregnancy and Changes in Relationship Status .....	157
Mistimed Pregnancy and Changes in Relationship Status .....	159
Mistimed Pregnancy and Age 3 Outcomes .....	160
Unwanted Pregnancy and Changes in Relationship Status .....	161
Moderation Analyses .....	170
Chapter 5: DISCUSSION .....	173
Summary of Results .....	173
Robustness of Identified Associations for Consideration of Abortion .....	175
Possible Avenues for Protection .....	175
Findings in Terms of Existing Literature Base .....	177
Limitations .....	178
Implications .....	180
References .....	182
Appendix A .....	189
Appendix B .....	236
Appendix C .....	256
Appendix D .....	276
Appendix E .....	292
Appendix F .....	314

## List of Tables

	Page
Table 1. Dependent variables measured at child age 1.....	39
Table 2. Dependent variables measured at child age 3.....	44
Table 3. Control variables measured at child’s birth.....	48
Table 4. Standardized mean differences on age 1 outcomes for mothers who didn’t consider an abortion compared to mothers who did consider.....	50
Table 5. Standardized mean differences on age 3 outcomes for mothers who didn’t consider an abortion compared to mothers who did consider.....	51
Table 6. Standardized mean differences on covariates for mothers who didn’t consider an abortion compared to mothers who did consider.....	52
Table 7. Relationship changes from birth to age 1.....	54
Table 8. Standardized mean differences on age 1 relationship changes for mothers who didn’t consider an abortion compared to mothers who did consider.....	55
Table 9. Relationship changes from birth to age 3.....	56
Table 10. Standardized mean differences on age 3 relationship changes for mothers who didn’t consider an abortion compared to mothers who did consider.....	57
Table 11. Dependent variables measured at child age 3.....	65
Table 12. Control variables measured at child’s birth.....	68
Table 13. Standardized mean differences on age 3 outcomes for mothers who had wanted pregnancies compared to mothers who had unwanted pregnancies.....	69
Table 14. Standardized mean differences on covariates for mothers who had wanted pregnancies compared to mothers who had unwanted pregnancies.....	70
Table 15. Relationship changes from birth to age 3.....	71
Table 16. Standardized mean differences on age 3 relationship changes who had wanted pregnancies compared to mothers who had unwanted pregnancies.....	72
Table 17. Covariates for mother’s consideration of abortion by family structure.....	106
Table 18. Covariates for mother’s consideration of abortion exclusive of biological father’s consideration by family structure.....	108
Table 19. Associations between considering an abortion and single mother relationship status with the child’s biological father when the child is 1.....	111
Table 20. Associations between considering an abortion and single mother relationship status with the child’s biological father when the child is 3. Reference group is single mother was stably romantic with child’s biological father from 1 to 3.....	112
Table 21. Associations between considering an abortion and cohabiting mother relationship status with the child’s biological father when the child is 1.....	113



Table 22. Associations between considering an abortion and cohabiting mother relationship status with the child’s biological father when the child is 3. ....	114
Table 23. Associations between single mother’s consideration of abortion and self-reported depressive symptoms when the child is 1-year-old. ....	116
Table 24. Associations between single mother’s consideration of abortion and self-reported parenting stress when the child is 1-year-old.....	117
Table 25. Associations between cohabiting mother’s consideration of abortion and self-reported depressive symptoms when the child is 1-year-old. ....	118
Table 26. Associations between cohabiting mother’s consideration of abortion and self-reported parenting stress when the child is 1-year-old.....	119
Table 27. Associations between single mother’s consideration of abortion and self-reported engagement in parenting activities when the child is 1-year-old.....	120
Table 28. Associations between single mother’s consideration of abortion and whether reported spanking in past month when the child is 1-year-old. ....	121
Table 29. Associations between cohabiting mother’s consideration of abortion and self-reported engagement in parenting activities when the child is 1-year-old.....	122
Table 30. Associations between cohabiting mother’s consideration of abortion and whether reported spanking in past month when the child is 1-year-old. ....	123
Table 31. Associations between single mother’s consideration of abortion and co-parenting quality with the child’s biological father when the child is 1-year-old. ....	124
Table 32. Associations between cohabiting mother’s consideration of abortion and co-parenting quality with the child’s biological father when the child is 1-year-old. ....	125
Table 33. Associations between single mother’s consideration of abortion and self-reported depressive symptoms when the child is 3-years-old. ....	127
Table 34. Associations between single mother’s consideration of abortion and self-reported parenting stress when the child is 3-years-old. ....	128
Table 35. Associations between cohabiting mother’s consideration of abortion and self-reported depressive symptoms when the child is 3-years-old. ....	129
Table 36. Associations between cohabiting mother’s consideration of abortion and self-reported parenting stress when the child is 3-years-old. ....	130
Table 37. Associations between single mother’s consideration of abortion and self-reported engagement in parenting when the child is 3-years-old.....	132
Table 38. Non-significant associations between single mother’s consideration of abortion and spanking and observed measures of parenting when the child is 3-years-old. ....	133
Table 39. Associations between cohabiting mother’s consideration of abortion and self-reported engagement in parenting when the child is 3-years-old.....	134
Table 40. Associations between cohabiting mother’s consideration of abortion and whether reported spanking in past month when the child is 3-years-old.....	135

Table 41. Associations between cohabiting mother’s consideration of abortion and observed warmth when the child is 3-years-old. ....	136
Table 42. Insignificant associations between cohabiting mother’s consideration of abortion and observed measures of parenting when the child is 3-years-old. ....	137
Table 43. Associations between single mother’s consideration of abortion and self-reported co-parenting with the child’s biological father when the child is 3-years-old. ....	138
Table 44. Associations between cohabiting mother’s consideration of abortion and self-reported co-parenting with the child’s biological father when the child is 3-years-old. ....	139
Table 45. Developmental models for single mother’s consideration of abortion and maternal mental health when the child is 3-years-old. ....	141
Table 46. Developmental models for single mother’s consideration of abortion and co-parenting with the child’s biological father when the child is 3-years-old. ....	142
Table 47. Developmental models for cohabiting mother’s consideration of abortion and maternal mental health when the child is 3-years-old. ....	143
Table 48. Developmental models for cohabiting mother’s consideration of abortion and parenting behaviors when the child is 3-years-old. ....	144
Table 49. Developmental models for cohabiting mother’s consideration of abortion and observed warmth when the child is 3-years-old. ....	145
Table 50. Covariates for unwanted pregnancy of abortion by family structure. ....	154
Table 51. Covariates for mistimed pregnancy of abortion by family structure. ....	156
Table 52. Associations between unwanted pregnancy and single mother relationship status with the child’s biological father when the child is 3. ....	157
Table 53. Associations between unwanted pregnancy and cohabiting mother relationship status with the child’s biological father when the child is 3. ....	158
Table 54. Associations between mistimed pregnancy and single mother relationship status with the child’s biological father when the child is 3. ....	159
Table 55. Associations between mistimed pregnancy and cohabiting mother relationship status with the child’s biological father when the child is 3. ....	160
Table 56. Insignificant associations between single mother’s unwanted pregnancy and maternal mental health when the child is 3-years-old. ....	161
Table 57. Associations between cohabiting mother’s unwanted pregnancy and self-reported depressive symptoms when the child is 3-years-old. ....	162
Table 58. Associations between cohabiting mother’s unwanted pregnancy and self-reported depressive symptoms when the child is 3-years-old. ....	163
Table 59. Insignificant associations between single mother’s unwanted pregnancy and parenting behaviors when the child is 3-years-old. ....	164
Table 60. Associations between cohabiting mother’s unwanted pregnancy and self-reported engagement in parenting when the child is 3-years-old. ....	165

Table 61. Associations between cohabiting mother’s unwanted pregnancy and self-reported spanking when the child is 3-years-old.....	166
Table 62. Insignificant associations between cohabiting mother’s unwanted pregnancy and observed parenting when the child is 3-years-old.....	167
Table 63. Associations between single mother’s unwanted pregnancy and self-reported co-parenting quality with the child’s biological father when the child is 3-years-old.....	168
Table 64. Associations between cohabiting mother’s unwanted pregnancy and self-reported co-parenting quality with the child’s biological father when the child is 3-years-old.....	169

## List of Figures

	Page
Figure 1. Analytic sample of single families in FFCWS.....	34
Figure 2. Analytic sample of cohabiting families in FFCWS.....	35
Figure 3. Analytic sample of single families in BSF Project.....	60
Figure 4. Analytic sample of cohabiting families in BSF Project. ....	61
Figure 5. Parenting stress when child is 3 by whether or not a cohabiting mother considered an abortion and baseline education level. ....	149
Figure 6. Engagement in parenting when child is 3 by whether or not a cohabiting mother considered an abortion and whether or not she completed high school .....	150
Figure 7. Engagement in parenting when child is 3 by whether or not a cohabiting mother had an unwanted pregnancy and whether or not she was assigned to the BSF Program. ....	171
Figure 8. Spanking when child is 3 by whether or not a single mother had an unwanted pregnancy and whether or not she was assigned to the BSF Program.....	172

## List of Appendix Tables

	Page
<b>Appendix A</b> .....	189
Table 1. Descriptive statistics for FFCWS study variables. ....	189
Table 2. Multinomial logit results predicting categories of consideration of abortion with FFCWS sample by relationship status with biological father at birth of child. The reference group is neither mother nor biological father considered an abortion. ....	193
Table 3. Associations between mother’s consideration of abortion and self-reported maternal mental health and parenting behaviors when the child is 1-year-old for mothers who are single at child’s birth. ....	195
Table 4. Associations between mother’s consideration of abortion and self-reported maternal mental health and parenting behaviors when the child is 1-year-old for mothers who are cohabiting with the child’s biological father at child’s birth. ....	198
Table 5. Associations between mother’s consideration of abortion and self-reported co-parenting quality with child’s biological father when the child is 1-year-old. ....	201
Table 6. Associations between mother’s consideration of abortion and self-reported maternal mental health when the child is 3-years-old for mothers who are single at child’s birth .....	204
Table 7. Associations between mother’s consideration of abortion and self-reported parenting behaviors when the child is 3-years-old for mothers who are single at child’s birth .....	208
Table 8. Associations between categories of consideration of abortion and observed maternal parenting behaviors when the child is 3-years-old for mothers who are single at child’s birth .	212
Table 9. Associations between mother’s consideration of abortion and self-reported maternal mental health when the child is 3-years-old for mothers who are cohabiting with the child’s father at child’s birth .....	216
Table 10. Associations between mother’s consideration of abortion and self-reported maternal parenting behaviors when the child is 3-years-old for mothers who are cohabiting with the child’s biological father at child’s birth .....	220
Table 11. Associations between mother’s consideration of abortion and observed parenting behaviors when the child is 3-years-old for mothers who are cohabiting with the child’s biological father at child’s birth.....	223
Table 12. Associations between mother’s consideration of abortion and co-parenting with child’s biological father when the child is 3-years-old.....	226
Table 13. Examination of whether identified associations for FFCWS mothers who were single at child’s birth remain when utilizing propensity score pair matching techniques.....	230

Table 14. Examination of whether identified associations for FFCWS mothers who were cohabiting with the child’s biological father at child’s birth remain when utilizing propensity score pair matching techniques. ....	231
Table 15. Moderation of associations between mother consideration of abortion and mother’s mental health and parenting by maternal education level. ....	232
<b>Appendix B</b> .....	236
Table 16. Associations between categories of consideration of abortion and self-reported maternal mental health when the child is 3-years-old for mothers who are single at child’s birth .....	236
Table 17. Associations between categories of consideration of abortion and self-reported maternal parenting behaviors when the child is 3-years-old for mothers who are single at child’s birth .....	239
Table 18. Associations between categories of consideration of abortion and observed maternal parenting behaviors when the child is 3-years-old for mothers who are single at child’s birth. ....	243
Table 19. Associations between categories of consideration of abortion and self-reported maternal mental health when the child is 3-years-old for mothers who are cohabiting with the child’s biological father at child’s birth. ....	246
Table 20. Associations between categories of consideration of abortion and self-reported maternal parenting behaviors when the child is 3-years-old for mothers who are cohabiting with child’s biological father at child’s birth. ....	249
Table 21. Associations between categories of consideration of abortion and observed maternal parenting behaviors when the child is 3-years-old for mothers who are cohabiting with the child’s biological father at child’s birth.....	253
<b>Appendix C</b> .....	256
Table 22. Descriptive Statistics for BSF Evaluation Variables .....	256
Table 23. Prediction of unwanted and mistimed pregnancies with BSF sample by relationship status with biological father at birth of child. ....	258
Table 24. Associations between mother’s unwanted pregnancy and self-reported maternal mental health when the child is 3-years-old for mothers who are single at child’s birth .....	259
Table 25. Associations between mother’s unwanted pregnancy and self-reported parenting behaviors when the child is 3-years-old for mothers who are single at child’s birth .....	261
Table 26. Associations between mother’s unwanted pregnancy and observed parenting behaviors when the child is 3-years-old for mothers who are single at child’s birth .....	263

Table 27. Associations between mother’s unwanted pregnancy and self-reported maternal mental health when the child is 3-years-old for mothers who are cohabiting with the child’s father at child’s birth .....	265
Table 28. Associations between mother’s unwanted pregnancy and self-reported parenting behaviors when the child is 3-years-old for mothers who are cohabiting with the child’s father at child’s birth .....	267
Table 29. Associations between mother’s unwanted pregnancy and observed parenting when the child is 3-years-old for mothers who are cohabiting with the child’s father at child’s birth. ....	268
Table 30. Associations between mother’s unwanted pregnancy and self-reported co-parenting with the child’s biological father when the child is 3-years-old .....	270
Table 31. Moderation of associations between unwanted pregnancy and self-reported engagement in parenting behaviors by assignment to BSF program. ....	272
Table 32. Moderation of associations between unwanted pregnancy and spanking behaviors by assignment to BSF program. ....	274
<b>Appendix D</b> .....	276
Table 33. Measurement details for FFCWS maternal mental health and parenting outcomes collected when the child was 1-year-old. ....	276
Table 34. Measurement details for FFCWS maternal mental health and parenting outcomes collected when the child was 3-years-old. ....	278
Table 35. Measurement details for FFCWS demographic and baseline variables. ....	282
Table 36. Measurement details for BSF Evaluation maternal mental health and parenting outcomes collected when the child was 3-years-old. ....	286
Table 37. Measurement details for BSF Project demographic and baseline variables. ....	289

## List of Appendix Figures

	Page
<b>Appendix E.</b> .....	292
Figure 1. Initial covariate balance for engagement in parenting for mothers who were single at baseline. ....	292
Figure 2. Final balance after conditioning on propensity score for engagement in parenting for mothers who were single at baseline. ....	293
Figure 3. Initial covariate balance for depressive symptoms for mothers who were single at baseline. ....	294
Figure 4. Final balance after conditioning on propensity score for depressive symptoms for mothers who were single at baseline. ....	295
Figure 5. Initial covariate balance for parenting stress for mothers who were single at baseline. ....	296
Figure 6. Final balance after conditioning on propensity score for parenting stress for mothers who were single at baseline. ....	297
Figure 7. Initial covariate balance for spanking behaviors for mothers who were single at baseline. ....	298
Figure 8. Final balance after conditioning on propensity score for spanking behaviors for mothers who were single at baseline. ....	299
Figure 9. Initial covariate balance for co-parenting with the child’s biological father for mothers who were single at baseline. ....	300
Figure 10. Final balance after conditioning on propensity score for co-parenting with the child’s biological father for mothers who were single at baseline. ....	301
Figure 11. Initial covariate balance for engagement in parenting for mothers who were cohabiting with the child’s biological father at baseline. ....	302
Figure 12. Final balance after conditioning on propensity score for engagement in parenting for mothers who were cohabiting with the child’s biological father at baseline. ....	303
Figure 13. Initial covariate balance for depressive symptoms for mothers who were cohabiting with the child’s biological father at baseline. ....	304
Figure 14. Final balance after conditioning on propensity score for depressive symptoms for mothers who were cohabiting with the child’s biological father at baseline. ....	305
Figure 15. Initial covariate balance for parenting stress for mothers who were cohabiting with the child’s biological father at baseline. ....	306



Figure 16. Final balance after conditioning on propensity score for parenting stress for mothers who were cohabiting with the child’s biological father at baseline. ....	307
Figure 17. Initial covariate balance for spanking behaviors for mothers who were cohabiting with the child’s biological father at baseline. ....	308
Figure 18. Final balance after conditioning on propensity score for spanking behaviors for mothers who were cohabiting with the child’s biological father at baseline. ....	309
Figure 19. Initial covariate balance for co-parenting with the child’s biological father for mothers who were cohabiting with the child’s biological father at baseline. ....	310
Figure 20. Final balance after conditioning on propensity score for co-parenting with the child’s biological father for mothers who were cohabiting with the child’s biological father at baseline. ....	311
Figure 21. Initial covariate balance for observed warmth for mothers who were cohabiting with the child’s biological father at baseline. ....	312
Figure 22. Final balance after conditioning on propensity score for observed warmth for mothers who were cohabiting with the child’s biological father at baseline. ....	313

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*for Dada*

## **Introduction**

Rates of unintended pregnancies and births are higher in the United States than in Canada, Australia, and most of Europe (Meyer & Carlson, 2014). In 2008, the rate of unintended pregnancies among women between the ages of 15 and 44 years within the United States increased to 51% (Finer & Zolna, 2014). Furstenberg (2014) suggests that the rate of unintended pregnancies and births in the United States are so high because young Americans, especially those who are more economically disadvantaged, are far less adept at practicing contraception and preventing unwanted pregnancies than young adults in other industrialized countries. Regardless of why rates are heightened, women faced with an unintended pregnancy must choose whether to carry their unintended pregnancies to term or abort. Both decisions have the potential to result in psychological difficulties for women. Whether or not a woman's experience with an unintended pregnancy leads to negative psychological consequences depends on the level of stress she experiences during the decision-making process, how she copes with her emotions during the abortion procedure or pregnancy, and how she copes with her emotions in the aftermath (American Psychological Association & American Psychological Association, 2008).

### **Defining Pregnancy Intention**

Unintended pregnancies are defined as such if they are considered to be either mistimed or unwanted by the woman (Finer & Zolna, 2014). A pregnancy is considered mistimed, if a woman reports that she wanted to become pregnant in the future but not at the exact time of the current pregnancy. In contrast, a pregnancy is considered unwanted if the woman has no desire to become pregnant at the time of the current conception or ever in the future (Finer & Zolna,

2014). An alternative way to define an unintended pregnancy is when a woman considers having an abortion at the time of the current conception (Waller & Bitler, 2008). By considering an abortion, the woman is expressing doubts regarding her desire to become pregnant currently, but there is no clear indication of whether or not she would ever want to become pregnant in the future.

### **Considering Abortion**

A woman's abortion decision is often shaped by environmental influences, such as her economic resources, and social influences, such as presence or absence of a supportive partner, within her context (American Psychological Association & American Psychological Association, 2008). Research examining abortion decisions among women provide some evidence to a socioeconomic divide regarding whether women choose to abort or carry unintended pregnancies to term. Research conducted in France shows that older women of higher socioeconomic statuses considered work and lack of stability in their relationships as reasons to pursue abortion (Sihvo, Bajos, Ducot, & Kaminski, 2003). Similarly, younger women cited unfinished schooling as a reason for pursuing an abortion. In addition, women who were in relationships with partners with increased education levels were more likely to have abortions (Sihvo et al., 2003).

### **Deciding to Carry an Unintended Pregnancy to Term**

In 2008, rates of unintended pregnancy ending in birth rose to 27 per 1000 women between the ages of 15 to 44 years (Finer & Zolna, 2014). Ethnographic accounts of poor women in the United States can illuminate possible explanations as to why increasing amounts of unintended pregnancies are carried to term despite initial consideration of abortion. For example, a number of economically disadvantaged women within the United States describe having children as being a "necessity" for generating meaning in their lives and fostering their female

identities (Edin & Kefalas, 2011, pp. 6). Therefore, such women may ultimately choose to carry unplanned or initially unwanted births to term in order to fulfill this “necessity” for meaning in life derived from having children. From conducting a content analysis of a survey of 518 low-income pregnant and postpartum women in Detroit, Hulseley, Laken, Miller & Ager (2000) identified five categories explaining why women decided against having an abortion. First, women indicated pregnancy as being a situation that was out of their control. Second, women explained that other people influenced their decision. Third, women cited psychological and or moral reasons for deciding against an abortion. Fourth, women suffered from inaction and passivity regarding their situation. Lastly, woman ended up wanting the baby and or heard the heartbeat and cited that as a primary reason for carrying the pregnancy to term (Hulseley et al., 2000).

### **Potential Consequences of Unintended Pregnancies**

Although a substantial number of pregnant women decide to carry unintended pregnancies to term and become mothers, little research exists examining how early experiences of unintendedness (which may or may not eventually be considered a wanted pregnancy) affects maternal mental health and parenting behaviors as their children age. Past research has shown that unintended pregnancy is predictive of postpartum depressive symptoms (Leathers & Kelley, 2000; Cheng, Schwarz, Douglas, & Horon, 2009; Rich-Edwards, Kleinman, Abrams, Harlow, McLaughlin, Joffe & Gillman, 2006), and psychological disorders can spillover to negatively affect parenting domains (Logan, Holcombe, Manlove, & Ryan, 2007). As such, consideration of abortion was found to predict greater parenting stress when the child was one (Claridge & Chaviano, 2013). It is important to know whether mothers who once considered having an abortion show longstanding differences in mental health and parenting because a history of

abortion contemplation may serve as a useful indicator of risk to practitioners serving mothers and young children.

### **The Present Research**

In sum, despite the likelihood that unintendedness and unwantedness of pregnancy is associated with maternal mental health and parenting behaviors, little research has examined the question beyond postpartum. This dissertation aims to understand the associations between mothers who indicate that their pregnancy was unintended and longstanding differences in mental health and parenting behaviors as their children age. To expand upon the aforementioned research on this topic, I include a stricter measure of unintendedness (consideration of abortion) and examine possible associations with later maternal mental health and parenting behaviors when the child is 1 and 3 years of age. In addition, I examine whether associations identified when children are 3 are larger, smaller, or approximately the same as what was found for when the child is younger.

From a policy perspective, it is important to identify family contexts that might indicate risk for maternal wellbeing and healthy child development. It is possible that unintendedness of pregnancy is one such context, and if so, it is important to test possible avenues for amelioration. For example, one hypothesized pathway for which unintended pregnancy may negatively affect families is by increasing maternal parenting stress. Mothers who experience high levels of parenting stress might engage in less supportive parenting characterized by harsher, less responsive interactions with their children (Deater-Deckard, 2005). If evidence supports this pathway, it would be important to identify possible mechanisms that might moderate the effects of unintended pregnancy on parenting stress and subsequent parenting behaviors. This

dissertation will examine how receipt of services, such as relationship building programs, moderate potential effects of unwanted pregnancies.

In the following chapters, I describe research that examines associations between maternal self-report of unintended pregnancy asked at her child's birth or during pregnancy and maternal mental health and parenting behaviors measured when her child is 1 and 3-years of age. In addition to the examination of direct effects, I conduct further analyses of trajectories of possible amelioration of associations over time for women who meet one of the categories of an unintended pregnancy – considered an abortion, identify their pregnancy as unwanted, and identify their pregnancy as mistimed. In Chapter 1, I begin with a discussion of ways to conceptualize an unintended pregnancy and how studies typically measure unintendedness and wantedness. Next, literature regarding the consequences of unintended pregnancies for maternal mental health and behavioral functioning will be discussed. In addition, the effects of maternal mental health issues and impaired functioning on infant and child development will be considered. Lastly, a discussion of potential policy and therapy implications to address the risk factors associated with unintended pregnancies will be explored. In Chapter 2, I detail the dissertation's theoretical framework and associated hypotheses. In Chapter 3, I explain my two sources of data for this dissertation and my analytic strategy. In short, I will examine possible associations between self-reported unintended pregnancy by mothers at baseline and maternal mental health (maternal depressive symptomology and parenting stress) and parenting behaviors (engagement in parenting activities, harsh parenting behaviors, observed parenting, and co-parenting behaviors) at age 1 and 3. In addition, I will examine the possible moderating effects of income, maternal education, and relationship building supports on the hypothesized associations. In Chapter 4, I detail the results of the dissertation separately by data source. Lastly, in Chapter



5, I provide a discussion summarizing research findings across both data sources and consider how these findings fit with the research literature as a whole and their implications.

Data will be drawn from the Fragile Families and Child Wellbeing Study (FFCWS) and the Building Strong Families (BSF) Project. These datasets are appropriate to examine my research questions because they include questions regarding pregnancy intention for both mother and biological father and follow families longitudinally (FFCWS follows families until the child is 15 years of age and BSF follows families until the child is 3 years of age). Taken together, I will have the opportunity to evaluate possible associations between three different ways to define unintended pregnancy (consideration of an abortion, mistimed pregnancy, and unwanted pregnancy) and maternal mental health and parenting behaviors when the child is 3 years of age. Both datasets include approximately 5,000 families respectively, which will provide sufficient statistical power for my analyses.

## Chapter 1

### BACKGROUND:

Associations between Unintended Pregnancies and Maternal and Child Wellbeing

#### **Understanding Pregnancy Intention**

Intendedness of pregnancy is a construct that encompasses a woman's desire for a child and timing of conceiving a child. A woman is understood as having an unintended pregnancy when she self-reports herself as either not wanting a child at any time (unwanted pregnancy) or when she self-reports herself as not wanting a child right now (mistimed pregnancy) (Klerman, 2000). A limitation of current research regarding pregnancy intention is often the inability to disentangle whether a pregnancy is completely unwanted or mistimed. In terms of psychosocial health, a mistimed pregnancy may be associated with different levels of stress than an unwanted pregnancy, since a mistimed pregnancy may be associated with minor inconveniences but an overall want of a child, just perhaps not at that exact time of conception (Klerman, 2000). Researchers can determine whether a woman is better classified in the unwanted or mistimed categories of unintendedness by asking the woman questions, such as whether she wanted a child at any time in her life (evaluating wantedness of pregnancy) and whether she became pregnant sooner or later than expected (evaluating timing of pregnancy) (Klerman, 2000). Yet, rarely are these two types of unintendedness kept distinct in research, but rather, are treated equally as representing an unintended pregnancy. A final way recent research has conceptualized intendedness is by asking women whether they ever considered an abortion prior to giving birth (Waller & Bitler, 2008). A woman could consider an abortion because she does not want the pregnancy or the pregnancy is mistimed. Therefore, again, researchers are unable to distinguish what exactly constitutes an unintended pregnancy. In addition, an unintended pregnancy can

theoretically encompass the intention of the pregnant woman, biological father, and both together (Logan et al., 2007). While most published studies regarding the effects of unintended pregnancies focus only on the mothers' reports of intendedness, biological father pregnancy intention is also important to take into account, as it can directly or indirectly influence mothers' own views regarding her pregnancy and later involvement or lack of involvement by the father if unintended pregnancies are carried to term (Logan et al., 2007).

It is possible that a certain type of unintended pregnancy (unwantedness, mistimed, and consideration of abortion) is more predictive of a mother at-risk for mental health and behavioral problems than other types, but little research has examined the question of "severity" of unwantedness empirically. One study examining a prospective cohort study of a little over one thousand pregnant women in Durham, North Carolina suggests that there is an intendedness gradient in which wanted pregnancies resulted in the healthiest outcomes for mothers and children, mistimed pregnancies were associated with some psychosocial problems but nothing severe, and unwanted pregnancies were associated with the poorest maternal mental health outcomes (Maxson & Miranda, 2011). Identifying a pregnancy as unwanted was associated with the highest rates of maternal depressive symptoms, perceived stress, and negative paternal and social support (Maxson & Miranda, 2011).

### **Correlates of Unintended Pregnancies**

Nationally representative data from the National Survey of Family Growth (NSFG) collected by the National Center for Health Statistics in 2002 identify age, education, race/ethnicity, relationship status, and income as common demographic correlates of unintended pregnancy within the United States (Chandra, Martinez, Mosher, Abma, & Jones, 2005; as cited in Logan et al. 2007). The NSFG asked women to report the intendedness of any births within 5

years prior to the interview. Researchers found a higher percentage of women under 18 years of age who reported having an unwanted (25.4%) and mistimed pregnancy (62.7%) within 5 years compared to women 25-29 years of age (10.4% unwanted pregnancy and 16.3% mistimed pregnancy). In addition, women with low educational attainment, defined by less than a high school diploma or GED, reported higher rates of unwanted (16.1%) and mistimed (19.7%) pregnancies compared to women with Bachelor's degrees or higher (6% unwanted pregnancy and 8.5% mistimed pregnancy). Race and ethnicity differences were also identified, in which the highest rates of unwanted and mistimed pregnancies were reported by Black or African American women at 26.7% and 19.3% respectively. Hispanic or Latina women reported rates of unwanted pregnancy at 16.9% and mistimed pregnancy at 20.9%. White non-Hispanic or non-Latina mothers reported the lowest rates of unwanted pregnancy at 9.9% and mistimed pregnancy at 15.6%. Rates of unwanted and mistimed pregnancy differed by relationship status with the biological father as well, where higher rates of unwanted and mistimed pregnancy were identified for parents who were never married or cohabiting versus married. Lastly, a higher percentage of women below the Federal poverty threshold reported having an unwanted (23.2%) and mistimed (24.1%) pregnancy compared to women 300 percent of the Federal poverty threshold (7.0% unwanted and 11.7% mistimed pregnancy) (Chandra et al., 2005).

### **Potential Consequences of Unintended Pregnancies**

There are a number of possible consequences for women and their children of unintended pregnancies that are carried to term. Psychologically, women facing unintended pregnancies might be at-risk for poor psychological well-being during and after the perinatal time. Psychological disorders, such as perinatal depression, can spillover to negatively affect parenting and relationship domains (Logan et al., 2007). In addition, unintended pregnancies are associated

with prenatal and perinatal risks for the infant's health and developmental wellbeing, such as prematurity, low birth weight, and lower likelihood of being breastfed (Shah, Balkhair, Ohlsson, Beyene, Scott, & Frick, 2011; Taylor, & Cabral, 2002).

### **Maternal Depressive Symptomology**

Unintended pregnancy has been shown to be predictive of postpartum depressive symptoms (Leathers & Kelley; Cheng, Schwarz, Douglas, & Horon, 2009; Rich-Edwards, Kleinman, Abrams, Harlow, McLaughlin, Joffe, & Gillman, 2006). Measured using the Center for Epidemiological Studies Depression scale (CES-D), a sample of insured, married mothers, regardless of intendedness of the child, were observed as having more depressive symptoms during the postpartum time than during pregnancy (Leathers & Kelley, 2000). Both maternal self-reports of unintended pregnancies and partner perception of unintended pregnancies were identified in hierarchical regression analyses as accounting for a significant proportion (6%) of the variance in women's postpartum depressive symptoms (Leathers & Kelley, 2000). In a different study of a U.S. cohort of 1,662 women, researchers found that unwanted pregnancy doubled the risk of antenatal depression in the third trimester of pregnancy (Rich-Edwards et al., 2006). Pregnant women particularly at risk for developing depressive symptomology were those women younger in age at conception and those women with previous histories of depressive symptomology. Yet, even when controlling for both age and previous history with depression, researchers found unwanted pregnancy to be a statistically significant predictor of antenatal depression (Rich-Edwards et al., 2006). Utilizing data from a stratified random sample of 9,048 mothers giving birth between 2001 and 2006, Cheng et al. (2009) provide further evidence to the predictive power of unintended pregnancy for depressive symptomology by replicating the findings of Rich-Edwards et al. (2006). Cheng et al. (2009) also identify a likelihood of

experiencing postpartum depression that is nearly doubled when a pregnancy was unwanted. In addition, women with mistimed pregnancies were shown to be vulnerable for postpartum depression (Cheng et al., 2009).

### **Perinatal Health Behaviors**

In addition to perinatal depression, women with unintended pregnancies are less likely to take care of themselves and their growing fetuses in comparison to women who wanted to be pregnant (Cheng et al., 2009). Women with unwanted or mistimed pregnancies were associated with a higher likelihood to delay prenatal care until their second trimester than their counterparts who wanted to be pregnant (Cheng et al., 2009). In addition, unintended pregnancy was associated with a delay in consumption of perinatal multivitamins containing folic acid that are important to prevent neural tube birth defects and was associated with a higher likelihood to smoke prenatally and postpartum (Cheng et al., 2009).

### **Relationship with Biological Father**

Unintended pregnancies can occur within the context of varied relationship statuses (e.g., married, cohabitating, or single). Research utilizing the Early Childhood Longitudinal Study – Birth Cohort found that couples who faced an unintended pregnancy were less likely to be married and experienced greater problems with relationship quality measured by self-report of keeping pregnancy from biological father, not discussing the pregnancy, and inaccurately reporting partner's pregnancy intention (Hohmann-Marriott, 2009). In contrast, some qualitative work from focus groups conducted in Georgia suggests that women may believe that carrying an unintended pregnancy to term can renew and increase relationship commitment between her and the biological father (Lifflander, Gaydos, & Hogue, 2006). Yet, a woman's belief of renewed commitment does not necessarily result in behavioral changes. Just as pregnancy intention might

be associated with relationship quality between parents, it also may influence parents' abilities to work together to parent their children. Claridge and Chaviano (2014) examined how unintended pregnancy, measured by whether or not each parent considered an abortion, influenced co-parenting capacity. Authors found that mother's reported less supportive co-parenting when they had considered an abortion alone or if both they and the biological fathers had considered an abortion (Claridge & Chaviano, 2014).

### **Relationship with Child**

The research literature examining possible associations between unintended pregnancies and the mother-child relationship have focused specifically on the effects of unwanted pregnancies on the mother-child dyad and not the effects of mistimed pregnancies or other ways to define unintended pregnancies. One longitudinal study utilizing the Intergenerational Panel Study of Mothers and Children found that mothers who experienced unwanted pregnancies had lower quality relationships with their children in adolescence and adulthood (Barber, Axinn, & Thornton, 1998). The aforementioned associations between unwanted pregnancies and lower quality parent-child relationships controlled for individual attributes of the focal child (e.g., gender), mother's age at the child's eighteenth birthday, child's birth order, number of children in the family, maternal education, family income, and mother's participation in the labor force (Barber et al., 1998). Utilizing the 1987-88 National Survey of Families and Households as a second data source, Barber et al. (1998) examined potential explanations for the longitudinal associations they identified. In accordance with the previous section, Barber and colleagues (1998) identified higher levels of depression and lower levels of happiness in mothers whose pregnancies were unwanted. In addition, mothers of unwanted pregnancies were found to spend less leisure time (e.g., picnics, movies, sports, parks, museums) with their children and were

found to be more likely to spank their children (Barber et al., 1998). Utilizing a sample of 1,327 children younger than two in 1986 from the National Longitudinal Survey of Youth (NLSY), Baydar (1995) found that scales representing opportunities for skill development, positive mother-child relationship and nonauthoritarian parenting style, as measured and constructed from the Home Observation Measurement of the Environment (HOME), did not differ by intendedness of pregnancy for the full sample. When Baydar (1995) restricted the NLSY sample to just children at least one year of age in 1986, differences in the constructed HOME scales by intendedness of pregnancy emerged. Children who were aged one or older and were unwanted received fewer opportunities for skill development than children of the same age who were mistimed. In addition, mistimed children received fewer opportunities for skill development than intended children. Lastly, more authoritarian parenting was associated with unwanted children than their mistimed and wanted peers (Baydar, 1995). All identified associations statistically controlled for a number of maternal, family and child characteristics, such as maternal race or ethnicity, mother's age at her child's birth, marital status, living arrangement of the child's biological father at the child's birth, maternal employment approximately 9-12 months prior to child's birth, maternal education, maternal ability level measured by the percentile score in the Armed Forces Qualification Test (AFQT), total family income, per capita family income at the child's birth, and the Rosenberg scale of maternal self-esteem (Baydar, 1995).

### **Effects on Child Outcomes**

Based on the Family Stress Model (Conger & Elder Jr., 1994), a mother's influence over her child's development (e.g., parenting practices) can be mediated by her maternal mental health. For example, a mother who is suffering from increased depressive symptomology because her pregnancy was unintended could be at a higher likelihood to lack sensitivity towards



her young child's needs. This lack of maternal sensitivity can then translate into adverse developmental outcomes for the growing child (e.g., poor attachment with the mother). In fact, there is some empirical evidence suggesting the validity of the Family Stress Model in this context. McCrory and McNally (2013) find that mothers in an Irish sample scored at approximately the 80<sup>th</sup> percentile on the Parental Stress Scale, when they described their pregnancy as unintended. Interestingly, no link between this significant increase in parental stress was linked to adverse developmental outcomes for study children, but this might have been due to the young age of children (9 months old) assessed in the study. Similarly, research conducted with adolescent mothers has shown that lower prenatal intendedness, as measured by a composite score of individual questions asking adolescents to rate how planned or intended their pregnancies were, was associated with higher levels of depressive symptomology, greater self-reports of harsh parenting, and greater self-reports of childbearing regret (East, Chien, & Barber, 2012). East et al. (2012) found reciprocal effects of parenting stress and childbearing regret, in which adolescent mothers' experiences with harsh parenting was associated with increased parenting stress and childbearing regret and vice versa. Again, this study focused on maternal mental health outcomes and behaviors instead of extending results to child outcomes, but the literature on harsh parenting, parenting stress, and maternal depressive symptomology suggests that the children of adolescent mothers participating in this study would be at risk for adverse cognitive, behavioral, and socioemotional outcomes (Brennan, Hammen, Andersen, Bor, Najman, & Williams, 2000). In fact, one study conducted with an at-risk sample of 682 first-time mothers did evaluate possible mediating relationships between intendedness of pregnancy and child outcomes and found that parenting stress mediated the association between unintended pregnancy and children's socioemotional competency at 36 months of age (Claridge, 2016).

Lastly, a study measuring maternal pregnancy acceptance, which was a composite measure created from questions that evaluated how happy low-income Black mothers were about their pregnancies, found that pregnancy acceptance was positively associated with attachment security in toddlerhood (Ispa, Sable, Porter, & Csizmadia, 2007). Therefore, this study suggests that feelings about pregnancy, such as pregnancy intention or acceptance, could affect children as well as be associated with mothers' mental health wellbeing and behaviors.

### **Moderating Factors for Unintended Pregnancy Effects**

Given the negative mental health and perinatal health behaviors associated with unintended pregnancies, it is important to examine contextual factors that may moderate such associations for women who choose to carry unintended pregnancies to term. A moderation of potential negative effects in the positive direction can be perceived as a protective factor. Research that has been conducted on protective factors for unintended pregnancies is limited. One study, Claridge and Chaviano (2013), examines protective factors for the association between unintended pregnancy and parenting stress, one year postpartum. Utilizing the Fragile Families and Child Wellbeing Study, Claridge and Chaviano (2013) measure unintendedness from a question asking mothers whether they ever considered an abortion prior to their child's birth. Claridge and Chaviano (2013) found that mothers who considered an abortion and have more advantaged socioeconomic statuses, as defined by greater education, higher income, and reduced reports of substance abuse at the child's birth, reported lower levels of parenting stress than other mothers who considered an abortion and were less advantaged and more likely to engage in substance abuse postpartum. Yet, this research does not allow the literature base to understand whether these three moderators (education, income and history of substance abuse) only operate together or also separately. In a more recent study conducted with teenage mothers,

Claridge, Lettenberger-Klein, and VanDodge (2017) examine maternal demographic characteristics that may serve as moderating factors. Researchers identify that both maternal race and education moderated the association between pregnancy unintendedness (teenage mothers reporting that their pregnancies “just happened”) and parenting behaviors when children were 18 months old (Claridge et al., 2017). Black and Hispanic teenagers who had unintended pregnancies exhibited stronger negative associations with observed positive parenting behaviors than White teenagers. In addition, low maternal education was found to be important above and beyond pregnancy intention for observed positive parenting. For mothers with less than a high school education, there was a negative association between intending a pregnancy and observed positive parenting (Claridge et al., 2017). Perhaps, suggesting that wanting a child with low education reflects a mismatch between want and what one can handle as a parent at a young age with less education. When teenage mothers had a college education, the positive association between intending a pregnancy and exhibiting positive parenting behaviors was recovered (Claridge et al., 2017). Taking these two studies together, education, income, and race seem important in explaining the possible association between pregnancy intentions and parenting behaviors. Yet, both studies fail to take into account influence from the relationship or lack of relationship with the biological father as another possible factor, which seems central and important to examine.

### **Limitations of the Research Literature**

It is important to understand that none of the aforementioned research studies support a causal interpretation between pregnancy intention and maternal mental health, maternal behaviors, and child outcomes. In order to estimate a causal effect of pregnancy intention on maternal and infant outcomes, researchers are concerned by the amount of selection bias inherent

in becoming pregnant unintentionally and then choosing to terminate the pregnancy or to carry the pregnancy to term (Gipson, Koenig, & Hindin, 2008). For example, it is possible that unmeasured variables, such as maternal religiosity, explain both a woman's choice to carry the pregnancy to term and influences her perinatal mental health and behaviors.

Moreover, all of the research reviewed above that demonstrates associations between unintended pregnancies and negative outcomes on maternal mental health and maternal behaviors must be understood in the context that these women decided to carry their pregnancies to term. It is possible that these mothers transitioned from viewing their pregnancies as unwanted to wanted over the perinatal period (Dwyer & Jackson, 2008). If this is the case, the associations that are being documented could reflect more about the experience of deciding to keep an unintended pregnancy than unintendedness itself (Dwyer & Jackson, 2008).

Lastly, it is important to not interpret the research literature regarding unintended pregnancy and maternal outcomes as deterministic, since studies reviewed are correlational. Just because the research consistently shows higher likelihood of maternal depressive symptomology and parenting stress for mothers who decided to go forward with their unintended pregnancies, does not mean every mother who did not plan conception will suffer from postpartum depression or unmanageable parenting stress.

### **Current Dissertation's Contribution to the Research Literature**

This dissertation aims to add to the research literature in a number of ways. While some of the existing research has examined how intendedness of pregnancy influences maternal mental health, less focus has been placed on whether or not intendedness of pregnancy is associated with actual parenting behavior (e.g., engagement with children and harsh behaviors). This dissertation aims to test whether parenting behaviors differ by intendedness of pregnancy. In addition, the

dissertation will attempt to reduce selection bias by utilizing propensity score matching techniques. The dissertation will also consider biological father influence by examining associations between unintended pregnancy and maternal mental health and parenting behaviors within family structure groups (single and cohabiting mothers). Additional models will control for potential influence from fathers (e.g., maternal report of paternal intendedness and longitudinal relationship status with the mother) to test robustness of identified associations. Since this dissertation includes three different ways to define unintended pregnancies (considering abortion, unwanted, and mistimed), I will attempt to better understand the gradient of associations identified by Maxson and Miranda (2011) and examine where consideration of abortion lies on the gradient (e.g., will it be the marker of unintended pregnancy associated with the most severe risk for families).

### **Implications for Policy and Therapy**

Regardless of whether the associations between unintended pregnancy and maternal mental health and parenting outcomes are causal, women who have an unintended pregnancy may benefit from additional support. Policies might ensure that such women are able to receive the mental health resources and support that they need to both make an informed decision regarding whether they want to terminate or carry the pregnancy to term and help work through any detrimental mental health effects associated with their decisions. Since women of more socioeconomically disadvantaged backgrounds are at greater risk of having an unintended pregnancy, access to mental health services, whether it be counseling, psychological, or psychiatric services, should be a concern. A good first step is implementing a friendly mental health wellness conversation when mothers give birth and/or during OBGYN visits during pregnancy. If a few questions about women's experiences becoming pregnant and their

perceptions about intendedness are asked, perinatal staff might be able to refer expectant mothers to mental health services. The rate of unintended births is high enough within the United States that screening mothers for such an easily identifiable marker associated with postpartum depression could be advantageous.

Little work has been done on interventions to address psychological experiences during the decision-making process regarding abortion, after undergoing the procedure, or after deciding to carry an unintended pregnancy to term. Mueller and Major (1989) conducted an evaluation of an intervention for women who had undergone an abortion and found that focusing on coping skills via promoting women's self-efficacy was particularly beneficial for coping with an abortion experience (as cited in American Psychological Association & American Psychological Association, 2008). Such a self-efficacy intervention could be as equally beneficial for women who choose to continue with an unintended pregnancy, but research is needed to examine such an avenue for intervention. Although not empirically evaluated, it is likely that typical treatment for perinatal depression and perinatal post-traumatic stress disorder, such as Cognitive-Behavioral Therapy, Psychodynamic Psychotherapy, Interpersonal Psychotherapy, or a combination of therapy methods would prove beneficial for both women who terminate or carry their unintended pregnancies to term, depending on their psychological and psychosocial needs. Providing adequate mental health services to struggling mothers will eventually help their children by improving maternal sensitivity, affect, and warmth, as depressive symptomology and parenting stress is treated. The research literature does not support the primary focus of intervention to be on the parent-child interactional level (e.g., Attachment and Biobehavioral Catch-Up (ABC) intervention), since most of the research focuses on and documents the effects of unintended pregnancies on maternal mental health. However, if

evidence suggesting associations between unintended pregnancy and mother-child interactional quality is found, then more relationship-focused interventions might prove to be beneficial.

## Chapter 2

### THEORETICAL BACKGROUND AND HYPOTHESES:

#### A Story of Unintended Pregnancy and Associated Parenting Stress

#### **Theoretical Framework**

Although created in order to provide a theoretical framework to understand the effects of income instability on family wellbeing, the Family Stress Model also provides a relevant framework for the current research. In the Family Stress Model, economic hardship has an adverse effect on parenting abilities and strategies by negatively affecting parents' emotions, behaviors, and relationships (Conger & Elder Jr., 1994). In other words, economic hardship may negatively influence a parent's focus and stress regarding making ends meet which can increase parental psychological distress and disrupt marital bonds. Such negative effects of economic hardship on psychological wellbeing and marital bonds translate to parenting behaviors (Conger & Elder Jr., 1994).

In the context of this dissertation, families in both the Fragile Families and Child Wellbeing Study (FFCWS) and the Building Strong Families (BSF) Project have a higher likelihood of experiencing economic hardship due to the fact that both studies are composed largely of unmarried parents, because the study either oversampled non-marital births (FFCWS) or only included families with non-marital parents (BSF) in their sampling criteria (Reichman, Teitler, Garfinkel, & McLanahan, 2001; Wood, Moore, Clarkwest, Killewald, & Monahan, 2012). Past research has drawn the link between family structure and economic resources in which single and cohabiting families have fewer economic resources than married families (Waldfogel, Craigie, & Brooks-Gunn, 2010). Within this context of low-income, mothers in my two datasets are already at-risk for maternal mental health problems and maladaptive parenting



according to the Family Stress Model. Therefore, unintended pregnancy can be perceived as an added stressor within this model, where in addition to any possible negative associations of economic hardship on parents' emotions, behaviors, and relationships, there are possible associations of pregnancy unintendedness on parent wellbeing. This necessitates examination of whether unintended pregnancy is associated with negative maternal mental health and parenting outcomes above and beyond indicators of economic risk (e.g., income and maternal educational level), as well as the possible interaction effects of unintended pregnancy and indicators of economic risk.

### **Research Questions and Hypotheses**

The following sections outline the questions guiding this dissertation. Since I utilize two separate sources of data, there will be two separate sets of research questions pertaining to the particular data available in each source. Although the research questions will be distinct by data source, they will also be related, as I hope to extrapolate findings across two datasets in order to build a better understanding of different ways to measure unintended pregnancy and add to the research base regarding the outcomes associated with three qualitatively different types of unintended pregnancy when the child is 3 years of age.

#### **Research Questions for FFCWS**

**Is there an association between having considered abortion and mothers' mental health and parenting behaviors when the child is 1 year old? Are associations identified when the child is 3-years-old?** By perceiving consideration of an abortion as a potential marker of added stress for the mothers in the FFCWS study, I hypothesize that mothers who consider an abortion will exhibit greater parenting stress, increased depressive symptoms, reduced engagement in parenting activities, reduced co-parenting quality with the child's biological

father, and have higher likelihoods of engaging in harsh parenting (as measured by spanking practices) than mothers who did not consider an abortion. One study using FFCWS already identified an association between consideration of an abortion and greater parenting stress when children are 1 year of age (Claridge & Chaviano, 2013). Trajectories of parenting stress within low-income populations have been identified using the Early Head Start Research and Evaluation Project (Chang & Fine, 2007). Authors found that two trajectory classes of parenting stress represented chronically high and increasing parenting stress from when the child was 14 months old to 36 months old. Authors identified factors, such as high levels of depression and reduced levels of maternal self-efficacy, as characteristic of the chronically high and increasing parenting stress groups (Chang & Fine, 2007). It is possible that mothers who consider an abortion and experience increased parenting stress when their children are 1 year of age will also fit into one or both of these at-risk groups. Bandura's (1992) social cognitive theory supports the idea that individuals who have low levels of self-efficacy will have trouble controlling their thoughts, feelings, and actions (as cited in Chang & Fine, 2007). Mothers who consider an abortion and go forward with their pregnancies may have trouble managing the unintendedness surrounding the pregnancy that affects her mental health and parenting long-term.

**Do associations differ for mothers who are single at the time of their child's birth and mothers who are cohabiting with the child's biological father at birth?** Additionally, I hypothesize that associations between unintended pregnancy and maternal mental health and parenting behaviors will differ between mothers who reported being single at their child's birth and mothers who reported cohabiting with the child's biological father at birth. Research using the FFCWS shows that single mothers face particular risk of economic disadvantage in terms of ability to provide material resources for their children and receive child support from the child's

biological father (Kalil & Ryan, 2010). In addition, single mothers cannot benefit from the division of labor and support associated with having a second parent in the home like mothers who are cohabiting with their child's biological father (Waldfogel, et al., 2010). With these patterns of economic disadvantage as a context, it is possible that the potential risk posed by having an unintended pregnancy will be more salient for single mothers than cohabiting mothers.

Moreover, for this analytic approach I rely on the general research base that consistently finds married mothers and their children to fare better than mothers with less stable relationships with biological fathers (Waldfogel, et al., 2010; Rosenkrantz & Huston, 2004). Since within the FFCWS only 9% of mothers who both considered an abortion and were married to the child's biological father at her child's birth, I do not examine the married at baseline group on its own and test associations regarding consideration of abortion only within mothers who are single and are cohabiting at the time of birth of their child.

**Is this association explained by instability in the relationship, or lack of relationship, with the child's biological father?** For the FFCWS sample in particular, instability in relationships with the child's biological father are common, since the study over-sampled non-marital births. It is possible that the association identified between consideration of abortion and maternal mental health and parenting behaviors is completely explained by family structure (e.g., whether or not the mother is cohabiting with the biological father, is single, or changes in that family structure) over the first three years of life. I hypothesize that the size of beta coefficients for consideration of abortion in models assessing its association with maternal mental health and parenting behaviors will be reduced, once statistically controlling for longitudinal influence of family structure, but still will represent statistically significant associations.

In addition, family structure transitions may influence maternal parenting stress. In particular within the FFCWS, Cooper, McLanahan, Meadows, and Brooks-Gunn (2009) identify higher levels of reported parenting stress for mothers during the first five years of their children's lives when mothers experience biological father exits from coresidential relationships. Therefore, it is probable that family structure changes will independently affect maternal mental health above and beyond whether the mother considered having an abortion. In addition, it theoretically makes sense that poor relationship quality with the biological father (as evidenced by exits from marriage and cohabiting structures) could spillover to parenting behaviors and reduce maternal parenting engagement and increase harshness (Waldfogel et al., 2010). Besides such main effects, interactions are reasonable. For example, changes in relationship status with the child's biological father may exacerbate the links between unintended pregnancy and maternal mental health and parenting outcomes. Yet, ultimately the consideration of an abortion is personal and should theoretically represent the mother's own cognitions about her pregnancy (even if the biological father separately asked her to have an abortion, which is important and will be controlled for in some models throughout this dissertation) and that personal cognition is what I hypothesize will influence her mental health and parenting separate from the biological father's influence.

**Are associations between considering an abortion and maternal mental health and parenting behaviors identified at age 3 accounted for by associations at age 1?**

Developmentally, it is important to test whether associations identified later in a child's life are explained by mental health and parenting behaviors developed earlier in a child's life. Research demonstrates high levels of within-individual stability in terms of levels of psychological distress from pregnancy to when the child is 2 years old (Dipietro, Costigan, & Sipsma, 2008). In

addition, research has shown substantial continuity in sensitive and stimulating parenting behaviors over the child's first 6 years of life (Dallaire & Weinraub, 2005). Therefore, it is likely that measures of maternal mental health and parenting behaviors assessed when the child is 1 in the FFCWS will be linked to the same measures assessed two years later. Therefore, this dissertation will utilize lag models that control for maternal mental health and parenting behaviors measured when the child is 1 and models that control for the interaction between considering an abortion and the age 1 outcome to assess whether associations identified later in a child's life (age 3) are separate or accounted for by earlier identified associations (age 1).

**How much does selection into consideration of an abortion bias results?** To my knowledge, none of the previous literature examining unintendedness of pregnancy has tried to address statistically the selection issue inherent to this project. We know from research using the National Survey of Family Growth that age, education, race/ethnicity, relationship status, and income are correlated with unintended pregnancies within the United States (Chandra et al., 2005; as cited in Logan et al., 2007). Therefore, it is unwarranted to approach unintendedness of pregnancy as being a random occurrence; rather it is more likely that certain demographic characteristics are able to predict whether a woman has a propensity to experience an unintended pregnancy.

In addition, the women represented in this dissertation not only experience an unintended pregnancy but give birth. Therefore, it is likely that women who end up experiencing unintended pregnancies and decide to carry these pregnancies to term will differ from those who did not on the dissertation's outcomes of interest (maternal mental health and parenting behavior). By statistically controlling for demographic characteristics that are common correlates of unintended pregnancies, past research has been able to address some concerns with selection. Yet, statistical

models can only be completely unbiased if the researcher is able to adequately measure and include all variables that women who do and do not experience an unintended pregnancy differ on or if these research questions could be addressed in a randomized control trial setting (which is impossible in this context). Moreover, considering an abortion may reflect pre-existing differences between the pregnant women who do and do not consider terminating their pregnancies. Propensity score pair matching techniques will be used in order to address the selection problem further than only utilizing extensive demographic characteristics in my models. It is possible that the previously hypothesized associations between consideration of abortion and maternal mental health and parenting behaviors disappear, when using the propensity score pair matching. However, if unintendedness matters, associations should be seen.

**Do maternal demographics (ratio in poverty and education level at child's birth) moderate the association between considering an abortion and maternal mental health and parenting behaviors?** Differences in maternal demographic characteristics among mothers who experienced unintended pregnancies could moderate the direct associations between considering abortion and maternal mental health and parenting behaviors. One study does provide evidence to suggest that higher socioeconomic status (as defined by greater education, greater income, and low substance abuse) moderated the relationship between consideration of abortion and maternal parenting stress when the child was 1 year of age (Claridge & Chaviano, 2013). Based on these findings, I hypothesize that not being in poverty and having a college degree will moderate the associations between considering an abortion and maternal mental health and parenting behaviors such that considering an abortion will be associated with more negative links for mothers with less education and lower income than mothers with higher education and income levels.

**Research Questions for BSF**

**Is there an association between having a mistimed pregnancy and mother's mental health and parenting behaviors at child age 3?** The research literature examining mistimed pregnancies and maternal mental health and parenting suggests a weaker association between mistimed pregnancies and maternal mental health and parenting behaviors than what is identified with unwanted pregnancies. Maxson and Miranda (2011) found mistimed pregnancies to be associated with some poor maternal mental health but not to the level that was found with unwanted pregnancies. Similarly, Baydar (1995) identified that mistimed pregnancies more resembled wanted pregnancies than unwanted pregnancies on HOME measures of parenting. Therefore, I hypothesize that mistimed pregnancies will not result in associations with maternal mental health and parenting behaviors at the statistically significant level by child age 3. Mothers who self-report that their pregnancies were mistimed are not necessarily indicating a level of unintendedness representing not wanting the pregnancy but rather that they did not plan for the pregnancy at this exact time. Since mistimed pregnancies are categorically different than unwanted pregnancies, it is possible that any potential negative effect on mental health and parenting behaviors has dissipated by the time that the child turns 3 years of age.

For the BSF Project, analyses will again be conducted within family structure groups (single at baseline and cohabiting with the child's biological father at baseline). Similar to the FFCWS, only 9% of mothers who were married with the biological father of their child at the child's birth self-reported their pregnancies as being unwanted. In general, there are very few mothers who were married at baseline within the BSF sample ( $n = 256$ ) due to the eligibility requirements necessary to be randomized into a BSF program (being unmarried at enrollment into the study).

**Is there an association between having an unwanted pregnancy and mother's mental health and parenting behaviors at child age 3?** The poorest maternal mental health has been found to be associated with having an unwanted pregnancy (Maxson & Miranda, 2011). Therefore, I hypothesize that unwanted pregnancies will be associated with both poor maternal mental health outcomes and poor parenting outcomes in the BSF Evaluation. Mothers who indicate that a pregnancy is unwanted are reporting that they not only did not intend for the pregnancy but perhaps never wanted to become a parent at all. Therefore, it would not be surprising to observe longstanding associations between unwantedness and mental health and parenting three years into the child's life.

**Do maternal demographics (household income and education level at child's birth) moderate the associations between unintended pregnancy and maternal mental health and parenting behaviors assessed when the child is 3?** There is only one published study to my knowledge that examined moderating effects of maternal demographic characteristics in the context of unintended pregnancy and not consideration of abortion. The Predicting and Preventing Neglect in Teen Mothers Study focused on teenage mothers and did not utilize a measure of unintendedness common to the research literature or used in this dissertation. Instead, researchers used teenage mother report that their pregnancies "just happened" as an indicator of unintended pregnancy (Claridge et al., 2017). Results from this study suggest that maternal education moderates the association between unintendedness of pregnancy and observed parenting behaviors (Claridge et al., 2017). Similar to my hypotheses for consideration of an abortion, I hypothesize that household income and maternal education level will both serve as moderating variables for the association between unwanted pregnancies and maternal mental health and parenting behaviors. Since I do not hypothesize a main effect of



mistimed pregnancy on maternal mental health and parenting behaviors, I also do not hypothesize that including household income and maternal education level as moderators in my models will yield statistically significant associations for pregnancies that were deemed mistimed.

**Does access to relationship building programs, such as the BSF Program (group sessions, family coordinators, and referrals to support services), serve as protective factors for women with unintended pregnancies?** Lastly, I seek to understand more about possible formal support systems that could be offered to mothers who experienced unintended pregnancies. The BSF Evaluation was created in order to evaluate whether the BSF Program, which targets romantically involved but unmarried parents expecting a child, was beneficial for relationship building, relationship sustainability, future marriage, and socioemotional and language development for the focal child (Wood et al., 2012). Since I propose that relationship status with the biological father is one outside contextual factor central to the hypothesized associations between mistimed and unwanted pregnancies and maternal mental health and parenting outcomes, it is important to examine whether receipt of relationship building programs could moderate the associations identified and be a route for recovery for mothers facing an unintended pregnancy. To my knowledge, BSF programs do not explicitly address unintendedness in program sessions and supports (unless parents brought concerns up or shared their views regarding unintended pregnancy themselves). It is possible that simply providing an additional support to mothers who indicated that their pregnancies were either mistimed or unwanted could be beneficial in terms of their mental health and parenting behaviors as their children age. I hypothesize that BSF program supports will moderate the relationship between unintended pregnancy (mistimed and unwanted pregnancy). Assignment to the BSF

program will be associated with no link between unintended pregnancies and mental health and parenting behaviors in the treatment group but there will be a negative link in the control group. If this hypothesis holds, then there will be preliminary evidence to suggest that offering early relationship supports could alleviate possible risks associated with experiencing an unintended pregnancy.

### **Chapter 3**

#### **METHODS**

##### **Data and Measures**

Data for this dissertation were drawn from two sources: the Fragile Families and Child Wellbeing Study (FFCWS) and the Building Strong Families (BSF) Project. I will describe the sample and research measures for each data source separately in the following sections.

##### **Fragile Families and Child Wellbeing Study**

This dissertation utilizes data from birth, Age 1, and Age 3 from the Fragile Families and Child Wellbeing Study (FFCWS) – a longitudinal, birth cohort study following 4,898 parents (three quarter of whom were unmarried) and their children born in large U.S. cities between 1998 and 2000. The FFCWS uses a stratified random sample of all US cities with 200,000 or more people. The stratification was not geographic; rather it was according to policy environments (e.g., welfare generosity, the strength of the child support system) and labor market conditions (e.g., strength of the local labor market). The sampling of units occurred in three stages. First, cities were sampled. Second, hospitals were sampled within cities. Finally, births were sampled with an oversampling of non-marital births within hospitals. FFCWS consists of six waves of data collection. Mothers and fathers participated in survey interviews after the birth of the child and approximately one, three, five, nine, and fifteen years later. In addition, in-home assessments of children and their home environments were conducted for a subsample of children in the study when the children were three and five years old (Reichman et al., 2001). For this analysis, survey data from baseline, age one, and age three are utilized, as well as the in-home data collected when the child was three-years-old.

**Analytic sample.** This dissertation draws upon data from the FFCWS when children were just born, one-year-old, and three-years-old. There are 4,231 families with valid survey information at the child's birth and when the child was three-years-old which represent my analytic sample for the dissertation. The analytic sample is reduced further to exclude families who do not have valid information on whether the mother considered abortion ( $n=52$ ), and families who do not have valid baseline parental relationship status ( $n=1$ ). In addition, families who were married at the child's birth and have valid age 3 data ( $n=1,035$ ) were excluded from analyses. In order to assess possible continuity and/or change in identified associations in terms of considering an abortion and maternal mental health and parenting behaviors from when the child is one and three-years-old, I evaluate comparable models when the child is one as used for when the child is three-years-old. Figure 1 shows number of valid cases at the child's birth, at age 1, and at age 3 for single mothers in my analytic sample. Figure 2 shows number of valid cases for cohabiting mothers at the child's birth, at age 1, and at age 3. Both figures show the number of cases at each time of data collection separately for mothers who considered an abortion and those who did not. In order to conduct analyses despite occurrences of missing values on covariates, I will conduct multiple imputation which is described in the next section.

Figure 1. Analytic sample of single families in FFCWS.

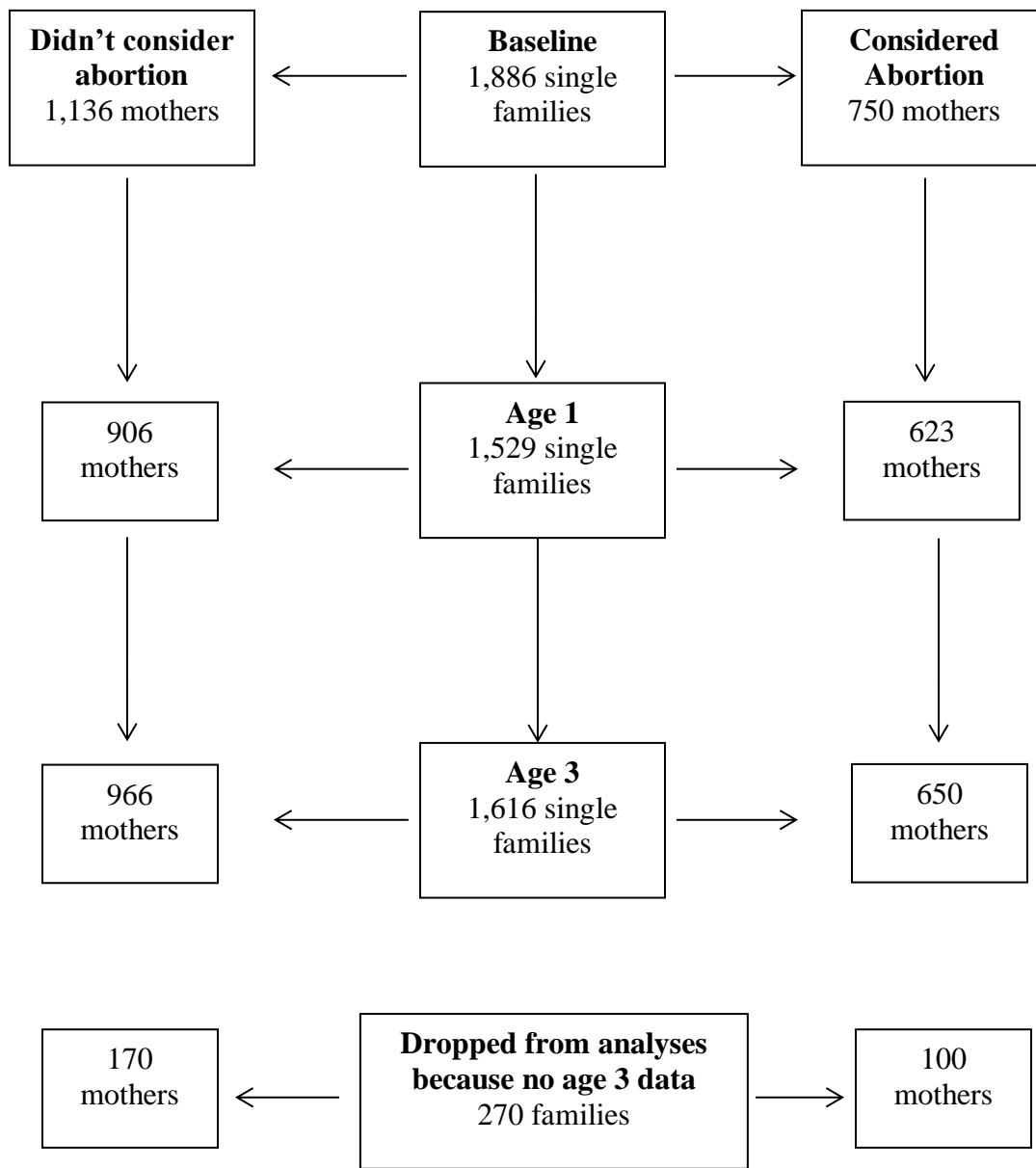
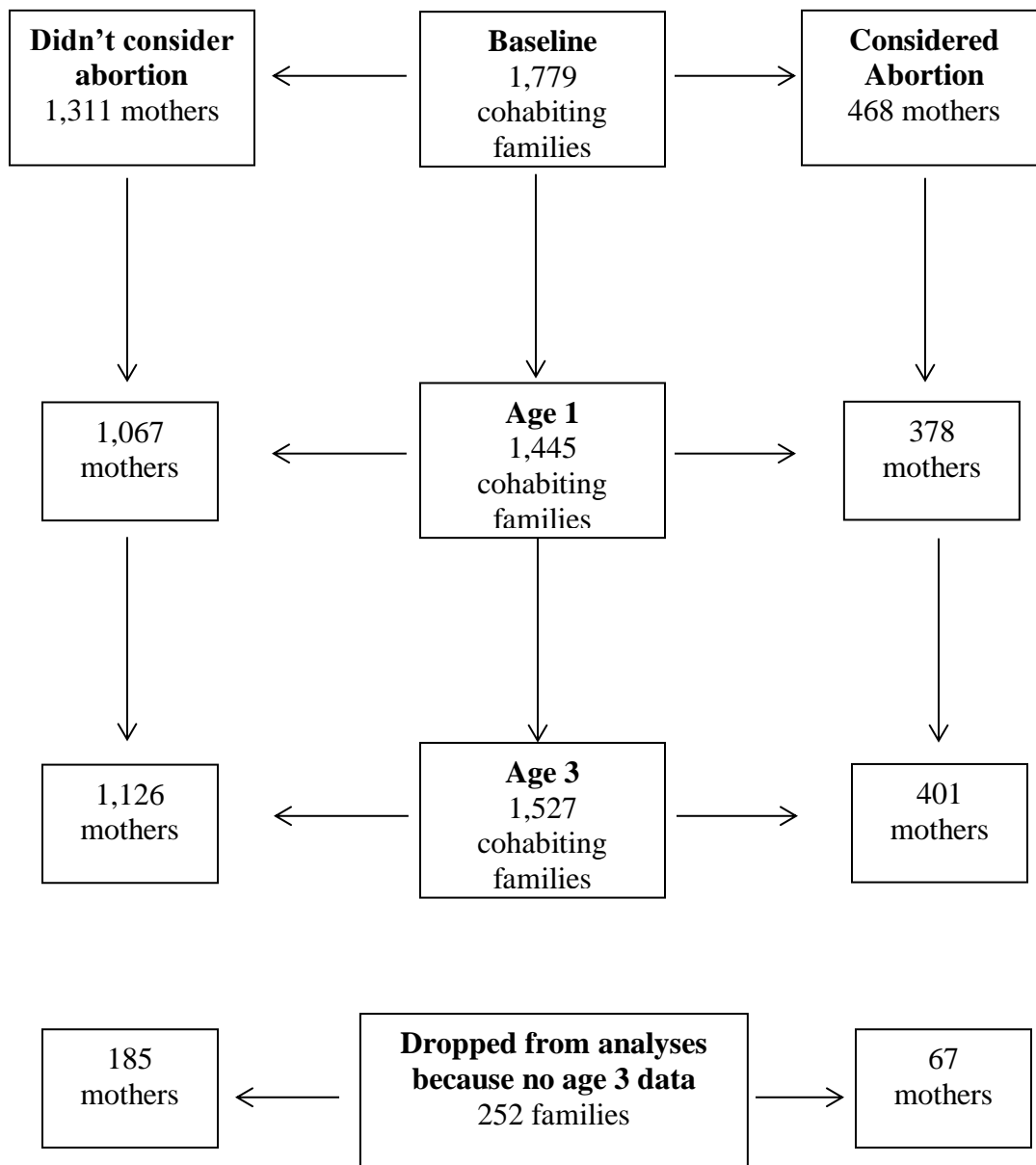


Figure 2. Analytic sample of cohabiting families in FFCWS.



**Missing data.** In order to address missing data, multiple imputation with chained equations or the *ice* command in Stata 14 was conducted (StataCorp, College Station, TX, USA). The *ice* command executes the first step of the imputation process (creating the imputed data) by performing multivariate imputation via chained equations (Royston, 2005). Models used to run *ice* to predict any missing values in my FFCWS analytic sample included all maternal mental health and parenting behavioral outcomes of interest and the complete set of demographic (e.g., race/ethnicity, education level, etc.) and baseline variables (e.g., frequency of religious attendance, mother drank during pregnancy, etc.) used as covariates in final models. For this analysis, I programmed *ice* to generate 50 separate imputed datasets to use for analyses. Therefore, when conducting final analyses, estimated results were averaged across these 50 imputed datasets and standard errors were reported rather than standard deviations (Rubin, 1987). In addition, final analytic models did not utilize imputed values for my dependent variables, independent variable of interest (consideration of abortion), or baseline relationship status with the child's biological father (single and cohabiting), and as such, any mother who was missing on these raw variables was dropped from the model (von Hippel, 2007). Therefore, the sample size for models throughout my analyses will vary depending on the number of cases with valid values on each particular outcome of interest.

**Independent variable measured at child's birth.** There is one independent variable of interest in the FFCWS that serves as a way to define unintended pregnancies.

**Consideration of abortion.** Consideration of abortion was indicated by a mother's answer ("no"=0, "yes"=1) to the following question: "When you found out you were pregnant, did you think about having an abortion?" ( $n = 1,051$ ). The comparison group of women who did not

consider an abortion consists of women who self-reported “no” to this survey question ( $n = 2,092$ ).

**Dependent variables measured at child age 1.** There are 5 dependent variables of interest in the FFCWS that represent maternal mental health and parenting behaviors. All outcomes, with the exception of maternal depressive symptoms and spanking within the past month, were standardized before analyses were conducted. Table 1 at the end of this section provides a summary of these 5 outcomes.

**Maternal depressive symptoms.** Maternal depressive symptoms when the child was 1 year of age was determined by a mother’s endorsement (“no” =0, “yes” =1) of the one following question: “During the past 12 months, has there ever been a time when you felt sad, blue, or depressed for two or more weeks in a row?” ( $n = 3,006$ , 78% reported “no,” 22% reported “yes”).

**Maternal parenting stress.** Averaged endorsements of 4 indicators of parenting stress ( $\alpha = 0.61$ ): (a) Being a parent is harder than I thought it would be; (b) I feel trapped by my responsibilities as a parent; (c) taking care of my child(ren) is more work than pleasure; and (d) I often feel tired/worn out from raising a family. These questions are scored on a 4-point scale and recoded such that 1 = “strongly disagree,” 2 = “somewhat disagree,” 3 = “somewhat agree,” and 4 = “strongly agree.” Scores range from 1 to 4 ( $n = 2,590$ , mean = 2.20, standard deviation = 0.69).

**Engagement in parenting.** Average of reported engagement in 8 parenting activities ( $\alpha = 0.63$ ): (a) Days per week usually play games like “peek-a-boo” or “gotcha” with child; (b) Days per week usually sing songs or nursery rhymes with child; (c) Days per week usually read stories to child; (d) Days per week usually tell stories to child; (e) Days per week



you play inside with toys such as blocks or legos with child; (f) Days per week take child to visit relatives; (g) Days per week hug or show physical affection to child; (i) Days per week put child to bed. Scores range from 0.5 to 7 ( $n = 2,591$ , mean = 5.28, standard deviation = 1.008).

***Co-parenting with biological father.*** Averaged endorsements of 6 indicators of parenting stress ( $\alpha = 0.87$ ): (a) When father is with child, he acts like the kind of parent you want for your child; (b) You can trust father to take good care of child; (c) You can count on father to watch child for a few hours; (d) Father respects schedules/rules you make for child; (e) Father supports you in the ways you want to raise child; and (f) You and father talk about problems that come up with child. These questions are scored on a 4-point scale and recoded such that 0 = “never and rarely,” 1 = “sometimes,” and 2 = “always.” Scores range from 0 to 2 ( $n = 2,308$ , mean = 1.58, standard deviation = 0.545).

***Spanking.*** Whether or not the mother reported spanking child in the past month ( $n = 3,985$ , 71% reported “no,” 29% reported “yes”).

Table 1. Dependent variables measured at child age 1.

Outcome at age 1	Number of Items	Item Scoring	Range	% Yes/Mean
Maternal depressive symptoms	1 item	1 = "yes" 0 = "no"	n/a	22% yes
Maternal parenting stress	4 items	Average of endorsements on a 4-point scale	1-4	2.20
Engagement in parenting	8 items	Average of frequency in engagement over a week (7day) period	0.5-7	5.28
Co-parenting with child's biological father	6 items	Average of endorsements on a 4-point scale	0-2	1.58
Spanking within past month	1 item	1 = "yes" 0 = "no"	n/a	29% yes

**Dependent variables measured at child age 3.** There are 8 dependent variables of interest in the FFCWS that represent maternal mental health and parenting behaviors. All outcomes, with the exception of spanking within the past month, were standardized before analyses were conducted. Table 2 at the end of this section provides a summary of these 8 outcomes.

**Maternal depressive symptomology.** Mothers were asked questions derived from the Composite International Diagnostic Interview – Short Form (CIDI-SF), Section A (Kessler, Andrews, Mroczek, Ustun, & Wittchen, 1998). The short form utilizes a subset of the CIDI interview to generate the probability that a respondent would be diagnosed with major depression if given the full CIDI interview (Kessler et al., 1998). A count of 7 self-reported symptoms: (a) For two consecutive weeks, did you lose interest in most things?; (b) During those two weeks, did you feel more tired/low on energy than usual?; (c) Did you gain/lose weight without trying, or stay the same?; (d) Did you have trouble falling asleep during those 2 weeks?; (e) Did you have a lot more trouble concentrating than usual?; (f) During this period did you feel down on yourself?; and (g) Did you think a lot about death during those 2 weeks? To meet the criteria of depressive symptoms, mothers responded positively to the aforementioned questions. Scores range from 1 to 7 ( $n = 2,977$ , mean = 1.27, standard deviation = 2.34).

**Maternal parenting stress.** Averaged endorsements of 4 indicators of parenting stress ( $\alpha = 0.63$ ): (a) Being a parent is harder than I thought it would be; (b) I feel trapped by my responsibilities as a parent; (c) taking care of my child(ren) is more work than pleasure; and (d) I often feel tired/worn out from raising a family. These questions are scored on a 4-point scale and recoded such that 1 = “strongly disagree,” 2 = “somewhat disagree,” 3 = “somewhat agree,” and

4 = “strongly agree.” Scores range from 1 to 4 ( $n = 3,116$ , mean = 2.25, standard deviation = 0.68).

**Engagement in parenting.** Average of reported engagement in 13 parenting activities ( $\alpha = 0.67$ ): (a) Days per week sing songs or nursery rhymes with child; (b) Days per week hug or show physical affection to child; (c) Days per week tell child that you love him/her; (d) Days per week let child help you with simple chores; (e) Days per week play imaginary games with him/her; (f) Days per week read stories to child; (g) Days per week tell stories to child; (h) Days per week play inside with toys with child; (i) Days per week tell child you appreciate something he/she did; (j) Days per week take him/her to visit relatives; (k) Days per week go to a restaurant/out to eat with him/her; (l) Days per week assist child with eating; (m) Days per week put child to bed. Scores range from 0 to 7 ( $n = 3,118$ , mean = 4.99, standard deviation = 0.92).

**Co-parenting with biological father.** Averaged endorsements of 6 indicators of parenting stress ( $\alpha = 0.89$ ): (a) When father is with child, he acts like the kind of parent you want for your child; (b) You can trust father to take good care of child; (c) You can count on father to watch child for a few hours; (d) Father respects schedules/rules you make for child; (e) Father supports you in the ways you want to raise child; and (f) You and father talk about problems that come up with child. These questions are scored on a 4-point scale and recoded such that 0 = “never and rarely,” 1 = “sometimes,” and 2 = “always.” Scores range from 0 to 2 ( $n = 1,232$ , mean = 1.43, standard deviation = 0.60).

**Spanking.** Whether or not the mother reported spanking the child in the past month ( $n = 3,113$ , 47% reported “no,” 53% reported “yes”).

**Observed home learning.** Average of 8 home learning items measured on a 4-point scale from the Home Observation for Measurement of the Environment (HOME) scale ( $\alpha = 0.75$ ) (Caldwell & Bradley, 1984): (a) About how many, if any, push or pull toys does child have?; (b) About how many, if any, toys that let child work his/her muscles does child have?; (c) About how many, if any, toys that have pieces that fit together does child have?; (d) About how many, if any, toys that can be put together in different ways does child have?; (e) About how many, if any, cuddly, soft role-playing toys does (child) have?; (f) About how many, if any books do you have for (child)?; (g) About how many, if any, toys that let (him/her) make music does (child) have?; (h) About how many, if any, toys with wheels does (child) have? Scores range from 1.38 to 4 ( $n = 2,499$ , mean=3.09, standard deviation=0.54).

**Observed warmth.** Average of 7 yes/no observed warmth items from the Home Observation for Measurement of the Environment (HOME) scale ( $\alpha = 0.77$ ) (Caldwell & Bradley, 1984): (a) Parent spontaneously praised child at least twice; (b) Parent's voice conveys positive feelings toward child; (c) Parent caressed or kissed child at least once; (d) Parent responded positively when you (interviewer) praised child; (e) Parent spontaneously vocalized to child twice; (f) Parent responded verbally to child's vocalizations; (g) Parent told child the name of an object of person during visit. Scores range from 0 to 1 ( $n=1,656$ , mean = 0.83, standard deviation = 0.24).

**Observed harsh parenting.** Average of 5 yes/no harsh parenting items from the Home Observation for Measurement of the Environment (HOME) scale that were reverse coded ( $\alpha = 0.76$ ) (Caldwell & Bradley, 1984): (a) Parent did not should at child; (b) Parent did not express annoyance with or hostility toward child; (c) Parent did not slap child; (d) Parent did not scold or

criticize child during the visit; (e) Parent did not interfere or restrict child more than 3 times.

Scores range from 0 to 1 ( $n=1,663$ , mean=0.11, standard deviation=0.22).

Table 2. Dependent variables measured at child age 3.

Outcome at age 3	Number of Items	Item Scoring	Range	% Yes/Mean
Maternal depressive symptoms	7 items	Count of 1 = "yes" 0 = "no"	0-7	1.27
Maternal parenting stress	4 items	Average of endorsements on a 4-point scale	1-4	2.25
Engagement in parenting	13 items	Average of frequency in engagement over a week (7 day) period	0-7	4.99
Co-parenting with child's biological father	6 items	Average of endorsements on a 4-point scale	0-2	1.43
Spanking within past month	1 item	1 = "yes" 0 = "no"	n/a	53% yes
Observed measure of home learning	8 items	Average of endorsements on a 4-point scale	1.38-4	3.09
Observed warmth	7 items	Average of yes/no endorsements	0-1	0.83
Observed harsh parenting	5 items	Average of yes/no endorsements	0-1	0.11

**Control variables measured at child's birth.** This dissertation utilizes 14 separate covariates that represent maternal demographic factors. Table 3 at the end of this section provides a summary of these 14 covariates.

***Mother's report of biological father's consideration of abortion.*** Mothers were asked to report whether or not the biological father of their child asked them to have an abortion ( $n=3,109$ , 87% reported "no," 13% reported "yes").

***Mom appeared anxious and/or depressed at child's birth.*** Data collectors were asked to report on whether respondents appeared anxious and whether respondents appeared depressed or withdrawn during the interview process. ( $n=3,121$ , 91% reported "no," 9% reported "yes").

***Gender of child.*** Mothers reported the gender of their child. Two dummy variables were used to indicate child's gender: (a) female, (b) male (reference group) ( $n=3,179$ , 48% female, 52% male).

***Number of children in primary residence.*** Mother self-report of the number of children under the age of 18 that reside in their primary residence ( $n=3,149$ , mean = 1.31 and standard deviation = 1.34).

***Maternal race/ethnicity.*** Four dummy variables were used to indicate mother's race/ethnicity ( $n=3,170$ ): (a) Black, (b) Hispanic, (c) other race/ethnicity, and (d) White (reference category), (56% Black, 27% Hispanic, 2% other race/ethnicity, and 15% White).

***Mother's age.*** The age of mother at birth of her child measured in years. Age ranges from 14 to 47 ( $n=3,178$ , mean=23.88, standard deviation=5.58).

***Maternal education.*** Four dummy variables were used to indicate the amount of education mothers had attained at child's birth ( $n=3,174$ ): (a) high school graduate or less, (b)



some college, and (c) college graduate (reference category) (45% less than high school, 28% high school graduation, 24% some college, and 3% college graduate).

***Ratio of mother's household income/poverty threshold.*** The ratio of mother-reported household income to the appropriate federal poverty threshold at child's birth. Ratios below 1.00 indicate that the household income is below the official poverty threshold, whereas a ratio of 1.00 or greater indicates at or above the poverty threshold ( $n=3,179$ , range=0 to 14, mean=1.60, standard deviation=1.56).

***Mother drank during pregnancy.*** Mother self-reported frequency of consuming alcohol during her pregnancy recoded such that never consuming alcohol = "0" and consuming alcohol during pregnancy at any level of frequency = "1." ( $n=3,174$ , 90% = "no" and 10% = "yes").

***Mother used drugs during pregnancy.*** Mothers self-reported frequency of using drugs during her pregnancy recoded such that never using drugs = "0" and using drugs during pregnancy at any level of frequency = "1." ( $n=3,173$ , 93% = "no" and 7% = "yes").

***Frequency of attendance to religious services.*** Mother's baseline self-reported attendance to religious services; recoded such that 1 = "never," 2 = "a few times a year," 3 = "a few times a month," 4 = "about once a week," and 5 = more than once a week." ( $n=3,167$ , mean = 2.91, standard deviation 1.36).

***Child low birth weight.*** At child's birth, mothers reported whether or not their child was born with low birth weight ( $n=3,090$ , 89% = "no" and 11% = "yes").

***Child is mother's first.*** Self-report of having additional biological children at focal child's birth recoded such that 1 = "no other children" and 0 = "yes other children." ( $n=3,167$ , 60% had other children, 40% this pregnancy was mother's first).

*First visited the doctor for pregnancy at or after 4th month of pregnancy.* Mothers reported at baseline in which month they first visited the doctor for their pregnancy. The continuous variable was recoded such that 0 = “visiting the doctor before the 4<sup>th</sup> month of pregnancy” and 1 = “visiting the doctor at or after 4<sup>th</sup> month of pregnancy.” ( $n=3,082$ , 79% = “no” and 21% = “yes”).

Table 3. Control variables measured at child's birth.

Control variables measured at birth	Number of Items	Item Scoring	Range	% Yes/Mean
Mother's report of bio father's consideration of abortion	1 item	1 = "yes" 0 = "no"	n/a	13%
Mom appeared anxious/and or depressed at child's birth	1 item	1 = "yes" 0 = "no"	n/a	9%
Gender of child	1 item	1 = "female" 0 = "male"	n/a	48%
Number of children in primary residence	1 item	Continuous variable	0-8	3.12
Maternal race/ethnicity	1 item	4 dummy variables (Black, Hispanic, other race/ethnicity, and White)	n/a	56% Black 27% Hispanic 2% other race/ethnicity 15% White (reference category)
Mother's age	1 item	Continuous variable	14-47	23.88
Maternal education	1 item	4 dummy variables (less than high school, high school, some college, and college)	n/a	45% less than high school 28% high school graduation 24% some college 3% college graduate
Ratio of mother's household income/poverty	1 item	Continuous variable	0-14	1.60

## threshold

Mother drank during pregnancy	1 item	1 = "yes" 0 = "no"	n/a	10%
Mother used drugs during pregnancy	1 item	1 = "yes" 0 = "no"	n/a	7%
Frequency of attendance to religious services	1 item	5-point scale	1-5	2.91
Child low birth weight	1 item	1 = "yes" 0 = "no"	n/a	11%
Child is mother's first	1 item	1 = "yes" 0 = "no"	n/a	40%
First visited the doctor for pregnancy at or after 4 <sup>th</sup> month of pregnancy	1 item	1 = "yes" 0 = "no"	n/a	21%

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Table 4. Standardized mean differences on age 1 outcomes for mothers who didn't consider an abortion compared to mothers who did consider.

Outcome at age 1	Mean / % didn't consider abortion	Mean / % considered abortion	Standardized mean difference
Maternal depressive symptoms	0.183	0.256	-0.177
Maternal parenting stress	2.137	2.308	-0.251
Engagement in parenting	5.343	5.195	0.148
Co-parenting with child's biological father	1.678	1.507	0.330
Spanking within past month	24%	35%	-0.242

Table 5. Standardized mean differences on age 3 outcomes for mothers who didn't consider an abortion compared to mothers who did consider.

Outcome at age 3	Mean / % didn't consider abortion	Mean / % considered abortion	Standardized mean difference
Maternal depressive symptoms	1.003	1.537	-0.231
Maternal parenting stress	2.201	2.378	-0.262
Engagement in parenting	5.026	4.885	0.154
Co-parenting with child's biological father	1.551	1.368	0.315
Spanking within past month	50%	57%	-0.145
Observed measure of home learning	3.175	3.070	0.196
Observed warmth	0.858	0.832	0.114
Observed harsh parenting	0.087	0.121	-0.157

Table 6. Standardized mean differences on covariates for mothers who didn't consider an abortion compared to mothers who did consider.

Control variables measured at birth	Mean / % didn't consider abortion	Mean / % considered abortion	Standardized mean difference
Mother's report of bio father's consideration of abortion	7%	20%	-0.399
Mom appeared anxious/and or depressed at child's birth	7%	10%	-0.124
Child female	47%	48%	-0.010
Number of children in primary residence	1.163	1.501	-0.259
Maternal race/ethnicity	41% = Black 29% = Hispanic 4% = Other 26% = White	67% = Black 19% = Hispanic 3% = Other 11% = White	-0.548 = Black 0.243 = Hispanic 0.043 = Other 0.401 = White
Mother's age	25.590	24.290	0.218
Maternal education	37% = less than high school 24% = high school graduate 25% = some college 14% = college	41% = less than high school 30% = high school graduate 25% = some college 4% = college	-0.076 = less than high school -0.131 = high school graduate 0.002 = some college 0.334 = college
Ratio of mother's household income/poverty threshold	2.515	1.612	0.410
Mother drank during pregnancy	9%	15%	-0.206

Mother used drugs during pregnancy	3%	11%	-0.317
Frequency of attendance to religious services	3.164	2.790	0.276
Child low birth weight	9%	12%	-0.115
Child is mother's first	12%	30%	0.252
First visited the doctor for pregnancy at or after 4 <sup>th</sup> month of pregnancy	15%	27%	-0.312

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**Changes in relationship with the child’s biological father over the first three years.**

Since I am concerned by the possible influence of the biological father on maternal mental health and parenting behaviors, I include longitudinal variables in some of my models to account for stable and changing relationship status with the biological father. Table 7 and 9 describe these variables in detail.

Table 7. Relationship changes from birth to age 1.

Longitudinal Relationship Control Variable	Number of Items	Item Scoring	Range	% Yes
Single mother becomes romantic with the child’s biological father by the time child is 1	1 item	1 = “yes” 0 = “no”	n/a	20%
Cohabiting mother breaks-up with the child’s biological father by the time child is 1	1 item	1 = “yes” 0 = “no”	n/a	11%

Table 8. Standardized mean differences on age 1 relationship changes for mothers who didn't consider an abortion compared to mothers who did consider.

Control variables measured at birth	% didn't consider abortion	% considered abortion	Standardized mean difference
Single mother becomes romantic with the child's biological father by the time child is 1	13%	20%	-0.186
Cohabiting mother breaks-up with the child's biological father by the time child is 1	8%	9%	-0.053

Table 9. Relationship changes from birth to age 3.

Longitudinal Relationship Control Variable	Number of Items	Item Scoring	Range	% Yes
Single mother is stably romantic with biological father from age 1 to 3 (reference category)	1 dummy variable out of 4	1 = "yes" 0 = "no"	n/a	43%
Single mother is stably not romantic with biological father from age 1 to 3	1 dummy variable out of 4	1 = "yes" 0 = "no"	n/a	36%
Single mother is romantic with biological father when child is 1 but breaks-up by age 3	1 dummy variable out of 4	1 = "yes" 0 = "no"	n/a	16%
Single mother is not romantic with biological father when child is 1 but becomes romantic with him by age 3	1 dummy variable out of 4	1 = "yes" 0 = "no"	n/a	5%
Cohabiting mother breaks-up with the child's biological father by the time child is 3	1 item	1 = "yes" 0 = "no"	n/a	23%

Table 10. Standardized mean differences on age 3 relationship changes for mothers who didn't consider an abortion compared to mothers who did consider.

Longitudinal Relationship Control Variable	% Didn't consider abortion	% Considered abortion	Standardized mean difference
Single mother is stably romantic with biological father from age 1 to 3 (reference category)	60%	39%	0.437
Single mother is stably not romantic with biological father from age 1 to 3	23%	41%	-0.405
Single mother is romantic with biological father when child is 1 but breaks-up by age 3	13%	15%	-0.046
Single mother is not romantic with biological father when child is 1 but becomes romantic with him by age 3	4%	5%	-0.061
Cohabiting mother breaks-up with the child's biological father by the time child is 3	23%	23%	-0.008

### **Building Strong Families Project**

The second half of this dissertation utilizes data from baseline (Wave 1) and the 36-month follow-up (Wave 3) of the Building Strong Families (BSF) Project. Sponsored by the Administration of Children and Families (ACF), U.S. Department of Health and Human Services, the BSF Project developed, implemented, and tested relationship programs offered to unwed, but romantic, couples expecting children. The BSF Project randomly assigned 5,000 volunteer couples to a treatment group that would receive a relationship building program and to a control group which did not. The study collected data from four sources: (1) the application form for program participation, (2) a telephone follow-up answered by mothers and fathers when the child was approximately 15 months of age, (3) a telephone follow-up answered by mothers and fathers when the child was approximately 36 months of age, and (4) direct assessment of maternal and biological father parenting in a subset of study participants when the child was approximately 36 months of age (Hershey, Devaney, Wood, & McConnell, 2013).

**Analytic sample.** This dissertation draws upon baseline and age 3 data from the BSF Project. Mothers were interviewed at application to participate in the BSF program (Wave 1) and then interviewed by the phone and underwent an in-home assessment when the child was 3 years of age (Wave 3). There are 3,981 mothers with valid information at both waves of data collection due to lower than expected response rates (Hershey et al., 2013). There are 1,976 mothers with valid information on the in-home direct assessments of parenting that will be utilized for this dissertation. The analytic sample is reduced further to exclude families who do not have valid information on whether the mother reported that her pregnancy was unwanted ( $n=86$ ), and families who were married at baseline ( $n=335$ ). Figure 3 shows number of valid cases at the child's birth and at age 3 for single mothers in my analytic sample. Figure 4 shows number of

valid cases for cohabiting mothers at the child's birth, at age 1, and at age 3. Both figures show the number of cases at each wave separately for mothers who had unwanted pregnancies and those who did not.

**Missing data.** In order to conduct analyses despite occurrences of missing values, I utilized multiple imputation with chained equations or the *ice* command in Stata 14, as was done to address missingness in the FFCWS. Again, I did not estimate models using imputed values of my dependent variables, measures of unintended pregnancy (unwanted pregnancy and mistimed pregnancy) and baseline relationship status with the child's biological father per von Hippel (2007). Therefore, the sample size varies with the number of cases with valid values on each dependent variable. Because my statistics were averaged across 50 imputed datasets (Rubin, 1987), I report standard errors rather than standard deviations.

Figure 3. Analytic sample of single families in BSF Project.

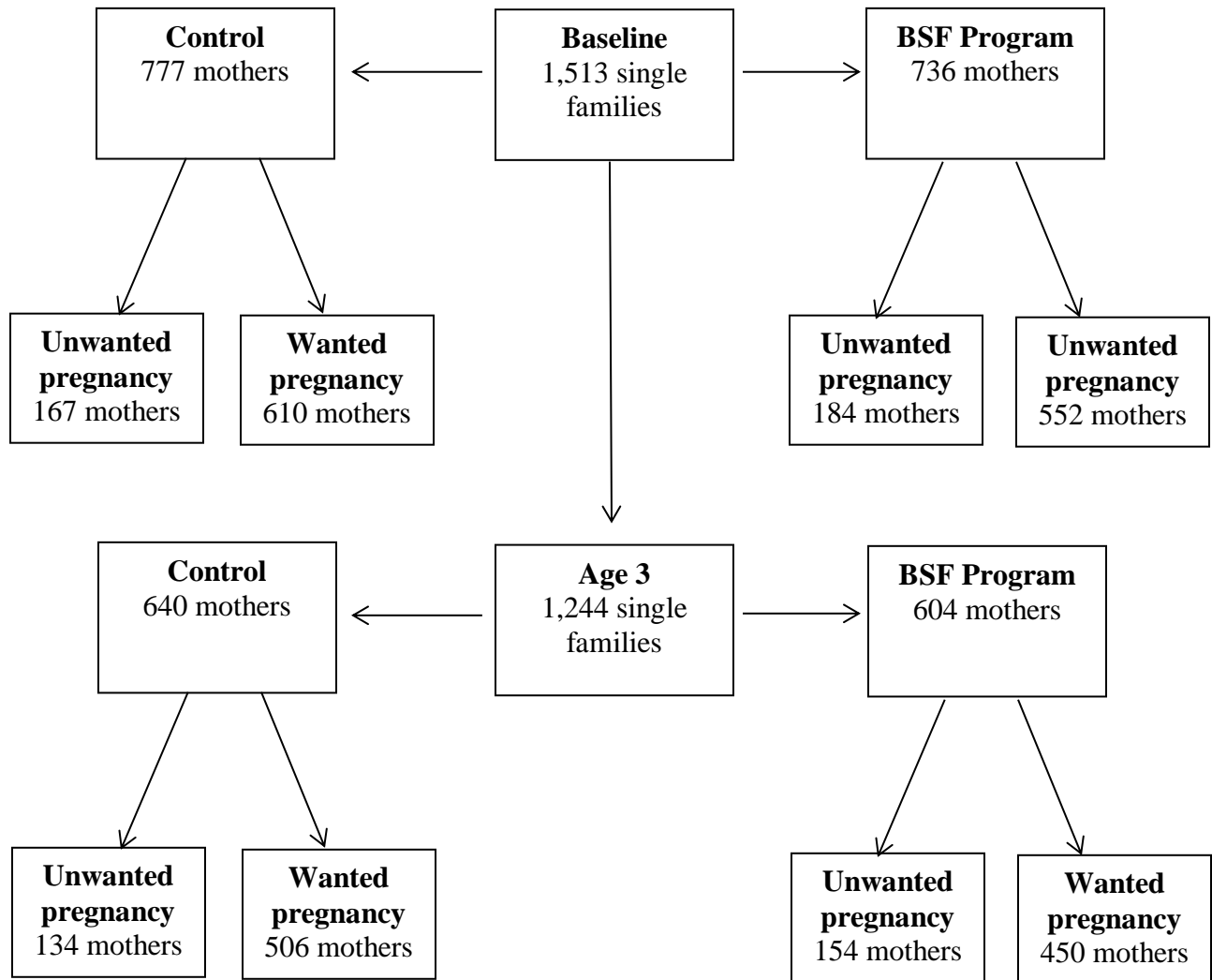
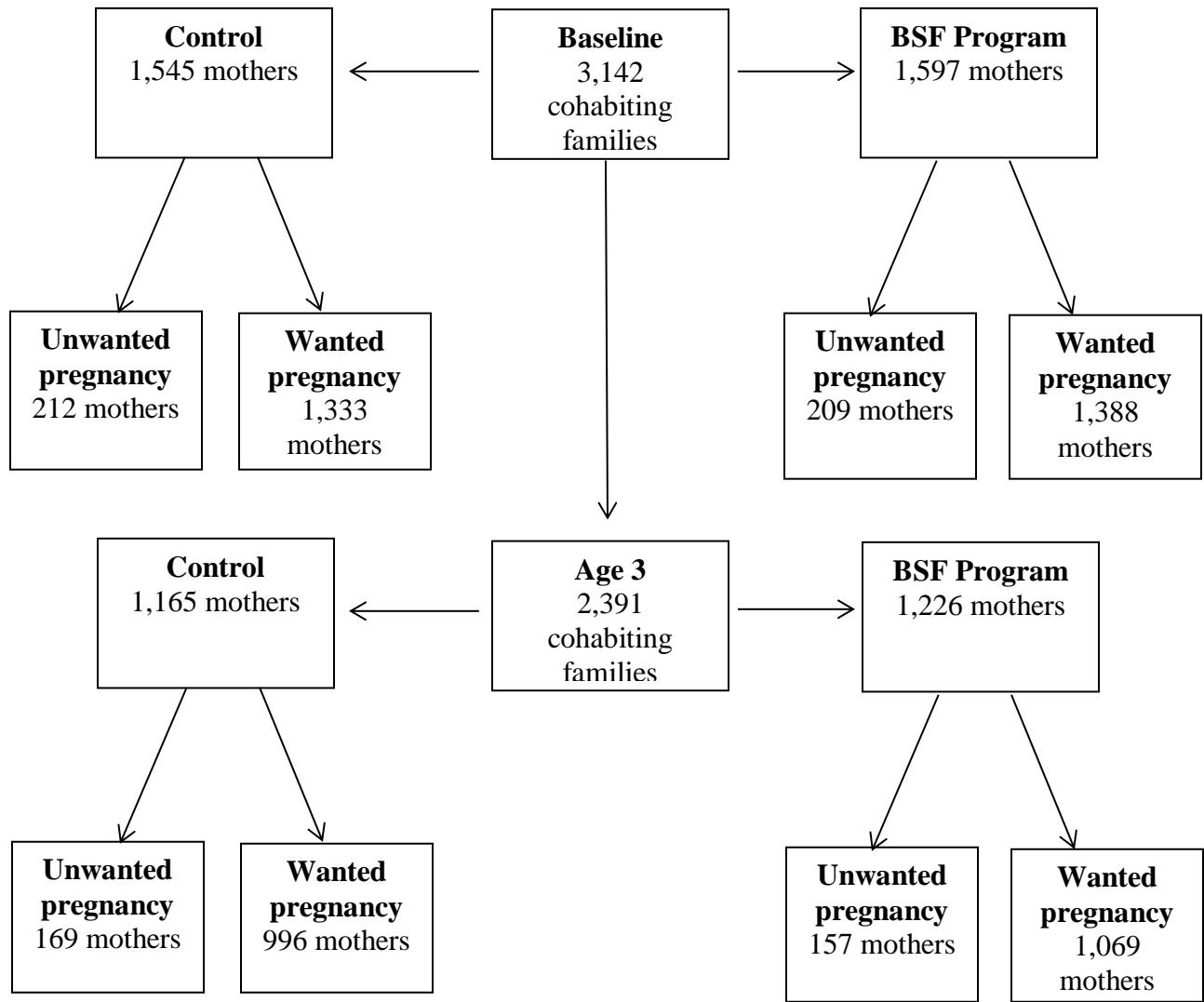


Figure 4. Analytic sample of cohabiting families in BSF Project.





**Independent variables measured at application to BSF program.** There are two independent variables of interest in the BSF Project that serve as ways to define unintended pregnancies.

***Mistimed pregnancy.*** Mothers reported whether the current pregnancy was wanted but considered mistimed ( $n=3,700$ , 37% = “no” and 63% = “yes”).

***Unwanted pregnancy.*** Mothers reported that the current pregnancy was unwanted ( $n=3,895$ , 84% = “no” and 16% = “yes”).

**Dependent variables measured at child age 3.** There are 9 dependent variables of interest in the BSF Project that represent maternal mental health and parenting behaviors. All outcomes, with the exception of spanking within the past month, were standardized before analyses were conducted.

***Maternal depressive symptomology.*** Mothers were asked the 12-item version of the Center for Epidemiologic Studies Depression Scale (CES-D), which measures the prevalence of depressive symptomology. Average of endorsements to the following 12-items was calculated ( $\alpha = 0.87$ ): (a) I was bothered by thing that usually don't bother me; (b) I did not feel like eating; my appetite was poor; (c) I felt that I could not shake off the blues even with help from my family or friends; (d) I had trouble keeping my mind on what I was doing; (e) I felt depressed; (f) Everything I did felt like an effort; (g) I felt fearful; (h) My sleep was restless; (i) I talked less than usual; (j) I felt lonely; (k) I felt sad; and (l) I could not get “going.” These questions are scored on a 4-point scale and recoded such that 1 = “rarely or some of the time,” 2 = “some of the time,” 3 = “most of the time,” and 4 = “most or all of the time.” Scores range from 1 to 4 ( $n = 3,725$ , mean = 1.41, standard deviation = 0.52).

**Parenting stress.** Mothers were asked the 4-item Aggravation in Parenting Scale ( $\alpha = 0.58$ ), which asks moms to report how often in the past month they have (a) felt that their children were more difficult to care for than most, (b) their children did things that bothered them, (c) they were giving up their lives to meet the needs of the child, and (d) they were angry with their children. These questions are scored on a 4-point scale and recoded such that 1 = “none of the time,” 2 = “some of the time,” 3 = “most of the time,” and 4 = “all of the time.” An average of endorsements to these questions were calculated. Scores range from 1 to 4 ( $n=3,703$ , mean = 1.59, standard deviation = 0.52).

**Engagement in parenting.** Average of reported engagement in 4 parenting activities ( $\alpha = 0.82$ ): (a) sings songs; (b) read or looked at books with child; (c) told stories to child, and (d) played with games or toys with child. Items were scored on a 6-point scale and recoded such that 1 = “not at all,” 2 = “rarely,” 3 = “a few times a month,” 4 = “a few times a week,” 5 = “about once a day,” and 6 = “more than once a day.” Scores range from 1 to 6 ( $n=3,563$ , mean = 4.96, standard deviation = 0.84).

**Co-parenting with child’s biological father.** Average of endorsements to 10 indicators of co-parenting ( $\alpha = 0.97$ ): (a) Good parent; (b) Communicates well; (c) Good judgment, (d) Job easier; (e) Good team; (f) Handle children; (g) Solve problems; (h) Personal sacrifices; (i) Like talking; and (j) Pays attention. Endorsements were scored on a 5-point scale and recoded such that 1 = “strongly disagree,” 2 = “disagree,” 3 = “not sure,” 4 = “agree,” and 5 = “strongly agree.” Scores range from 1 to 5 ( $n=3,571$ , mean = 3.80, standard deviation = 0.89).

**Spanking.** Whether or not the mother reported spanking the child in the past month ( $n = 3,558$ , 71% reported “no,” 29% reported “yes”).

***Observed warmth.*** Average of six yes/no warmth items from the Home Observation for Measurement of the Environment (HOME) scale ( $\alpha = 0.75$ ) (Caldwell & Bradley, 1984): (a) Mother converses with child at least twice; (b) Mother answers child's questions or request verbally; (c) Mother usually responds verbally to child's talking; (d) Mother's voice conveys positive feeling; (e) Mother caresses, kisses, or cuddles child at least once. Scores range from 0 to 1 ( $n = 1,819$ , mean = 0.93, standard deviation = 0.16).

***Observed maternal responsiveness.*** Average of 4 items (sensitivity, cognitive stimulation, positive regard, and detachment (reverse coded)) capturing mother's responsiveness towards the child during the Two-Bag assessment ( $\alpha = 0.81$ ). Trained observers watched video-taped play and assigned scores that ranged from 1 = very low observed behavior to 7 = very high observed behavior for each construct ( $n=1,771$ , mean = 4.56, standard deviation = 0.86).

***Observed measure of harsh parenting.*** Average of 2 items (negative regard and intrusiveness) capturing mother's assertive negative behavior towards the child during the Two-Bag assessment ( $\alpha = 0.71$ ). Trained observers watched video-taped play and assigned scores that ranged from 1 = very low observed behavior to 7 = very high observed behavior for each construct ( $n=1,771$ , mean = 2.76, standard deviation = 0.99).

Table 11. Dependent variables measured at child age 3.

Outcome at age 3	Number of Items	Item Scoring	Range	% Yes/Mean
Maternal depressive symptoms	12 items	Average of endorsements on 4-point scale	1-4	1.41
Maternal parenting stress	4 items	Average of endorsements on a 4-point scale	1-4	1.59
Engagement in parenting	4 items	Average of endorsements on a 6-point scale	1-6	4.96
Co-parenting with child's biological father	10 items	Average of endorsements on a 5-point scale	1.1-4.8	3.80
Spanking within past month	1 item	1 = "yes" 0 = "no"	n/a	29% yes
Observed warmth	6 items	Average of yes/no endorsements	0-1	0.93
Observed responsiveness	4 items	Average of coder rated behavior on a 7-point scale	1-7	4.56
Observed harsh parenting	2 items	Average of coder rated behavior on a 7-point scale	1-7	2.76

**Control variables measured at application to the BSF program.** This dissertation utilizes 9 separate covariates that represent maternal demographic factors.

**Assigned to BSF program.** Dichotomous variable indicating random assignment into receipt of a BSF program (0 = “control” and 1 = “assigned to BSF program”). ( $n=3,725$ , 50% = “control” and 50% = “assigned to BSF program”).

**Mother psychological distress at application (soon before or after giving birth to child).** A count of 6 self-reported symptoms measured by the Kessler Psychological Distress Scale (Yiengprugsawan, Kelly, & Tawatsupa, 2014): (a) During the past 30 days, how often did you feel so sad that nothing could cheer you up?; (b) During the past 30 days, how often did you feel nervous?; (c) During the past 30 days, how often did you feel restless or fidgety?; (d) During the past 30 days, how often did you feel hopeless?; (e) During the past 30 days, how often did you feel that everything was an effort?; (f) During the past 30 days, how often did you feel worthless? Endorsements were scored on a 4-point scale and recoded such that 1 = “rarely or none of the time,” 2 = “some of the time,” 3 = “most of the time,” and 4 = “most or all of the time.” Scores range from 2 to 30 ( $n=3,724$ , mean = 12.00, standard deviation = 4.41).

**Gender of child.** Mothers reported the gender of their child. Two dummy variables were used to indicate child’s gender: (a) female, (b) male (reference group). ( $n=3,725$ , 46% = male, 54% = female).

**Maternal race/ethnicity.** Four dummy variables were used to indicate mother’s race: (a) Black, (b) Hispanic, (c) other race/ethnicity, and (d) White (reference group) ( $n=3,668$ , 59% = Black, 22% Hispanic, 2% other race/ethnicity, and 17% = White).

***Mother's age.*** The age of mother at application to participate in the BSF program in years (mother could be still pregnant or have given birth). Ages range from 18 to 45 ( $n=2,134$ , mean = 23.83, standard deviation = 4.85).

***Maternal education.*** Dichotomous variable indicating whether mother had received her high school diploma ( $n=3,497$ , 36% = "no" and 64% = "yes").

***Mother's household income.*** Self-reported household income category coded as 0 = "none," 3500 = "\$1-\$4,999," 7500 = "\$5,000-\$9,999," 12500 = "\$10,000-\$14,999," 17500 = "\$15,000 - \$19,999," 22500 = "\$20,000 - \$24,999," 27500 = "25,000 - \$34,999, and 35000 = "35,000 or above." Scores range from 0 to 35000 ( $n=3,434$ , mean = 6,921.23, standard deviation = 7,144.50).

***Mother knows biological father of child less than 1 year.*** Mother self-reported time that she has known biological father; 1 = "months," 2 = "years," and 3 = "weeks." Variable was recoded to be dichotomous; 1 = "months and weeks" and 0 = "years." ( $n=3,721$ , 75% "no" and 25% "yes").

***Religious service attendance.*** Mother self-reported attendance to religious services recoded as such that 0 = "never," 1 = "a few times a year," 2 = "a few times per month," and 3 = "once a week or more." Scores range from 0 to 3 ( $n=3,675$ , mean = 1.36, standard deviation = 1.04).

Table 12. Control variables measured at child's birth.

Control variables measured at birth	Number of Items	Item Scoring	Range	% Yes/Mean
Assigned to BSF program	1 item	1 = "yes" 0 = "no"	n/a	50%
Mother baseline psychological distress	6 items	Count of symptoms	2-30	12.00
Gender of child	1 item	1 = "female" 0 = "male"	n/a	54%
Maternal race/ethnicity	1 item	4 dummy variables (Black, Hispanic, other race/ethnicity, and White)	n/a	59% Black 22% Hispanic 2% other race/ethnicity 17% White (reference category)
Mother's age	1 item	Continuous variable	18-45	23.83
High school graduate	1 item	1 = "yes" 0 = "no"	n/a	64%
Mother's household income	1 item	Continuous variable	0-35,000	6,921.23
Mother knows biological father of child less than year	1 item	1 = "yes" 0 = "no"	n/a	25%
Frequency of attendance to religious services	1 item	4-point scale	0-3	1.36

Table 13. Standardized mean differences on age 3 outcomes for mothers who had wanted pregnancies compared to mothers who had unwanted pregnancies.

Outcome at age 3	Mean / % wanted pregnancy	Mean / % unwanted pregnancy	Standardized mean difference
Maternal depressive symptoms	1.394	1.455	-0.116
Maternal parenting stress	1.577	1.662	-0.160
Engagement in parenting	4.988	4.826	0.188
Co-parenting with child's biological father	3.853	3.636	0.242
Spanking within past month	28%	33%	-0.110
Observed warmth	0.967	0.161	0.084
Observed responsiveness	4.561	4.548	0.014
Observed harsh parenting	2.738	2.790	-0.052



Table 14. Standardized mean differences on covariates for mothers who had wanted pregnancies compared to mothers who had unwanted pregnancies.

Control variables measured at birth	Mean / % wanted pregnancy	Mean / % unwanted pregnancy	Standardized mean difference
Assigned to BSF program	0.503	0.500	0.010
Mother baseline psychological distress	11.740	13.340	-0.348
Child is female	0.545	0.550	-0.010
Maternal race/ethnicity	56% = Black 24% = Hispanic 2% = Other 18% = White	64% = Black 18% = Hispanic 4% = Other 14% = White	-0.161= Black 0.148 = Hispanic -0.086= Other 0.093 = White
Mother's age	23.850	24.16	-0.062
High school graduate	65%	63%	0.048
Mother's household income	7,298.40	6,653.40	-0.030
Mother knows biological father of child less than year	23%	28%	-0.112
Frequency of attendance to religious services	1.386	1.401	-0.014

**Changes in relationship with the child’s biological father over the first three years of life.** Since the BSF program specifically targets families with parents in romantic relationships, it is important to account for possible changes in that relationship. Therefore, I include longitudinal variables in some of my models that account for stable and changing relationship status with the biological father to test robustness of identified associations. Table 15 describes these variables in detail.

Table 15. Relationship changes from birth to age 3.

Longitudinal Relationship Control Variable	Number of Items	Item Scoring	Range	% Yes/Mean
Single mother is stably single from child’s birth to when the child is 3	1 item	1 = “yes” 0 = “no”	n/a	24%
Cohabiting mother broke-up with biological father by the time the child is 3.	1 item	1 = “yes” 0 = “no”	n/a	30%

Table 16. Standardized mean differences on age 3 relationship changes who had wanted pregnancies compared to mothers who had unwanted pregnancies.

Longitudinal Relationship Control Variable	% wanted pregnancy	% unwanted pregnancy	Standardized mean difference
Single mother is stably single from child's birth to when the child is 3	20%	34%	-0.311
Cohabiting mother broke-up with biological father by the time the child is 3.	29%	28%	0.021

### **Analytic Strategy**

**Analyses using FFCWS.** Ordinary least squares (OLS) regression is an appropriate method to examine the potential association between consideration of abortion and maternal mental health and parenting behaviors because OLS regression is a robust methodology to examine associations between variables. In fact, with inclusion of appropriate covariates that explain outcome variables of interest, OLS regression has the ability to estimate beta coefficients that accurately represent associations between independent and dependent variables. In cases where OLS regression models fail to include important covariates, then estimated associations will be biased. In order to test the sensitivity of analyses presented in this dissertation, I introduce a set of dummy variables for longitudinal relationship status with the child's biological father, upon exclusion from models could potentially bias results. Additionally, I re-estimate associations using propensity score pair matching techniques in order to test whether associations are robust when calculating estimates strictly with overlapping cases.

The first step in my analysis is to understand what demographic and baseline variables predict a mother indicating that she considered an abortion (exclusively), that the child's biological father considered an abortion (exclusively), and that both of them considered an abortion. I examine this prediction model by fitting the following multinomial logit separately for mothers who are single at baseline and mothers who are cohabiting with the biological father at baseline. The reference group for the categories of consideration of abortion is neither mother nor biological father considered an abortion, and I calculate relative risk ratios to improve interpretability of results. Relative risk ratios represent the ratio of the probability of being in the consideration of abortion category over the probability of not reporting having considered an abortion (reference group):

$Y_{1(\text{mother only considered an abortion})}$ ,  $Y_{2(\text{mother's report that biological father only considered an abortion})}$ ,  $Y_{3(\text{mother's report that both she and biological father considered an abortion})} = b_0 + b_1 (\text{mother's age at child's birth}) + b_2 (\text{Black}) + b_3 (\text{Hispanic}) + b_4 (\text{Other}) + b_5 (\text{mother's household income/poverty threshold}) + b_6 (\text{less than high school}) + b_7 (\text{high school}) + b_8 (\text{some college}) + b_9 (\text{frequency of attendance to religious services}) + b_{10} (\text{first visited the doctor for pregnancy at or after 4}^{\text{th}} \text{ month of pregnancy}) + b_{11} (\text{this pregnancy is mother's first child}) + b_{12} (\text{mother drank during pregnancy}) + b_{13} (\text{mother did drugs during pregnancy})$

In the above model, the reference categories for the independent variables (omitted from the model) are White and college graduate. Due to the sampling and data collection methods used in the FFCWS, the data used are clustered at the city level, therefore, I expect there to be an intraclass correlation between families in the same cities, which will bias calculated standard errors. Therefore, in an attempt to statistically correct for this intraclass correlation, I include in the above model city fixed effects for 20 cities where sampling occurred to adjust for clustering by city.

Next, I assess my research questions that are interested in main effects of consideration of abortion and maternal mental health and parenting behaviors.

***Is there an association between having considered abortion and mothers' mental health and parenting behaviors at child age 1 and child age 3?*** Before testing any selection bias inherent in consideration of abortion and any possible moderating effect of maternal demographic characteristics, I must assess the presence of main effects of consideration of abortion for all of my independent variables of interest at both Wave 2 and Wave 3. The following Model 1 is assessed for each measure of maternal mental health and parenting

behaviors separately for mothers who are single at baseline and mothers who are cohabiting with the child's biological father at baseline:

$$Y_{(\text{mental health or parenting outcome})} = b_0 + b_1 (\text{consideration of abortion}) + b_2 (\text{mother's age at child's birth}) + b_3 (\text{Black}) + b_4 (\text{Hispanic}) + b_5 (\text{other}) + b_6 (\text{child female}) + b_7 (\text{child low birth weight}) + b_8 (\text{number of children in household at child's birth}) + b_9 (\text{mother's household income/poverty threshold}) + b_{10} (\text{child is mother's first}) + b_{11} (\text{less than high school}) + b_{12} (\text{high school}) + b_{13} (\text{some college}) + b_{14} (\text{frequency of attendance to religious services}) + b_{15} (\text{mother appeared anxious and/or depressed at child's birth}) + b_{16} (\text{first visited the doctor for pregnancy at or after 4<sup>th</sup> month of pregnancy}) + b_{17} (\text{mother drank during pregnancy}) + b_{18} (\text{mother did drugs during pregnancy})$$

In the above model, the reference categories (omitted from the model) are child male, White, and college graduate. For the binary maternal depressive symptoms and spanking outcomes, I utilize logistic regression with the same set of covariates to assess the potential association between consideration of abortion and the dichotomous outcomes as it is a more appropriate model for both outcomes. I calculate odds ratios for the logistic regression models to improve interpretability. Although not written in the above model, 20 city fixed effects are included to correct for clustering on the city level. In terms of ability to answer my stated research questions, the presence of main effects for consideration of abortion will be determined by size, sign, and statistically significant p-value of  $b_1$ . It is hypothesized that  $b_1$  will be positive and statistically significant for maternal depressive symptoms, parenting stress, spanking behaviors, and observed measure of harsh parenting, which will indicate an association characterized by risk for mothers who considered an abortion. It is also hypothesized that  $b_1$  will be negative and statistically significant for engagement in parenting activities, observed measure of home

learning, and observed measure of maternal warmth, which will also indicate risk for mothers who considered an abortion.

*Is this association explained by instability in the relationship, or lack of relationship, with the child's biological father?* Next, I examine whether the main effect associations for consideration of abortion hold after statistically controlling for relationship status with the child's biological father. The following Model 2 is assessed for each Wave 2 measure of maternal mental health and parenting behaviors for mothers who are single at the child's birth:

$$Y_{(\text{mental health or parenting outcome})} = b_0 + b_1 (\text{consideration of abortion}) + b_2 (\text{mother's report that biological father asked to have an abortion}) + b_3 (\text{becomes romantic with biological father when child is 1}) + b_4 (\text{mother's age at child's birth}) + b_5 (\text{Black}) + b_6 (\text{Hispanic}) + b_7 (\text{Other}) + b_8 (\text{child female}) + b_9 (\text{child low birth weight}) + b_{10} (\text{number of children in household at child's birth}) + b_{11} (\text{mother's household income/poverty threshold}) + b_{12} (\text{child is mother's first}) + b_{13} (\text{less than high school}) + b_{14} (\text{high school}) + b_{15} (\text{some college}) + b_{16} (\text{frequency of attendance to religious services}) + b_{17} (\text{mother appeared anxious and/or depressed at child's birth}) + b_{18} (\text{first visited the doctor for pregnancy at or after 4}^{\text{th}} \text{ month of pregnancy}) + b_{19} (\text{mother drank during pregnancy}) + b_{20} (\text{mother did drugs during pregnancy})$$

In the above model, the reference categories (omitted from the model) are child male, White, and college graduate. Again, for the binary maternal depressive symptoms and spanking outcome, I use logistic regression with the same set of covariates to assess the potential association between consideration of abortion and these two outcomes. As explained earlier, 20 city fixed effects are included in all models.

The following Model 2 was assessed for each Wave 2 measure of maternal mental health and parenting behaviors for mothers who are cohabiting with the child's biological father at the child's birth:

$$Y_{(\text{mental health or parenting outcome})} = b_0 + b_1 (\text{consideration of abortion}) + b_2 (\text{mother's report that biological father asked to have an abortion}) + b_3 (\text{breaks up with child's biological father by the time the child is 1}) + b_4 (\text{mother's age at child's birth}) + b_5 (\text{Black}) + b_6 (\text{Hispanic}) + b_7 (\text{Other}) + b_8 (\text{child female}) + b_9 (\text{child low birth weight}) + b_{10} (\text{number of children in household at child's birth}) + b_{11} (\text{mother's household income/poverty threshold}) + b_{12} (\text{child is mother's first}) + b_{13} (\text{less than high school}) + b_{14} (\text{high school}) + b_{15} (\text{some college}) + b_{16} (\text{frequency of attendance to religious services}) + b_{17} (\text{mother appeared anxious and/or depressed at child's birth}) + b_{18} (\text{first visited the doctor for pregnancy at or after 4}^{\text{th}} \text{ month of pregnancy}) + b_{19} (\text{mother drank during pregnancy}) + b_{20} (\text{mother did drugs during pregnancy})$$

In the above model, the reference categories (omitted from the model) are child male, White, and college graduate. Logistic regression is utilized for maternal depressive symptoms and spanking, and 20 city fixed effects are included in all models to correct for clustering on the city level.

In terms of anticipated results from Model 2, it is expected that  $b_1$  will maintain the direction and statistical significance previously hypothesized in the first set of OLS and logistic regression models, but it is hypothesized that the size of  $b_1$  will reduce in relation to the inclusion of longitudinal relationship status with the child's biological father in the models.

The following Model 2 was assessed for each Wave 3 measure of maternal mental health and parenting behaviors for mothers who are single at the child's birth:



$Y_{(\text{mental health or parenting outcome})} = b_0 + b_1 (\text{consideration of abortion}) + b_2 (\text{mother's report that biological father asked to have an abortion}) + b_3 (\text{stably not romantic}) + b_4 (\text{romantic when child is 1 and break-up by age 3}) + b_5 (\text{not romantic when child is 1 but become romantic by age 3}) + b_6 (\text{mother's age at child's birth}) + b_7 (\text{Black}) + b_8 (\text{Hispanic}) + b_9 (\text{Other}) + b_{10} (\text{child female}) + b_{11} (\text{child low birth weight}) + b_{12} (\text{number of children in household at child's birth}) + b_{13} (\text{mother's household income/poverty threshold}) + b_{14} (\text{child is mother's first}) + b_{15} (\text{less than high school}) + b_{16} (\text{high school}) + b_{17} (\text{some college}) + b_{18} (\text{frequency of attendance to religious services}) + b_{19} (\text{mother appeared anxious and/or depressed at child's birth}) + b_{20} (\text{first visited the doctor for pregnancy at or after 4}^{\text{th}} \text{ month of pregnancy}) + b_{21} (\text{mother drank during pregnancy}) + b_{22} (\text{mother did drugs during pregnancy})$

In the above model, the reference categories (omitted from the model) are child male, White, college graduate, and stably romantic from when the child is 1 to 3 years of age. Logistic regression is utilized for the spanking outcome, and 20 city fixed effects are included in all models to correct for clustering on the city level.

The following Model 2 was assessed for each Wave 3 measure of maternal mental health and parenting behaviors for mothers who are cohabiting with the child's biological father at the child's birth:

$Y_{(\text{mental health or parenting outcome})} = b_0 + b_1 (\text{consideration of abortion}) + b_2 (\text{mother's report that biological father asked to have an abortion}) + b_3 (\text{broke-up with child's biological father by the time the child is 3}) + b_4 (\text{mother's age at child's birth}) + b_5 (\text{Black}) + b_6 (\text{Hispanic}) + b_7 (\text{Other}) + b_8 (\text{child female}) + b_9 (\text{child low birth weight}) + b_{10} (\text{number of children in household at child's birth}) + b_{11} (\text{mother's household income/poverty threshold}) + b_{12}$

(child is mother's first) +  $b_{13}$  (less than high school) +  $b_{14}$  (high school) +  $b_{15}$  (some college) +  $b_{16}$  (frequency of attendance to religious services) +  $b_{17}$  (mother appeared anxious and/or depressed at child's birth) +  $b_{18}$  (first visited the doctor for pregnancy at or after 4<sup>th</sup> month of pregnancy) +  $b_{19}$  (mother drank during pregnancy) +  $b_{20}$  (mother did drugs during pregnancy)

In the above model, the reference categories (omitted from the model) are child male, White, and college graduate. Logistic regression is utilized for the spanking outcome, and 20 city fixed effects are included in all models to correct for clustering on the city level.

In terms of anticipated results from Model 2, it is expected that  $b_1$  will maintain the sign and statistical significance previously hypothesized in the first set of OLS and logistic regression models, but it is hypothesized that the size of  $b_1$  will reduce in relation to the inclusion of longitudinal relationship status with the child's biological father in the models.

For Wave 3, there are two additional models fitted to further test robustness of results: a lag model that controls for the dependent variable measured at Wave 2 (Model 3) and a model that controls for the interaction between considering an abortion and the dependent variable from Wave 2 (Model 4). Again, these models are assessed separately by baseline family structure.

The following Model 3 was assessed for each Wave 3 measure of maternal mental health and parenting behaviors for mothers who are single at the child's birth:

$$Y_{(\text{mental health or parenting outcome})} = b_0 + b_1 (\text{consideration of abortion}) + b_2 (\text{mother's report that biological father asked to have an abortion}) + b_3 (\text{stably not romantic}) + b_4 (\text{romantic when child is 1 and break-up by age 3}) + b_5 (\text{not romantic when child is 1 but become romantic by age 3}) + b_6 (\text{mental health or parenting outcome when child is 1}) + b_7 (\text{mother's age at child's birth}) + b_8 (\text{Black}) + b_9 (\text{Hispanic}) + b_{10} (\text{Other}) + b_{11} (\text{child}$$

female) +  $b_{12}$  (child low birth weight) +  $b_{13}$  (number of children in household at child's birth) +  $b_{14}$  (mother's household income/poverty threshold) +  $b_{15}$  (child is mother's first) +  $b_{16}$  (less than high school) +  $b_{17}$  (high school) +  $b_{18}$  (some college) +  $b_{19}$  (frequency of attendance to religious services) +  $b_{20}$  (mother appeared anxious and/or depressed at child's birth) +  $b_{21}$  (first visited the doctor for pregnancy at or after 4<sup>th</sup> month of pregnancy) +  $b_{22}$  (mother drank during pregnancy) +  $b_{23}$  (mother did drugs during pregnancy)

In the above model, the reference categories (omitted from the model) are child male, White, college graduate, and stably romantic from when the child is 1 to 3 years of age. Logistic regression is utilized for the spanking outcome, and 20 city fixed effects are included in all models to correct for clustering on the city level.

The following Model 3 was assessed for each Wave 3 measure of maternal mental health and parenting behaviors for mothers who are cohabiting with the child's biological father at the child's birth:

$$Y_{(\text{mental health or parenting outcome})} = b_0 + b_1 (\text{consideration of abortion}) + b_2 (\text{mother's report that biological father asked to have an abortion}) + b_3 (\text{broke-up with child's biological father by the time the child is 3}) + b_4 (\text{mental health or parenting outcome when child is 1}) + b_5 (\text{mother's age at child's birth}) + b_6 (\text{Black}) + b_7 (\text{Hispanic}) + b_8 (\text{Other}) + b_9 (\text{child female}) + b_{10} (\text{child low birth weight}) + b_{11} (\text{number of children in household at child's birth}) + b_{12} (\text{mother's household income/poverty threshold}) + b_{13} (\text{child is mother's first}) + b_{14} (\text{less than high school}) + b_{15} (\text{high school}) + b_{16} (\text{some college}) + b_{17} (\text{frequency of attendance to religious services}) + b_{18} (\text{mother appeared anxious and/or depressed at child's birth}) + b_{19} (\text{first visited the doctor for pregnancy at or after 4}^{\text{th}} \text{ month of}$$

pregnancy) + b<sub>20</sub> (mother drank during pregnancy) + b<sub>21</sub> (mother did drugs during pregnancy)

In the above model, the reference categories (omitted from the model) are child male, White, and college graduate. Logistic regression is utilized for the spanking outcome, and 20 city fixed effects are included in all models to correct for clustering on the city level.

In terms of anticipated results from Model 3, it is hypothesized that b<sub>1</sub> will no longer be statistical significant once controlling for the Wave 2 outcome. If the main effect of b<sub>1</sub> does remain statistically significant within the lag model then there will be evidence to suggest considerable robustness in the identified association when the child is 3 years of age.

The following Model 4 was assessed for each Wave 3 measure of maternal mental health and parenting behaviors for mothers who are single at the child's birth:

$$Y_{(\text{mental health or parenting outcome})} = b_0 + b_1 (\text{consideration of abortion}) + b_2 (\text{mother's report that biological father asked to have an abortion}) + b_3 (\text{stably not romantic}) + b_4 (\text{romantic when child is 1 and break-up by age 3}) + b_5 (\text{not romantic when child is 1 but become romantic by age 3}) + b_6 (\text{mental health or parenting outcome when child is 1}) + b_7 (\text{mental health or parenting outcome when child is 1} \times \text{consideration of abortion}) + b_8 (\text{mother's age at child's birth}) + b_9 (\text{Black}) + b_{10} (\text{Hispanic}) + b_{11} (\text{Other}) + b_{12} (\text{child female}) + b_{13} (\text{child low birth weight}) + b_{14} (\text{number of children in household at child's birth}) + b_{15} (\text{mother's household income/poverty threshold}) + b_{16} (\text{child is mother's first}) + b_{17} (\text{less than high school}) + b_{18} (\text{high school}) + b_{19} (\text{some college}) + b_{20} (\text{frequency of attendance to religious services}) + b_{21} (\text{mother appeared anxious and/or depressed at child's birth}) + b_{22} (\text{first visited the doctor for pregnancy at or after 4}^{\text{th}} \text{ month of}$$

pregnancy) + b<sub>23</sub> (mother drank during pregnancy) + b<sub>24</sub> (mother did drugs during pregnancy)

In the above model, the reference categories (omitted from the model) are child male, White, college graduate, and stably romantic from when the child is 1 to 3 years of age. Logistic regression is utilized for the spanking outcome, and 20 city fixed effects are included in all models to correct for clustering on the city level.

The following Model 4 was assessed for each Wave 3 measure of maternal mental health and parenting behaviors for mothers who are cohabiting with the child's biological father at the child's birth:

$$Y_{(\text{mental health or parenting outcome})} = b_0 + b_1 (\text{consideration of abortion}) + b_2 (\text{mother's report that biological father asked to have an abortion}) + b_3 (\text{broke-up with child's biological father by the time the child is 3}) + b_4 (\text{mental health or parenting outcome when child is 1}) + b_5 (\text{mental health or parenting outcome when child is 1} \times \text{consideration of abortion}) + b_6 (\text{mother's age at child's birth}) + b_7 (\text{Black}) + b_8 (\text{Hispanic}) + b_9 (\text{Other}) + b_{10} (\text{child female}) + b_{11} (\text{child low birth weight}) + b_{12} (\text{number of children in household at child's birth}) + b_{13} (\text{mother's household income/poverty threshold}) + b_{14} (\text{child is mother's first}) + b_{15} (\text{less than high school}) + b_{16} (\text{high school}) + b_{17} (\text{some college}) + b_{18} (\text{frequency of attendance to religious services}) + b_{19} (\text{mother appeared anxious and/or depressed at child's birth}) + b_{20} (\text{first visited the doctor for pregnancy at or after 4}^{\text{th}} \text{ month of pregnancy}) + b_{21} (\text{mother drank during pregnancy}) + b_{22} (\text{mother did drugs during pregnancy})$$

In the above model, the reference categories (omitted from the model) are child male, White, and college graduate. Logistic regression is utilized for the spanking outcome, and 20 city fixed effects are included in all models to correct for clustering on the city level.

In terms of anticipated results from Model 4, it is hypothesized that  $b_5$  will be statistically significant and indicate a recovery of an association between consideration of abortion and maternal mental health and parenting when the child is 3. While it is likely that the main effect of considering an abortion will be eliminated by the lag model, it is possible that the interaction between considering an abortion and mental health and parenting assessed when the child is 1 will be associated with mental health and parenting when the child is 3 in the originally hypothesized direction.

*How much does selection into consideration of an abortion bias results?* Estimating the propensity score,  $\pi(X)$ , in the context of this dissertation represents the conditional probability of considering an abortion, given a set of observed baseline covariates within the FFCWS. In order to utilize a propensity score to allow for causal inference, two main assumptions must be met: Strong Ignorability and the Stable Unit Treatment Value Assumption (SUTVA). For the Strong Ignorability assumption to hold, conditioning on the observed covariates utilized to generate the propensity score must result in independence between the potential outcomes and treatment assignment. The second part of Strong Ignorability is that every unit in the population will have a propensity score between 0 and 1, meaning that every mother will have a conditional probability of having considered an abortion between 0 (no propensity) to 1 (100% propensity). The Ignorability assumption is difficult to assess as it cannot be proven empirically and typically always can be theoretically challenged. The SUTVA assumption is concerned with equality of exposure across all units. In other words, exposure to

consideration of abortion must be identical for all mothers in the population. Since every mother in the FFCWS was asked to self-report considering abortion prior to their child's birth, I can assume that all of these mothers were given the same exposure. The second part of SUTVA is that a mother's potential outcomes (measures of maternal mental health and parenting behaviors) are independent of the assignment pattern estimated by the propensity score. In other words, no other individual in the population or anything else can influence whether a mother indicated that she considered an abortion. For the purposes of this analysis, I must assume that there are no factors that both predict a mother's consideration of abortion and later maternal mental health and parenting. In terms of greater arching demographic factors, such as socioeconomic status, it is possible that there is some dependence between the propensity score and outcomes of interest that is systematic but was not adequately measured. Therefore, I approach this propensity score analysis as purely a robustness check for identified associations with OLS regression versus a method to achieve causality.

There are many methods to conducting a propensity score analysis. For this particular analysis, I employ "fullmatch" from the R package "optmatch" to pair match each mother who indicated considering an abortion with a mother who did not based on the most comparable propensity scores available. Propensity scores representing the likelihood that a mother would report having considered an abortion are estimated using a logistic regression model with all selected observed baseline covariates. Propensity score analysis was conducted separately for mothers who indicated that they were single at baseline and mothers who indicated that they were cohabiting with the child's biological father at baseline. As such, stratification by family structure occurred prior to propensity score pair matching techniques, and therefore, mothers were matched within family structure based on the most comparable propensity scores on all

other baseline covariates available. The following logistic regression model represents the propensity score that was utilized:

$$\begin{aligned}
 Y_{(\text{consideration of abortion})} = & b_0 + b_1 (\text{consideration of abortion}) + b_2 (\text{mother's report that} \\
 & \text{biological father asked to have an abortion}) + b_3 (\text{mother's age at child's birth}) + b_4 \\
 & (\text{Black}) + b_5 (\text{Hispanic}) + b_6 (\text{Other}) + b_7 (\text{mother's household income/poverty threshold}) \\
 & + b_8 (\text{child is mother's first}) + b_9 (\text{less than high school}) + b_{10} (\text{high school}) + b_{11} (\text{some} \\
 & \text{college}) + b_{12} (\text{frequency of attendance to religious services}) + b_{13} (\text{mother appeared} \\
 & \text{anxious and/or depressed at child's birth}) + b_{14} (\text{first visited the doctor for pregnancy at or} \\
 & \text{after 4}^{\text{th}} \text{ month of pregnancy}) + b_{15} (\text{mother drank during pregnancy}) + b_{16} (\text{mother did} \\
 & \text{drugs during pregnancy}) + b_{17} (\text{Oakland}) + b_{18} (\text{Austin}) + b_{19} (\text{Baltimore}) + b_{20} (\text{Detroit}) \\
 & + b_{21} (\text{Newark}) + b_{22} (\text{Philadelphia}) + b_{23} (\text{Richmond}) + b_{24} (\text{Corpus Christi}) + b_{25} \\
 & (\text{Indianapolis}) + b_{26} (\text{Milwaukee}) + b_{27} (\text{San Jose}) + b_{28} (\text{Boston}) + b_{29} (\text{Nashville}) + b_{30} \\
 & (\text{Chicago}) + b_{31} (\text{Jacksonville}) + b_{32} (\text{Toledo}) + b_{33} (\text{San Antonio}) + b_{34} (\text{Pittsburgh}) + b_{35} \\
 & (\text{Norfolk})
 \end{aligned}$$

In the above logistic regression model, the reference categories (omitted from the model) are White, college graduate, and New York City.

In order to conduct a propensity score analysis, overlap between the exposed and unexposed cases has to be established. I assessed initial overlap between groups on all independent variables of interest and found that the overlap was insufficient. To improve overlap, I dropped non-overlapping cases with a caliper of 0.1 to find better overlap between the two groups. I was unable to utilize an even stricter caliper to yield “closer” matches based on covariates because it resulted in too few successful matches to conduct analyses (e.g., sample sizes were less than 150 matches after dropping non-overlapping cases with a caliper of 0.001).



Once the propensity score is estimated, and therefore, conditioning assignment into reporting having considered an abortion versus not on the observed set of covariates, the assumption of Strong Ignorability allows for a reassessment of balance. In theory, estimating a valid propensity score will generate an acceptable balance on the set of covariates used for conditioning. I assessed whether improved balance on the observed covariates had been achieved by seeing if all covariates were within a standard of a standardized mean difference of 0.1 and a variance ratio within the range of 0.8 and 1.25 between the group of mothers who considered an abortion and the group of mothers who did not (Rubin, 2001). Since covariate balance using a caliper of 0.1 did improve (please see Appendix E), a caliper of 0.1 was deemed sufficient for the one-to-one pair matching by propensity scores.

Lastly, I calculated the average treatment effect on the treated (ATT), in order to present the estimated average causal effect of consideration of abortion on maternal mental health and parenting behavior variables of interest. The ATT for each maternal mental health and parenting outcome was estimated using one-to-one pair matching by propensity scores procedure outlined above.

***Do maternal demographics (ratio in poverty and education level at child's birth) moderate the association between considering an abortion and maternal mental health and parenting behaviors assessed when the child is 3?*** In order to examine the possible moderating effects of maternal demographics on consideration of abortion, I created 2 interaction variables that represent the interaction between mother's household income/poverty threshold, maternal education level at baseline, and consideration of abortion respectively. Moderation models were assessed for each measure of maternal mental health and parenting behaviors

separately for mothers who were single at baseline and mothers who were cohabiting with the child's biological father at baseline.

***Moderation by ratio in poverty.*** The following Model 1 was assessed for each Wave 3 measure of maternal mental health and parenting behaviors for mothers who are single at the child's birth:

$$Y_{(\text{mental health or parenting outcome})} = b_0 + b_1 (\text{consideration of abortion}) + b_2 (\text{mother's report that biological father asked to have an abortion}) + b_3 (\text{stably not romantic}) + b_4 (\text{romantic when child is 1 and break-up by age 3}) + b_5 (\text{not romantic when child is 1 but become romantic by age 3}) + b_6 (\text{mother's age at child's birth}) + b_7 (\text{Black}) + b_8 (\text{Hispanic}) + b_9 (\text{Other}) + b_{10} (\text{child female}) + b_{11} (\text{child low birth weight}) + b_{12} (\text{number of children in household at child's birth}) + b_{13} (\text{mother's household income/poverty threshold}) + b_{14} (\text{mother considered abortion x mother's household income/poverty threshold}) + b_{15} (\text{child is mother's first}) + b_{16} (\text{less than high school}) + b_{17} (\text{high school}) + b_{18} (\text{some college}) + b_{19} (\text{frequency of attendance to religious services}) + b_{20} (\text{mother appeared anxious and/or depressed at child's birth}) + b_{21} (\text{first visited the doctor for pregnancy at or after 4<sup>th</sup> month of pregnancy}) + b_{22} (\text{mother drank during pregnancy}) + b_{23} (\text{mother did drugs during pregnancy})$$

In the first moderation model (shown above), the reference categories (omitted from the model) are college graduate, child male, White, and stably romantic when child is 1 to 3 years old. For the binary spanking outcome, I utilized logistic regression with the same set of covariates and interaction terms to assess potential moderation effects. Models controlled for 20 city fixed effects to correct for clustering at the city level. In terms of ability to answer my stated research

question, the presence of interaction effects for consideration of abortion and ratio in poverty will be determined by the size, sign, and statistically significant p-value of  $b_{14}$ .

The following Model 2 was assessed for each Wave 3 measure of maternal mental health and parenting behaviors for mothers who are single at the child's birth and introduces an additional control for the maternal mental health or parenting outcome measured when the child was 1 year of age:

$$Y_{(\text{mental health or parenting outcome})} = b_0 + b_1 (\text{consideration of abortion}) + b_2 (\text{mother's report that biological father asked to have an abortion}) + b_3 (\text{stably not romantic}) + b_4 (\text{romantic when child is 1 and break-up by age 3}) + b_5 (\text{not romantic when child is 1 but become romantic by age 3}) + b_6 (\text{mental health or parenting outcome measured when child is 1}) + b_7 (\text{mother's age at child's birth}) + b_8 (\text{Black}) + b_9 (\text{Hispanic}) + b_{10} (\text{Other}) + b_{11} (\text{child female}) + b_{12} (\text{child low birth weight}) + b_{13} (\text{number of children in household at child's birth}) + b_{14} (\text{mother's household income/poverty threshold}) + b_{15} (\text{mother considered abortion} \times \text{mother's household income/poverty threshold}) + b_{16} (\text{child is mother's first}) + b_{17} (\text{less than high school}) + b_{18} (\text{high school}) + b_{19} (\text{some college}) + b_{20} (\text{frequency of attendance to religious services}) + b_{21} (\text{mother appeared anxious and/or depressed at child's birth}) + b_{22} (\text{first visited the doctor for pregnancy at or after 4}^{\text{th}} \text{ month of pregnancy}) + b_{23} (\text{mother drank during pregnancy}) + b_{24} (\text{mother did drugs during pregnancy})$$

In the second moderation model (shown above), the reference categories (omitted from the model) are college graduate, child male, White, and stably romantic when child is 1 to 3 years old. For the binary spanking outcome, I utilized logistic regression with the same set of covariates and interaction terms to assess potential moderation effects. Models controlled for 20

city fixed effects to correct for clustering at the city level. In terms of ability to answer my stated research question, the presence of interaction effects for consideration of abortion and ratio in poverty will be determined by the size, sign, and statistically significant p-value of  $b_{15}$ . Due to the inclusion of the lagged outcome variable, I hypothesize that any significant interaction identified in Model 1 will be reduced in size and statistical significance in this model.

The following Model 1 was assessed for each Wave 3 measure of maternal mental health and parenting behaviors for mothers who are cohabiting with the child's biological father at the child's birth:

$$Y_{(\text{mental health or parenting outcome})} = b_0 + b_1 (\text{consideration of abortion}) + b_2 (\text{mother's report that biological father asked to have an abortion}) + b_3 (\text{broke-up with biological father by the time child is 3}) + b_4 (\text{mother's age at child's birth}) + b_5 (\text{Black}) + b_6 (\text{Hispanic}) + b_7 (\text{Other}) + b_8 (\text{child female}) + b_9 (\text{child low birth weight}) + b_{10} (\text{number of children in household at child's birth}) + b_{11} (\text{mother's household income/poverty threshold}) + b_{12} (\text{mother considered abortion} \times \text{mother's household income/poverty threshold}) + b_{13} (\text{child is mother's first}) + b_{14} (\text{less than high school}) + b_{15} (\text{high school}) + b_{16} (\text{some college}) + b_{17} (\text{frequency of attendance to religious services}) + b_{18} (\text{mother appeared anxious and/or depressed at child's birth}) + b_{19} (\text{first visited the doctor for pregnancy at or after 4}^{\text{th}} \text{ month of pregnancy}) + b_{20} (\text{mother drank during pregnancy}) + b_{21} (\text{mother did drugs during pregnancy})$$

In the first moderation model (shown above), the reference categories (omitted from the model) are college graduate, child male, and White. For the binary spanking outcome, I utilized logistic regression with the same set of covariates and interaction terms to assess potential moderation effects. Models controlled for 20 city fixed effects to correct for clustering at the city level. In

terms of ability to answer my stated research question, the presence of interaction effects for consideration of abortion and ratio in poverty will be determined by the size, sign, and statistically significant p-value of  $b_{12}$ .

The following Model 2 was assessed for each Wave 3 measure of maternal mental health and parenting behaviors for mothers who are cohabiting with the child's biological father at the child's birth and introduces an additional control for the maternal mental health or parenting outcome measured when the child was 1 year of age:

$$Y_{(\text{mental health or parenting outcome})} = b_0 + b_1 (\text{consideration of abortion}) + b_2 (\text{mother's report that biological father asked to have an abortion}) + b_3 (\text{broke-up with biological father by the time child is 3}) + b_4 (\text{mental health or parenting outcome measured when child is 1}) + b_5 (\text{mother's age at child's birth}) + b_6 (\text{Black}) + b_7 (\text{Hispanic}) + b_8 (\text{Other}) + b_9 (\text{child female}) + b_{10} (\text{child low birth weight}) + b_{11} (\text{number of children in household at child's birth}) + b_{12} (\text{mother's household income/poverty threshold}) + b_{13} (\text{mother considered abortion} \times \text{mother's household income/poverty threshold}) + b_{14} (\text{child is mother's first}) + b_{15} (\text{less than high school}) + b_{16} (\text{high school}) + b_{17} (\text{some college}) + b_{18} (\text{frequency of attendance to religious services}) + b_{19} (\text{mother appeared anxious and/or depressed at child's birth}) + b_{20} (\text{first visited the doctor for pregnancy at or after 4}^{\text{th}} \text{ month of pregnancy}) + b_{21} (\text{mother drank during pregnancy}) + b_{22} (\text{mother did drugs during pregnancy})$$

In the second moderation model (shown above), the reference categories (omitted from the model) are college graduate, child male, and White. For the binary spanking outcome, I utilized logistic regression with the same set of covariates and interaction terms to assess potential moderation effects. Models controlled for 20 city fixed effects to correct for clustering at the city

level. In terms of ability to answer my stated research question, the presence of interaction effects for consideration of abortion and ratio in poverty will be determined by the size, sign, and statistically significant p-value of  $b_{13}$ . Due to the inclusion of the lagged outcome variable, I hypothesize that any significant interaction identified in Model 1 will be reduced in size and statistical significance in this model.

***Moderation by maternal baseline education level.*** The following Model 1 was assessed for each Wave 3 measure of maternal mental health and parenting behaviors for mothers who are single at the child's birth:

$$Y_{(\text{mental health or parenting outcome})} = b_0 + b_1 (\text{consideration of abortion}) + b_2 (\text{mother's report that biological father asked to have an abortion}) + b_3 (\text{stably not romantic}) + b_4 (\text{romantic when child is 1 and break-up by age 3}) + b_5 (\text{not romantic when child is 1 but become romantic by age 3}) + b_6 (\text{mother's age at child's birth}) + b_7 (\text{Black}) + b_8 (\text{Hispanic}) + b_9 (\text{Other}) + b_{10} (\text{child female}) + b_{11} (\text{child low birth weight}) + b_{12} (\text{number of children in household at child's birth}) + b_{13} (\text{mother's household income/poverty threshold}) + b_{14} (\text{child is mother's first}) + b_{15} (\text{less than high school}) + b_{16} (\text{high school}) + b_{17} (\text{some college}) + b_{18} (\text{mother considered abortion x less than high school}) + b_{19} (\text{mother considered abortion x high school}) + b_{20} (\text{mother considered abortion x some college}) + b_{21} (\text{frequency of attendance to religious services}) + b_{22} (\text{mother appeared anxious and/or depressed at child's birth}) + b_{23} (\text{first visited the doctor for pregnancy at or after 4<sup>th</sup> month of pregnancy}) + b_{24} (\text{mother drank during pregnancy}) + b_{25} (\text{mother did drugs during pregnancy})$$

In the first moderation model (shown above), the reference categories (omitted from the model) are college graduate, child male, White, stably romantic when child is 1 to 3 years old, and

mother considered abortion x college graduate). For the binary spanking outcome, I utilized logistic regression with the same set of covariates and interaction terms to assess potential moderation effects. Models controlled for 20 city fixed effects to correct for clustering at the city level. In terms of ability to answer my stated research question, the presence of interaction effects for consideration of abortion and baseline maternal education level will be determined by the size, sign, and statistically significant p-value of  $b_{18}$ ,  $b_{19}$ , and  $b_{20}$ .

The following Model 2 was assessed for each Wave 3 measure of maternal mental health and parenting behaviors for mothers who are single at the child's birth and introduces an additional control for the maternal mental health or parenting outcome measured when the child was 1 year of age:

$$Y_{(\text{mental health or parenting outcome})} = b_0 + b_1 (\text{consideration of abortion}) + b_2 (\text{mother's report that biological father asked to have an abortion}) + b_3 (\text{stably not romantic}) + b_4 (\text{romantic when child is 1 and break-up by age 3}) + b_5 (\text{not romantic when child is 1 but become romantic by age 3}) + b_6 (\text{mental health or parenting outcome measured when child is 1}) + b_7 (\text{mother's age at child's birth}) + b_8 (\text{Black}) + b_9 (\text{Hispanic}) + b_{10} (\text{Other}) + b_{11} (\text{child female}) + b_{12} (\text{child low birth weight}) + b_{13} (\text{number of children in household at child's birth}) + b_{14} (\text{mother's household income/poverty threshold}) + b_{15} (\text{child is mother's first}) + b_{16} (\text{less than high school}) + b_{17} (\text{high school}) + b_{18} (\text{some college}) + b_{19} (\text{mother considered abortion x less than high school}) + b_{20} (\text{mother considered abortion x high school}) + b_{21} (\text{mother considered abortion x some college}) + b_{22} (\text{frequency of attendance to religious services}) + b_{23} (\text{mother appeared anxious and/or depressed at child's birth}) + b_{24} (\text{first visited the doctor for pregnancy at or after 4<sup>th</sup> month of pregnancy}) + b_{25} (\text{mother drank during pregnancy}) + b_{26} (\text{mother did drugs during pregnancy})$$

In the second moderation model (shown above), the reference categories (omitted from the model) are college graduate, child male, White, stably romantic when child is 1 to 3 years old, and mother considered abortion x college graduate. For the binary spanking outcome, I utilized logistic regression with the same set of covariates and interaction terms to assess potential moderation effects. Models controlled for 20 city fixed effects to correct for clustering at the city level. In terms of ability to answer my stated research question, the presence of interaction effects for consideration of abortion and maternal education level will be determined by the size, sign, and statistically significant p-value of  $b_{19}$ ,  $b_{20}$ , and  $b_{21}$ . Due to the inclusion of the lagged outcome variable, I hypothesize that any significant interaction identified in Model 1 will be reduced in size and statistical significance in this model.

The following Model 1 was assessed for each Wave 3 measure of maternal mental health and parenting behaviors for mothers who are cohabiting with the child's biological father at the child's birth:

$$Y_{(\text{mental health or parenting outcome})} = b_0 + b_1 (\text{consideration of abortion}) + b_2 (\text{mother's report that biological father asked to have an abortion}) + b_3 (\text{broke-up with biological father by the time child is 3}) + b_4 (\text{mother's age at child's birth}) + b_5 (\text{Black}) + b_6 (\text{Hispanic}) + b_7 (\text{Other}) + b_8 (\text{child female}) + b_9 (\text{child low birth weight}) + b_{10} (\text{number of children in household at child's birth}) + b_{11} (\text{mother's household income/poverty threshold}) + b_{12} (\text{child is mother's first}) + b_{13} (\text{less than high school}) + b_{14} (\text{high school}) + b_{15} (\text{some college}) + b_{16} (\text{mother considered abortion x less than high school}) + b_{17} (\text{mother considered abortion x high school}) + b_{18} (\text{mother considered abortion x some college}) + b_{19} (\text{frequency of attendance to religious services}) + b_{20} (\text{mother appeared anxious and/or depressed at child's birth}) + b_{21} (\text{first visited the doctor for pregnancy at or after 4}^{\text{th}} \text{ month})$$



of pregnancy) +  $b_{22}$  (mother drank during pregnancy) +  $b_{23}$  (mother did drugs during pregnancy)

In the first moderation model (shown above), the reference categories (omitted from the model) are college graduate, child male, White, and considered abortion x college graduate. For the binary spanking outcome, I utilized logistic regression with the same set of covariates and interaction terms to assess potential moderation effects. Models controlled for 20 city fixed effects to correct for clustering at the city level. In terms of ability to answer my stated research question, the presence of interaction effects for consideration of abortion and ratio in poverty will be determined by the size, sign, and statistically significant p-value of  $b_{16}$ ,  $b_{17}$ , and  $b_{18}$ .

The following Model 2 was assessed for each Wave 3 measure of maternal mental health and parenting behaviors for mothers who are cohabiting with the child's biological father at the child's birth and introduces an additional control for the maternal mental health or parenting outcome measured when the child was 1 year of age:

$$Y_{(\text{mental health or parenting outcome})} = b_0 + b_1 (\text{consideration of abortion}) + b_2 (\text{mother's report that biological father asked to have an abortion}) + b_3 (\text{broke-up with biological father by the time child is 3}) + b_4 (\text{mental health or parenting outcome measured when child is 1}) + b_5 (\text{mother's age at child's birth}) + b_6 (\text{Black}) + b_7 (\text{Hispanic}) + b_8 (\text{Other}) + b_9 (\text{child female}) + b_{10} (\text{child low birth weight}) + b_{11} (\text{number of children in household at child's birth}) + b_{12} (\text{mother's household income/poverty threshold}) + b_{13} (\text{child is mother's first}) + b_{14} (\text{less than high school}) + b_{15} (\text{high school}) + b_{16} (\text{some college}) + b_{17} (\text{mother considered abortion x less than high school}) + b_{18} (\text{mother considered abortion x high school}) + b_{19} (\text{mother considered abortion x some college}) + b_{20} (\text{frequency of attendance to religious services}) + b_{21} (\text{mother appeared anxious and/or depressed at child's birth}) +$$

$b_{22}$  (first visited the doctor for pregnancy at or after 4<sup>th</sup> month of pregnancy) +  $b_{23}$  (mother drank during pregnancy) +  $b_{24}$  (mother did drugs during pregnancy)

In the second moderation model (shown above), the reference categories (omitted from the model) are college graduate, child male, White, and mother considered an abortion x college graduate. For the binary spanking outcome, I utilized logistic regression with the same set of covariates and interaction terms to assess potential moderation effects. Models controlled for 20 city fixed effects to correct for clustering at the city level. In terms of ability to answer my stated research question, the presence of interaction effects for consideration of abortion and ratio in poverty will be determined by the size, sign, and statistically significant p-value of  $b_{17}$ ,  $b_{18}$ , and  $b_{19}$ . Due to the inclusion of the lagged outcome variable, I hypothesize that any significant interaction identified in Model 1 will be reduced in size and statistical significance in this model.

**Analyses using BSF Evaluation.** OLS regression is an appropriate method to examine the potential association between mistimed pregnancy and unwanted pregnancy and maternal mental health and parenting behaviors because OLS regression is a robust methodology to examine associations between variables. In fact, with inclusion of appropriate covariates that explain outcome variables of interest, OLS regression has the ability to estimate beta coefficients that accurately represent associations between independent and dependent variables. In cases where OLS regression models fail to include important covariates, then estimated associations will be biased. In order to test the sensitivity of analyses presented in this dissertation, I introduce a set of dummy variables for longitudinal relationship status, upon exclusion from models could potentially bias results.

The first step in my analysis with the BSF data is to understand what demographic and baseline variables predict a mother indicating that she had an unwanted pregnancy and mistimed

pregnancy. I examine this prediction model by fitting the following logit model separately for mothers who are single at baseline and mothers who are cohabiting with the biological father at baseline:

$$Y_{(\text{unwanted pregnancy or mistimed pregnancy})} = b_0 + b_1 (\text{assigned to BSF}) + b_2 (\text{mother's age at child's birth}) + b_3 (\text{Black}) + b_4 (\text{Hispanic}) + b_5 (\text{Other}) + b_6 (\text{child female}) + b_7 (\text{mother's household income}) + b_8 (\text{high school graduate}) + b_9 (\text{mother knows biological father of child less than a year}) + b_{10} (\text{frequency of attendance to religious services}) + b_{11} (\text{baseline psychological distress})$$

In the above model, the reference category for the independent variable (omitted from the model) is White. The above model includes city fixed effects for 8 cities where BSF programs occurred to adjust for clustering by city.

Next, I assess my research questions that are interested in main effects of unwanted pregnancy and mistimed pregnancy and maternal mental health and parenting behaviors.

***Is there an association between having an unwanted pregnancy or mistimed pregnancy and mother's mental health and parenting behaviors when children are 3? To***

assess the presence of main effects of unwanted pregnancy and mistimed pregnancy for all of my independent variables of interest, I utilize the following Model 1 for each measure of maternal mental health and parenting behaviors for mothers who are single at baseline and mothers who are cohabiting with the child's biological father at baseline:

$$Y_{(\text{mental health or parenting outcome})} = b_0 + b_1 (\text{unwanted pregnancy or mistimed pregnancy}) + b_2 (\text{assigned to BSF}) + b_3 (\text{mother's age at child's birth}) + b_4 (\text{Black}) + b_5 (\text{Hispanic}) + b_6 (\text{Other}) + b_7 (\text{child female}) + b_8 (\text{mother's household income}) + b_9 (\text{high school graduate})$$

+  $b_{10}$  (mother knows biological father of child less than a year) +  $b_{11}$  (frequency of attendance to religious services) +  $b_{12}$  (baseline psychological distress)

In the above model, the reference category (omitted from the model) is White. For the spanking outcome, I utilize logistic regression with the same set of covariates to assess the potential association between unwanted pregnancy and mistimed pregnancy and discipline, as it is a more appropriate model for that outcome. Since the BSF Project was sampled at the city level similarly to the FFCWS, I again utilized 8 city fixed effects in all models. In terms of ability to answer my stated research questions, the presence of main effects for unwanted and mistimed pregnancy will be determined by the size, sign, and statistically significant p-value of  $b_1$ .

Just as was done for the FFCWS, a Model 2 was assessed for mothers who were single and mothers who were cohabiting with the child's biological father at baseline in which longitudinal relationship status with the biological father was added as an additional control. The following Model 2 is what was fitted for mothers who were single at baseline:

$$Y_{(\text{mental health or parenting outcome})} = b_0 + b_1 (\text{unwanted pregnancy or mistimed pregnancy}) + b_2 (\text{assigned to BSF}) + b_3 (\text{stably single from child's birth to when the child is 3}) + b_4 (\text{mother's age at child's birth}) + b_5 (\text{Black}) + b_6 (\text{Hispanic}) + b_7 (\text{Other}) + b_8 (\text{child female}) + b_9 (\text{mother's household income}) + b_{10} (\text{high school graduate}) + b_{11} (\text{mother knows biological father of child less than a year}) + b_{12} (\text{frequency of attendance to religious services}) + b_{13} (\text{baseline psychological distress})$$

In the above model, the reference category (omitted from the model) is White. Again, I utilize logistic regression for the spanking outcome and include 8 city fixed effects in all models. In terms of ability to answer my stated research questions, the presence of main effects for unwanted and mistimed pregnancy will be determined by the size, sign, and statistically

significant p-value of  $b_1$  and most likely change due to the inclusion of the longitudinal relationship control.

The following Model 2 is what was fitted for mothers who were cohabiting with the child's biological father at baseline:

$$Y_{\text{(mental health or parenting outcome)}} = b_0 + b_1 \text{ (unwanted pregnancy or mistimed pregnancy)} + b_2 \text{ (assigned to BSF)} + b_3 \text{ (broke-up with biological father by the time child is 3)} + b_4 \text{ (mother's age at child's birth)} + b_5 \text{ (Black)} + b_6 \text{ (Hispanic)} + b_7 \text{ (Other)} + b_8 \text{ (child female)} + b_9 \text{ (mother's household income)} + b_{10} \text{ (high school graduate)} + b_{11} \text{ (mother knows biological father of child less than a year)} + b_{12} \text{ (frequency of attendance to religious services)} + b_{13} \text{ (baseline psychological distress)}$$

In the above model, the reference category (omitted from the model) is White. Again, I utilize logistic regression for the spanking outcome and include 8 city fixed effects in all models. The presence of main effects for unwanted and mistimed pregnancy will be determined by the size, sign, and statistically significant p-value of  $b_1$  and again will most likely change due to the inclusion of the longitudinal relationship control.

***Do maternal demographics (income and education) moderate the associations between unintended pregnancies and maternal mental health and parenting behaviors at child age 3?*** In order to examine the possible moderating effects of maternal demographics on mistimed and unwanted pregnancies, I created 2 interaction variables that will represent the interaction between income and education and mistimed and unwanted pregnancies respectively. Again, models were fitted separately based on family structure reported at baseline.

***Moderation by income.*** The following Model 1 is what was fitted for both single and cohabiting mother groups:

$$Y_{\text{(mental health or parenting outcome)}} = b_0 + b_1 \text{ (unwanted pregnancy or mistimed pregnancy)} + b_2 \text{ (assigned to BSF)} + b_3 \text{ (mother's age at child's birth)} + b_4 \text{ (Black)} + b_5 \text{ (Hispanic)} + b_6 \text{ (Other)} + b_7 \text{ (child female)} + b_8 \text{ (mother's household income)} + b_9 \text{ (unwanted pregnancy or mistimed pregnancy x mother's household income)} + b_{10} \text{ (high school graduate)} + b_{11} \text{ (mother knows biological father of child less than a year)} + b_{12} \text{ (frequency of attendance to religious services)} + b_{13} \text{ (baseline psychological distress)}$$

In the above model, the reference category is White and 8 city fixed effects were included to correct for clustering on the city level. The interaction between unwanted pregnancy or mistimed pregnancy and mother's household income, will be evaluated by the size, sign, and p-value of  $b_9$ .

The following Model 2 takes into account the longitudinal relationship between mothers and their child's biological father and is what was fitted for mothers who reported being single at baseline:

$$Y_{\text{(mental health or parenting outcome)}} = b_0 + b_1 \text{ (unwanted pregnancy or mistimed pregnancy)} + b_2 \text{ (assigned to BSF)} + b_3 \text{ (stably single from child's birth to when the child is 3)} + b_4 \text{ (mother's age at child's birth)} + b_5 \text{ (Black)} + b_6 \text{ (Hispanic)} + b_7 \text{ (Other)} + b_8 \text{ (child female)} + b_9 \text{ (mother's household income)} + b_{10} \text{ (unwanted pregnancy or mistimed pregnancy x mother's household income)} + b_{11} \text{ (high school graduate)} + b_{12} \text{ (mother knows biological father of child less than a year)} + b_{13} \text{ (frequency of attendance to religious services)} + b_{14} \text{ (baseline psychological distress)}$$

In the above model, the reference category is White and 8 city fixed effects were included to correct for clustering on the city level. The interaction between unwanted pregnancy or mistimed pregnancy and mother's household income, will be evaluated by the size, sign, and p-value of  $b_{10}$ .

The following Model 2 takes into account the longitudinal relationship between mothers and their child's biological father and is what was fitted for mothers who reported cohabiting with the child's biological father at baseline:

$$Y_{(\text{mental health or parenting outcome})} = b_0 + b_1 (\text{unwanted pregnancy or mistimed pregnancy}) + b_2 (\text{assigned to BSF}) + b_3 (\text{broke-up with biological father by the time child is 3}) + b_4 (\text{mother's age at child's birth}) + b_5 (\text{Black}) + b_6 (\text{Hispanic}) + b_7 (\text{Other}) + b_8 (\text{child female}) + b_9 (\text{mother's household income}) + b_{10} (\text{unwanted pregnancy or mistimed pregnancy} \times \text{mother's household income}) + b_{11} (\text{high school graduate}) + b_{12} (\text{mother knows biological father of child less than a year}) + b_{13} (\text{frequency of attendance to religious services}) + b_{14} (\text{baseline psychological distress})$$

In the above model, the reference category is White and 8 city fixed effects were included to correct for clustering on the city level. The interaction between unwanted pregnancy or mistimed pregnancy and mother's household income, will be evaluated by the size, sign, and p-value of  $b_{10}$ .

***Moderation by maternal baseline education.*** The following Model 1 is what was fitted for both single and cohabiting mother groups:

$$Y_{(\text{mental health or parenting outcome})} = b_0 + b_1 (\text{unwanted pregnancy or mistimed pregnancy}) + b_2 (\text{assigned to BSF}) + b_3 (\text{mother's age at child's birth}) + b_4 (\text{Black}) + b_5 (\text{Hispanic}) + b_6 (\text{Other}) + b_7 (\text{child female}) + b_8 (\text{mother's household income}) + b_9 (\text{high school graduate}) + b_{10} (\text{unwanted pregnancy or mistimed pregnancy} \times \text{high school graduate}) + b_{11} (\text{mother knows biological father of child less than a year}) + b_{12} (\text{frequency of attendance to religious services}) + b_{13} (\text{baseline psychological distress})$$

In the above model, the reference category is White and 8 city fixed effects were included to correct for clustering on the city level. The interaction between unwanted pregnancy or mistimed pregnancy and maternal baseline education, will be evaluated by the size, sign, and p-value of  $b_{10}$ .

The following Model 2 takes into account the longitudinal relationship between mothers and their child's biological father and is what was fitted for mothers who reported being single at baseline:

$$Y_{(\text{mental health or parenting outcome})} = b_0 + b_1 (\text{unwanted pregnancy or mistimed pregnancy}) + b_2 (\text{assigned to BSF}) + b_3 (\text{stably single from child's birth to when the child is 3}) + b_4 (\text{mother's age at child's birth}) + b_5 (\text{Black}) + b_6 (\text{Hispanic}) + b_7 (\text{Other}) + b_8 (\text{child female}) + b_9 (\text{mother's household income}) + b_{10} (\text{high school graduate}) + b_{11} (\text{unwanted pregnancy or mistimed pregnancy} \times \text{high school graduate}) + b_{12} (\text{mother knows biological father of child less than a year}) + b_{13} (\text{frequency of attendance to religious services}) + b_{14} (\text{baseline psychological distress})$$

In the above model, the reference category is White and 8 city fixed effects were included to correct for clustering on the city level. The interaction between unwanted pregnancy or mistimed pregnancy and maternal baseline education, will be evaluated by the size, sign, and p-value of  $b_{11}$ .

The following Model 2 takes into account the longitudinal relationship between mothers and their child's biological father and is what was fitted for mothers who reported cohabiting with the child's biological father at baseline:

$$Y_{(\text{mental health or parenting outcome})} = b_0 + b_1 (\text{unwanted pregnancy or mistimed pregnancy}) + b_2 (\text{assigned to BSF}) + b_3 (\text{broke-up with biological father by the time child is 3}) + b_4$$



(mother's age at child's birth) +  $b_5$  (Black) +  $b_6$  (Hispanic) +  $b_7$  (Other) +  $b_8$  (child female) +  $b_9$  (mother's household income) +  $b_{10}$  (high school graduate) +  $b_{11}$  (unwanted pregnancy or mistimed pregnancy x high school graduate) +  $b_{12}$  (mother knows biological father of child less than a year) +  $b_{13}$  (frequency of attendance to religious services) +  $b_{14}$  (baseline psychological distress)

In the above model, the reference category is White and 8 city fixed effects were included to correct for clustering on the city level. The interaction between unwanted pregnancy or mistimed pregnancy and maternal baseline education, will be evaluated by the size, sign, and p-value of  $b_{11}$ .

*Does access to relationship building programs, such as the BSF Program (group sessions, Family coordinators, and referrals to support services), serve as protective factors for women with unintended pregnancies?* In order to answer this last research question I create an interaction term between BSF program assignment and mistimed pregnancy and unwanted pregnancy respectively.

The following Model 1 is what was fitted for both single and cohabiting mother groups:

$$Y_{(\text{mental health or parenting outcome})} = b_0 + b_1 (\text{unwanted pregnancy or mistimed pregnancy}) + b_2 (\text{assigned to BSF}) + b_3 (\text{unwanted pregnancy or mistimed pregnancy} \times \text{assigned to BSF}) + b_4 (\text{mother's age at child's birth}) + b_5 (\text{Black}) + b_6 (\text{Hispanic}) + b_7 (\text{Other}) + b_8 (\text{child female}) + b_9 (\text{mother's household income}) + b_{10} (\text{high school graduate}) + b_{11} (\text{mother knows biological father of child less than a year}) + b_{12} (\text{frequency of attendance to religious services}) + b_{13} (\text{baseline psychological distress})$$

In the above model, the reference category is White and 8 city fixed effects were included to correct for clustering on the city level. The interaction between unwanted pregnancy or mistimed

pregnancy and assignment to a BSF program, will be evaluated by the size, sign, and p-value of  $b_3$ .

The following Model 2 takes into account the longitudinal relationship between mothers and their child's biological father and is what was fitted for mothers who reported being single at baseline:

$$Y_{(\text{mental health or parenting outcome})} = b_0 + b_1 (\text{unwanted pregnancy or mistimed pregnancy}) + b_2 (\text{assigned to BSF}) + b_3 (\text{unwanted pregnancy or mistimed pregnancy} \times \text{assigned to BSF}) + b_4 (\text{stably single from child's birth to when the child is 3}) + b_5 (\text{mother's age at child's birth}) + b_6 (\text{Black}) + b_7 (\text{Hispanic}) + b_8 (\text{Other}) + b_9 (\text{child female}) + b_{10} (\text{mother's household income}) + b_{11} (\text{high school graduate}) + b_{12} (\text{mother knows biological father of child less than a year}) + b_{13} (\text{frequency of attendance to religious services}) + b_{14} (\text{baseline psychological distress})$$

In the above model, the reference category is White and 8 city fixed effects were included to correct for clustering on the city level. The interaction between unwanted pregnancy or mistimed pregnancy and assignment to a BSF program, will be evaluated by the size, sign, and p-value of  $b_3$ .

The following Model 2 takes into account the longitudinal relationship between mothers and their child's biological father and is what was fitted for mothers who reported cohabiting with the child's biological father at baseline:

$$Y_{(\text{mental health or parenting outcome})} = b_0 + b_1 (\text{unwanted pregnancy or mistimed pregnancy}) + b_2 (\text{assigned to BSF}) + b_3 (\text{unwanted pregnancy or mistimed pregnancy} \times \text{assigned to BSF}) + b_4 (\text{broke-up with biological father by the time child is 3}) + b_5 (\text{mother's age at child's birth}) + b_6 (\text{Black}) + b_7 (\text{Hispanic}) + b_8 (\text{Other}) + b_9 (\text{child female}) + b_{10} (\text{mother's}$$

household income) +  $b_{11}$  (high school graduate) +  $b_{12}$  (mother knows biological father of child less than a year) +  $b_{13}$  (frequency of attendance to religious services) +  $b_{14}$  (baseline psychological distress)

In the above model, the reference category is White and 8 city fixed effects were included to correct for clustering on the city level. The interaction between unwanted pregnancy or mistimed pregnancy and assignment to a BSF program, will be evaluated by the size, sign, and p-value of  $b_3$ .

## **Chapter 4**

### **RESULTS**

#### **FFCWS**

##### **Covariates Associated with Considering Abortion**

**Covariates for mother's consideration.** Forty percent of single mothers in the FFCWS indicated that they had considered an abortion prior to their child's birth. Logistic regression results presented in Table 17 below shows that single mothers had greater odds of reporting having considered an abortion if they were Black compared to White, reported having first visited the doctor for their pregnancy in the second trimester or later, if they had reported drinking during pregnancy, and if they had reported doing drugs during pregnancy. Being older in age at their child's birth, attending religious services at a higher frequency, and the focal child being the mother's first were all associated with reduced odds in having considered an abortion for single mothers. Twenty-six percent of cohabiting mothers in the FFCWS reported that they had considered an abortion. Table 17 shows that being Black compared to White, reported having first visited the doctor for their pregnancy in the second trimester or later, reported drinking during pregnancy, and reported doing drugs during pregnancy were associated with greater odds that cohabiting mothers considered an abortion. If the focal child was the cohabiting mother's first child, there was a reduced odds of her having considered abortion.

Table 17. Covariates for mother's consideration of abortion by family structure.

	Single (n=1,616)	Cohabiting (n=1,527)
Mother's age at child's birth	0.963** (0.011)	0.982 (0.013)
Maternal race/ethnicity (ref: White)		
Black	2.164*** (0.448)	1.892** (0.382)
Hispanic	1.338 (0.323)	0.687 (0.162)
Other	1.372 (0.526)	0.979 (0.424)
Mother's household income/poverty threshold	1.059 (0.049)	0.987 (0.041)
Maternal education (ref: college)		
<High school	0.647 (0.235)	0.864 (0.373)
High school	0.964 (0.347)	1.005 (0.428)
Some college	0.835 (0.294)	1.362 (0.571)
Frequency of attendance to religious services	0.856*** (0.034)	0.825 (0.041)
First visited the doctor for pregnancy at or after 4 <sup>th</sup> month of pregnancy	1.570*** (0.200)	1.708*** (0.269)
This pregnancy is mother's first child	0.484*** (0.062)	0.501*** (0.078)
Mother drank during pregnancy	2.055*** (0.375)	1.577** (0.342)
Mother did drugs during pregnancy	1.725* (0.376)	3.019*** (0.795)
Intercept	1.994 (1.220)	1.340 (0.923)
<i>R</i> <sup>2</sup>	0.093	0.118

*Note.* Table presents odds ratios (SEs). City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Results reflect imputed data for predictors only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

**Covariates for Mother's Consideration of Abortion Exclusive of Father's Consideration**

Thirty-one percent of single mothers in the FFCWS indicated that they had considered an abortion when their child's biological father had not. Logistic regression results presented in Table 18 below shows that single mothers had greater odds of reporting having considered an abortion if they were Black compared to White, reported having first visited the doctor for their pregnancy in the second trimester or later, if they had reported drinking during pregnancy, and if they had reported doing drugs during pregnancy. Single mothers were less likely to consider an abortion if they were older in age at their child's birth, attended religious services at a higher frequency, and if this pregnancy was their first. Twenty-two percent of cohabiting mothers in the FFCWS reported that they had considered an abortion when the biological father did not. Table 18 also shows that cohabiting mothers had greater odds of considering an abortion when the child's biological father had not considered, if they were Black compared to White, reported having first visited the doctor for their pregnancy in the second trimester or later, and reported doing drugs during pregnancy. If cohabiting mothers attended more religious services and if the focal child was the mother's first, then they were less likely to consider an abortion when the child's father had not.

Table 18. Covariates for mother's consideration of abortion exclusive of biological father's consideration by family structure.

	Single ( <i>n</i> =1,596)	Cohabiting ( <i>n</i> =1,509)
Mother's age at child's birth	0.972* (0.012)	0.984 (0.014)
Maternal race/ethnicity (ref: White)		
Black	1.946** (0.442)	2.238*** (0.483)
Hispanic	1.210 (0.319)	0.688 (0.177)
Other	1.962 (0.783)	1.258 (0.567)
Mother's household income/poverty threshold	0.977 (0.050)	1.024 (0.045)
Maternal education (ref: college)		
<High school	0.795 (0.314)	1.108 (0.522)
High school	0.985 (0.386)	1.300 (0.604)
Some college	0.891 (0.343)	1.523 (0.697)
Frequency of attendance to religious services	0.886** (0.037)	0.874* (0.046)
First visited the doctor for pregnancy at or after 4 <sup>th</sup> month of pregnancy	1.724*** (0.226)	1.609** (0.266)
This pregnancy is mother's first child	0.529*** (0.073)	0.477* (0.079)
Mother drank during pregnancy	2.065*** (0.387)	1.463 (0.341)
Mother did drugs during pregnancy	1.444*** (0.321)	2.037* (0.559)
Intercept	1.190 (0.539)	0.664 (0.490)
<i>R</i> <sup>2</sup>	0.080	0.118

*Note.* Table presents odds ratios (SEs). City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Results reflect imputed data for predictors only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

**Covariates for Mother's and Father's Consideration of Abortion**

Table 2 in Appendix A represents results from a multinomial logistic regression with categories of abortion (neither mother nor biological father considered an abortion as the reference group) conducted with the FFCWS sample of single and cohabiting families.

**Single families.** For single families, 9% of mothers reported that both she and the child's biological father considered an abortion, 9% of mothers reported that the father had only considered, and 31% reported that they were the only ones to consider an abortion.

**Mothers considered abortion only.** Single mothers who were Black compared to White ( $RR = 1.989, p < 0.01$ ), first visited the doctor at or after the 4<sup>th</sup> month of pregnancy ( $RR = 1.733, p < 0.001$ ), and drank during pregnancy ( $RR = 2.192, p < 0.001$ ) had a greater relative risk ratio to report having considered an abortion when the father did not. Whereas, single mothers who were older in age at their child's birth ( $RR = 0.969, p < 0.05$ ), who attended religious services more frequently ( $RR = 0.843, p < 0.001$ ), and the current pregnancy was their first child ( $RR = 0.485, p < 0.001$ ) had a lower relative risk ratio to report having considered an abortion when the father had not.

**Fathers considered abortion only.** Mothers who were Hispanic compared to White ( $RR = 0.446, p < 0.05$ ) and who attended religious services more frequently ( $RR = 0.865, p < 0.05$ ) were less likely to report that the child's biological father asked them for an abortion when they did not consider themselves.

**Both parents considered abortion.** Single families who were more likely to have considered an abortion were Black compared to White ( $RR = 2.130, p < 0.05$ ) and had greater income ( $RR = 1.179, p < 0.05$ ). Single families were less likely to have considered an abortion if the mother was older at the child's birth ( $RR = 0.957, p < 0.05$ ), if the mother attended religious



services more frequently ( $RR = 0.803, p < 0.01$ ), and if this pregnancy was the mother's first child ( $RR = 0.530, p < 0.01$ ).

**Cohabiting Families.** For cohabiting families, 4% of mothers reported that both she and the child's biological father considered an abortion, 3% of mothers reported that the father had only considered, and 22% reported that they were the only ones to consider.

**Mothers considered abortion only.** Cohabiting mothers who were Black compared to White ( $RR = 2.231, p < 0.001$ ), first visited the doctor at or after the 4<sup>th</sup> month of pregnancy ( $RR = 1.664, p < 0.01$ ), drank during pregnancy ( $RR = 1.667, p < 0.05$ ), and did drugs during pregnancy ( $RR = 2.666, p < 0.05$ ) were more likely to have considered an abortion when the child's father had not. Cohabiting mothers who attended more religious services ( $RR = 0.849, p < 0.01$ ) and indicated that this pregnancy was their first ( $RR = 0.467, p < 0.001$ ) were less likely to have considered an abortion when the child's father had not.

**Fathers considered abortion only.** I fail to identify any statistically significant covariates associated with cohabiting fathers asking their child's mother to have an abortion when she did not consider herself.

**Both parents considered abortion.** Cohabiting families who were more likely to have considered an abortion if mothers reported drinking during pregnancy ( $RR = 2.251, p < 0.05$ ) or doing drugs during pregnancy ( $RR = 4.822, p < 0.001$ ). Cohabiting families were less likely to have considered an abortion if the mother attended religious services more frequently ( $RR = 0.684, p < 0.01$ ).

### **Consideration of Abortion and Changes in Relationship Status**

**Single mothers at child's birth.** Table 19 below indicates that single mothers who considered an abortion were less likely to become romantic with the child's biological father by

the time the child was 1. The identified association remains stable once controlling for baseline and maternal demographic variables in Model 2.

Table 19. Associations between considering an abortion and single mother relationship status with the child's biological father when the child is 1.

	Becoming romantic with biological father at 1 ( <i>n</i> = 1,527)	
	Model 1	Model 2
Mother considered abortion	0.737** (0.081)	0.712** (0.082)
<i>R</i> <sup>2</sup>	0.023	0.045

*Note.* Table presents odds ratios (SEs). City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Model 2 controls for baseline and demographic covariates. Results reflect imputed data for covariates only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

Table 20 represents results from a multinomial logistic regression with categories of longitudinal relationship status (stably romantic from 1 to 3 as the reference group). Results indicate that considering an abortion increases the odds that a single mother remains stably non-romantic with the child's biological father compared to being stably romantic with him. The identified association remains statistically significant after controlling for baseline and demographic variables in Model 2.

Table 20. Associations between considering an abortion and single mother relationship status with the child's biological father when the child is 3. Reference group is single mother was stably romantic with child's biological father from 1 to 3.

	Stably not romantic		Romantic when child is 1 and break-up by 3		Not romantic when child is 1 but become romantic by age 3	
	(n = 1,499)					
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Mother considered abortion	1.457** (0.193)	1.471** (0.205)	1.193 (0.209)	1.138 (0.208)	1.371 (0.349)	1.437 (0.386)
$R^2$	0.022	0.041	0.022	0.041	0.022	0.041

*Note.* Table presents odds ratios (SEs). City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Model 2 controls for baseline and demographic covariates. Results reflect imputed data for covariates only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

**Cohabiting mothers at child's birth.** Model 1 of Table 21 below indicates that cohabiting mothers who considered an abortion were less likely to become romantic with the child's biological father by the time the child was 1-year-old. Yet, once controlling for baseline and demographic covariates, the association became no longer statistically significant. As indicated in Table 22 no associations between considering an abortion and relationship with the child's biological father when the child was 3 were identified.

Table 21. Associations between considering an abortion and cohabiting mother relationship status with the child's biological father when the child is 1.

	Break-up by 1	
	(n = 1,441)	
	Model 1	Model 2
Mother considered abortion	1.369* (0.198)	1.191 (0.184)
<i>R</i> <sup>2</sup>	0.031	0.054

*Note.* Table presents odds ratios (SEs). City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Model 2 controls for baseline and demographic covariates. Results reflect imputed data for covariates only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

Table 22. Associations between considering an abortion and cohabiting mother relationship status with the child's biological father when the child is 3.

	Break-up by 3	
	<i>(n = 1,525)</i>	
	Model 1	Model 2
Mother considered abortion	1.252 (0.158)	1.186 (0.158)
<i>R</i> <sup>2</sup>	0.039	0.048

*Note.* Table presents odds ratios (SEs). City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Model 2 controls for baseline and demographic covariates. Results reflect imputed data for covariates only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

### **Consideration of Abortion and Age 1 Outcomes**

Table 3 in Appendix A reports all OLS regression results for single mothers in terms of associations between consideration of abortion and depressive symptoms, parenting stress, engagement in parenting activities, and spanking behaviors controlling for a number of important demographic and socioeconomic covariates. Table 4 in Appendix A reports all OLS regression models fitted for cohabiting mothers. Below I will reproduce results for consideration of abortion by maternal mental health and parenting outcomes separately to facilitate ease of interpretation.

**Maternal mental health.** The following sections present findings regarding possible associations between mother's consideration of abortion and depressive symptoms and parenting stress when the child is 1-year-old.

*Single mothers at child's birth.* According to Model 2 in Table 23 below, mother's consideration of abortion was associated with greater odds of reporting depressive symptoms ( $OR = 1.372, p < 0.05$ ). Once taking into account relationship with the biological father when the child is 1 (Model 4), the association between mother's consideration of abortion and report of depressive symptoms is no longer statistically significant.

Table 23. Associations between single mother's consideration of abortion and self-reported depressive symptoms when the child is 1-year-old.

	Depressive symptoms			
	Model 1	Model 2	Model 3	Model 4
	( <i>n</i> =1,527)	( <i>n</i> =1,527)	( <i>n</i> =1,509)	( <i>n</i> =1,509)
Mother considered abortion	1.360* (0.172)	1.372* (0.182)	1.317* (0.177)	1.288 (0.174)
Mother's report that bio dad asked for an abortion			1.346 (0.219)	1.309 (0.214)
Becomes romantic with biological father when child is 1				0.656** (0.213)
<i>R</i> <sup>2</sup>	0.010	0.040	0.043	0.048

*Note.* Table presents odds ratios (SEs). City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Models 2, 3, and 4 control for baseline and demographic covariates. Results reflect imputed data for covariates only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

Table 24 below shows that consideration of abortion was also found to be associated with increased parenting stress ( $\beta = 0.189, p < 0.01$ ). The identified association holds when controlling for biological father's consideration of abortion (Model 3) and relationships status with the child's biological father when the child is 1 (Model 4).

Table 24. Associations between single mother's consideration of abortion and self-reported parenting stress when the child is 1-year-old.

	Parenting stress			
	Model 1	Model 2	Model 3	Model 4
	( <i>n</i> =1,336)	( <i>n</i> =1,336)	( <i>n</i> =1,331)	( <i>n</i> =1,331)
Mother considered abortion	0.217*** (0.059)	0.189** (0.060)	0.181** (0.061)	0.163** (0.061)
Mother's report that bio dad asked for an abortion			0.106 (0.077)	0.081 (0.077)
Becomes romantic with biological father when child is 1				-0.272*** (0.059)
<i>R</i> <sup>2</sup>	0.023	0.052	0.053	0.069

*Note.* Table presents unstandardized regression coefficients (SEs). City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Models 2, 3, and 4 control for baseline and demographic covariates. Results reflect imputed data for covariates only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .



***Cohabiting mothers at child's birth.*** According to Model 2 in Table 25 below, mother's consideration of abortion was associated with greater odds of reporting depressive symptoms ( $OR = 1.386, p < 0.05$ ). Once taking into account father's consideration of abortion (Model 3), the association between mother's consideration of abortion and depressive symptoms is no longer statistically significant.

Table 25. Associations between cohabiting mother's consideration of abortion and self-reported depressive symptoms when the child is 1-year-old.

	Depressive symptoms			
	Model 1	Model 2	Model 3	Model 4
	( $n=1,445$ )	( $n=1,445$ )	( $n=1,430$ )	( $n=1,430$ )
Mother considered abortion	1.546** (0.220)	1.386* (0.212)	1.317 (0.206)	1.311 (0.205)
Mother's report that bio dad asked for an abortion			1.746 (0.412)	1.690* (0.401)
Breaks up with child's biological father by the time the child is 1				1.334 (0.211)
$R^2$	0.023	0.051	0.053	0.055

*Note.* Table presents odds ratios (SEs). City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Models 2, 3, and 4 control for baseline and demographic covariates. Results reflect imputed data for covariates only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

Table 26 below shows that cohabiting mother's consideration of abortion was also found to be associated with increased parenting stress ( $\beta = 0.219, p < 0.01$ ). The identified association holds when controlling for biological father's consideration of abortion (Model 3) and relationships status with the child's biological father when the child is 1 (Model 4).

Table 26. Associations between cohabiting mother's consideration of abortion and self-reported parenting stress when the child is 1-year-old.

	Parenting stress			
	Model 1	Model 2	Model 3	Model 4
	( <i>n</i> =1,336)	( <i>n</i> =1,225)	( <i>n</i> =1,224)	( <i>n</i> =1,331)
Mother considered abortion	0.272*** (0.065)	0.219** (0.068)	0.195** (0.068)	0.190** (0.068)
Mother's report that bio dad asked for an abortion			0.250 (0.114)	0.231* (0.114)
Breaks up with child's biological father by the time the child is 1				0.172* (0.069)
<i>R</i> <sup>2</sup>	0.028	0.058	0.062	0.067

*Note.* Table presents unstandardized regression coefficients (SEs). City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Models 2, 3, and 4 control for baseline and demographic covariates. Results reflect imputed data for covariates only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

**Parenting behaviors.** The following section presents findings regarding possible associations between mother's consideration of abortion and engagement in parenting activities and spanking behaviors assessed when the child is 1-year-old.

**Single mothers at child's birth.** As evidenced below in Table 27, no statistically significant association between single mother's consideration of abortion and engagement in parenting was identified.

Table 27. Associations between single mother's consideration of abortion and self-reported engagement in parenting activities when the child is 1-year-old.

	Engagement in parenting			
	Model 1	Model 2	Model 3	Model 4
	(n=1,336)	(n=1,336)	(n=1,331)	(n=1,331)
Mother considered abortion	-0.080 (0.056)	-0.024 (0.058)	-0.018 (0.058)	-0.011 (0.058)
Mother's report that bio dad asked for an abortion			-0.054 (0.073)	-0.045 (0.073)
Becomes romantic with biological father when child is 1				0.096 (0.057)
<i>R</i> <sup>2</sup>	0.029	0.074	0.073	0.075

*Note.* Table presents unstandardized regression coefficients (SEs). City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Models 2, 3, and 4 control for baseline and demographic covariates. Results reflect imputed data for covariates only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

Table 28 below shows that single mothers who considered an abortion have a greater odds of reporting spanking in the past month. This association remained relatively unchanged when controlling for biological father's consideration of abortion (Model 3) and whether the parents became romantically involved by the time the child is 1 (Model 4).

Table 28. Associations between single mother's consideration of abortion and whether reported spanking in past month when the child is 1-year-old.

	Spanking			
	Model 1	Model 2	Model 3	Model 4
	( <i>n</i> =1,515)	( <i>n</i> =1,515)	( <i>n</i> =1,499)	( <i>n</i> =1,499)
Mother considered abortion	1.456** (0.172)	1.548** (0.196)	1.527** (0.195)	1.532** (0.197)
Mother's report that bio dad asked for an abortion			1.156 (0.184)	1.161 (0.185)
Becomes romantic with biological father when child is 1				1.051 (0.133)
<i>R</i> <sup>2</sup>	0.102	0.142	0.144	0.144

*Note.* Table presents unstandardized regression coefficients (SEs). City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Models 2, 3, and 4 control for baseline and demographic covariates. Results reflect imputed data for covariates only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

***Cohabiting mothers at child's birth.*** In Table 29, cohabiting mother's consideration of abortion is shown to be associated with lower engagement in parenting when the child is 1-year-old. This identified association remains statistically significant once biological father's consideration of abortion (Model 3) and whether mother and father break-up by the time the child is 1 (Model 4) are controlled.

Table 29. Associations between cohabiting mother's consideration of abortion and self-reported engagement in parenting activities when the child is 1-year-old.

	Engagement in parenting			
	Model 1	Model 2	Model 3	Model 4
	( <i>n</i> =1,226)	( <i>n</i> =1,226)	( <i>n</i> =1,225)	( <i>n</i> =1,225)
Mother considered abortion	-0.227** (0.065)	-0.178** (0.067)	-0.155* (0.067)	-0.156* (0.067)
Mother's report that bio dad asked for an abortion			-0.286 (0.112)	-0.289* (0.113)
Breaks up with child's biological father by the time the child is 1				0.034 (0.068)
<i>R</i> <sup>2</sup>	0.036	0.085	0.089	0.090

*Note.* Table presents unstandardized regression coefficients (SEs). City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Models 2, 3, and 4 control for baseline and demographic covariates. Results reflect imputed data for covariates only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

In Table 30, cohabiting mother's consideration of abortion is only shown to be associated with increased odds of spanking within the past month, when no additional baseline and demographic covariates are controlled (Model 1).

Table 30. Associations between cohabiting mother's consideration of abortion and whether reported spanking in past month when the child is 1-year-old.

	Spanking			
	Model 1	Model 2	Model 3	Model 4
	(n=1,436)	(n=1,436)	(n=1,421)	(n=1,421)
Mother considered abortion	1.347* (0.220)	1.278 (0.196)	1.228 (0.192)	1.227 (0.192)
Mother's report that bio dad asked for an abortion			1.515 (0.370)	1.511 (0.369)
Breaks up with child's biological father by the time the child is 1				1.034 (0.161)
<i>R</i> <sup>2</sup>	0.105	0.149	0.148	0.148

*Note.* Table presents odds ratios (SEs). City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Models 2, 3, and 4 control for baseline and demographic covariates. Results reflect imputed data for covariates only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

**Co-parenting when child is 1.** The following section presents findings regarding possible associations between mother's consideration of abortion and self-reported co-parenting quality assessed when the child is 1-year-old.

**Single mothers at child's birth.** There is some evidence suggesting that single mother's consideration of abortion is associated with lower quality co-parenting with the child's biological father when the child is 1. In Models 1, 2, and 3 of Table 31 below, this negative association is statistically significant. Yet, the association loses statistical significance in Model 4 when controlling for whether the single mother becomes romantic with the child's biological father at age 1. In Model 4, a negative association between father's consideration of abortion and co-parenting quality becomes statistically significant.

Table 31. Associations between single mother's consideration of abortion and co-parenting quality with the child's biological father when the child is 1-year-old.

	Co-parenting with child's biological father			
	Model 1	Model 2	Model 3	Model 4
	(n=1,097)	(n=1,097)	(n=1,095)	(n=1,095)
Mother considered abortion	-0.208** (0.073)	-0.226** (0.076)	-0.018* (0.076)	-0.108 (0.066)
Mother's report that bio dad asked for an abortion			-0.376 (0.099)	-0.305*** (0.085)
Becomes romantic with biological father when child is 1				1.197*** (0.063)
<i>R</i> <sup>2</sup>	0.028	0.055	0.069	0.308

*Note.* Table presents unstandardized regression coefficients (SEs). City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Models 2, 3, and 4 control for baseline and demographic covariates. Results reflect imputed data for covariates only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

***Cohabiting mothers at child's birth.*** As shown in Table 32, consideration of abortion is associated with lower quality reported co-parenting with the child's biological father when the child is 1-year-old. While the beta coefficient for cohabiting mother's consideration of abortion in Model 4 is reduced in considerable size and statistical significance by the inclusion of breaking up with the biological father by age 1, the association does remain statistically significant at the  $p < 0.05$  level ( $\beta = -0.131, p < 0.05$ ).

Table 32. Associations between cohabiting mother's consideration of abortion and co-parenting quality with the child's biological father when the child is 1-year-old.

	Co-parenting with child's biological father			
	Model 1	Model 2	Model 3	Model 4
	( $n=1,199$ )	( $n=1,199$ )	( $n=1,198$ )	( $n=1,198$ )
Mother considered abortion	-0.174** (0.060)	-0.190** (0.063)	-0.175** (0.063)	-0.131* (0.054)
Mother's report that bio dad asked for an abortion			-0.192 (0.106)	-0.058 (0.091)
Breaks up with child's biological father by the time the child is 1				-1.175*** (0.057)
$R^2$	0.030	0.042	0.045	0.303

*Note.* Table presents unstandardized regression coefficients (SEs). City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Models 2, 3, and 4 control for baseline and demographic covariates. Results reflect imputed data for covariates only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .



### Consideration of Abortion and Age 3 Outcomes

Table 6 in Appendix A reports all OLS regression results for single mothers in terms of associations between consideration of abortion and depressive symptoms, parenting stress, engagement in parenting activities, and spanking behaviors controlling for a number of important demographic and socioeconomic covariates. Table 9 in Appendix A reports all OLS regression models fitted for cohabiting mothers. Below I will reproduce results for consideration of abortion by maternal mental health and parenting outcomes separately to facilitate ease of interpretation.

**Maternal mental health.** The following sections present findings regarding possible associations between mother's consideration of abortion and depressive symptoms and parenting stress when the child is 3-years-old.

*Single mothers at child's birth.* According to Model 2 in Table 33 below, mother's consideration of abortion was associated with an increase in reported depressive symptoms ( $\beta = 0.146, p < 0.05$ ). This association ( $\beta = 0.117, p < 0.05$ ) remains statistically significant even after controlling for biological father's influence (mother's report that biological father asked for an abortion and the longitudinal relationship with the child's biological father when the child is 1 to 3) in Model 4.

Table 33. Associations between single mother's consideration of abortion and self-reported depressive symptoms when the child is 3-years-old.

	Depressive symptoms			
	Model 1	Model 2	Model 3	Model 4
	( <i>n</i> =1,508)	( <i>n</i> =1,508)	( <i>n</i> =1,489)	( <i>n</i> =1,489)
Mother considered abortion	0.165** (0.055)	0.146** (0.057)	0.127* (0.058)	0.117* (0.058)
Mother's report that bio dad asked for an abortion			0.178 (0.073)	0.162 (0.073)
Longitudinal relationship with bio dad (ref: stably romantic)				
Stably not romantic				0.274*** (0.069)
Romantic when child is 1 and break-up by age 3				0.198* (0.090)
Not romantic when child is 1 but become romantic by age 3				-0.034 (0.131)
<i>R</i> <sup>2</sup>	0.030	0.049	0.051	0.065

*Note.* Table presents unstandardized regression coefficients (SEs). City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Models 2, 3, and 4 control for baseline and demographic covariates. Results reflect imputed data for covariates only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

In Model 2 of Table 34, cohabiting mother's consideration of abortion is shown to be associated with increased parenting stress ( $\beta = 0.200, p < 0.001$ ). This association ( $\beta = 0.172, p < 0.01$ ) remains statistically significant even after controlling for biological father's

influence (mother's report that biological father asked for an abortion and the longitudinal relationship with the child's biological father when the child is 1 to 3) in Model 4.

Table 34. Associations between single mother's consideration of abortion and self-reported parenting stress when the child is 3-years-old.

	Parenting Stress			
	Model 1	Model 2	Model 3	Model 4
	( <i>n</i> =1,582)	( <i>n</i> =1,582)	( <i>n</i> =1,564)	( <i>n</i> =1,564)
Mother considered abortion	0.238*** (0.054)	0.200*** (0.055)	0.184** (0.056)	0.172** (0.056)
Mother's report that bio dad asked for an abortion			0.152* (0.069)	0.125 (0.069)
Longitudinal relationship with bio dad (ref: stably romantic)				
Stably not romantic				0.207** (0.066)
Romantic when child is 1 and break-up by age 3				-0.059 (0.088)
Not romantic when child is 1 but become romantic by age 3				-0.020 (0.126)
<i>R</i> <sup>2</sup>	0.028	0.055	0.057	0.069

*Note.* Table presents unstandardized regression coefficients (SEs). City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Models 2, 3, and 4 control for baseline and demographic covariates. Results reflect imputed data for covariates only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

***Cohabiting mothers at child’s birth.*** As shown in Table 35, consideration of abortion is associated with an increase in reported depressive symptoms depressive symptoms ( $\beta = 0.177, p < 0.01$ ). While the beta coefficient for cohabiting mother’s consideration of abortion in Model 4 is reduced in considerable size and statistical significance by the inclusion of breaking up with the biological father by age 1, the association does remain statistically significant at the  $p < 0.05$  level ( $\beta = 0.151, p < 0.05$ ).

Table 35. Associations between cohabiting mother’s consideration of abortion and self-reported depressive symptoms when the child is 3-years-old.

	Depressive symptoms			
	Model 1	Model 2	Model 3	Model 4
	(n=1,434)	(n=1,434)	(n=1,416)	(n=1,141)
Mother considered abortion	0.234*** (0.062)	0.177** (0.065)	0.157* (0.066)	0.151* (0.066)
Mother’s report that bio dad asked for an abortion			0.198 (0.108)	0.194 (0.108)
Breaks up with child’s biological father by the time the child is 3				0.151** (0.057)
<i>R</i> <sup>2</sup>	0.039	0.067	0.069	0.074

*Note.* Table presents unstandardized regression coefficients (SEs). City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Models 2, 3, and 4 control for baseline and demographic covariates. Results reflect imputed data for covariates only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

According to Model 2 of Table 36, mother's consideration of abortion was associated with an increase in reported parenting stress ( $\beta = 0.316, p < 0.001$ ). This association ( $\beta = 0.291, p < 0.01$ ) remains statistically significant in Model 4 when the biological father's influence is controlled (mother's report that biological father asked for an abortion and whether mother broke-up with the biological father by the time the child was 3).

Table 36. Associations between cohabiting mother's consideration of abortion and self-reported parenting stress when the child is 3-years-old.

	Parenting stress			
	Model 1	Model 2	Model 3	Model 4
	( <i>n</i> =1,500)	( <i>n</i> =1,500)	( <i>n</i> =1,482)	( <i>n</i> =1,482)
Mother considered abortion	0.336*** (0.059)	0.316*** (0.061)	0.299*** (0.062)	0.291*** (0.062)
Mother's report that bio dad asked for an abortion			0.066 (0.103)	0.066 (0.103)
Breaks up with child's biological father by the time the child is 3				0.093 (0.053)
<i>R</i> <sup>2</sup>	0.039	0.067	0.067	0.069

*Note.* Table presents unstandardized regression coefficients (SEs). City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Models 2, 3, and 4 control for baseline and demographic covariates. Results reflect imputed data for covariates only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

**Parenting behaviors.** The following section presents findings regarding possible associations between mother's consideration of abortion and engagement in parenting activities and spanking behaviors assessed when the child is 3-years-old.

*Single mothers at child's birth.* Table 7 in Appendix A shows that there were no statistically significant associations identified between mother's consideration of abortion and reported engagement in parenting or spanking behaviors when the child is 3-years-old. As shown in Table 37 below, there was a negative association between single mother's consideration of abortion and engagement in parenting identified in Model 1 which only controlled for city fixed effects. Yet, once other important baseline and demographic covariates were taken into account in Model 2, the association lost statistical significance.

Table 37 Associations between single mother’s consideration of abortion and self-reported engagement in parenting when the child is 3-years-old.

	Engagement in parenting			
	Model 1	Model 2	Model 3	Model 4
	(n=1,583)	(n=1,583)	(n=1,565)	(n=1,565)
Mother considered abortion	-0.113* (0.052)	-0.059 (0.054)	-0.058 (0.055)	-0.055 (0.055)
Mother’s report that bio dad asked for an abortion			-0.003 (0.068)	<0.001 (0.068)
Longitudinal relationship with bio dad (ref: stably romantic)				
Stably not romantic				-0.054 (0.066)
Romantic when child is 1 and break-up by age 3				-0.033 (0.087)
Not romantic when child is 1 but become romantic by age 3				-0.081 (0.130)
<i>R</i> <sup>2</sup>	0.021	0.048	0.047	0.048

*Note.* Table presents unstandardized regression coefficients (SEs). City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Models 2, 3, and 4 control for baseline and demographic covariates. Results reflect imputed data for covariates only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

Table 8 in Appendix A shows that there were no statistically significant associations between mother’s consideration of abortion and observed parenting (HOME warmth, HOME harsh parenting, or HOME learning). Table 38 below shows models evaluating possible

associations between spanking and observed parenting measures and single mother's consideration of abortion that only controlled for city fixed effects.

Table 38. Non-significant associations between single mother's consideration of abortion and spanking and observed measures of parenting when the child is 3-years-old.

	Spanking ( <i>n</i> =1,579)	Observed warmth ( <i>n</i> =850)	Observed harsh parenting ( <i>n</i> =852)	Observed home learning ( <i>n</i> =1,265)
Mother considered abortion	1.153 (0.121)	-0.023 (0.074)	0.089 (0.077)	-0.069 (0.056)
<i>R</i> <sup>2</sup>	0.026	0.099	0.073	0.078

*Note.* Table presents unstandardized regression coefficients (SEs). City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Results reflect imputed data for covariates only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

***Cohabiting mothers at child's birth.*** Table 10 in Appendix A depicts all OLS regression results for engagement in parenting and spanking behaviors controlling for a number of important demographic and socioeconomic covariates. Table 11 in Appendix A depicts associations between mother's consideration of abortion and observed parenting measures. According to Model 2 of Table 39, cohabiting mother's consideration of abortion was associated with a decrease in reported engagement in parenting ( $\beta = -0.250, p < 0.001$ ). This association ( $\beta = -0.234, p < 0.001$ ) remained stable after controlling for biological father's consideration of abortion and whether or not the mother broke-up with the biological father by the time the child was 3.



Table 39. Associations between cohabiting mother's consideration of abortion and self-reported engagement in parenting when the child is 3-years-old.

	Engagement in parenting			
	Model 1	Model 2	Model 3	Model 4
	( <i>n</i> =1,501)	( <i>n</i> =1,501)	( <i>n</i> =1,483)	( <i>n</i> =1,481)
Mother considered abortion	-0.231*** (0.059)	-0.250*** (0.061)	-0.236*** (0.062)	-0.234*** (0.062)
Mother's report that bio dad asked for an abortion			-0.088 (0.104)	-0.088 (0.104)
Breaks up with child's biological father by the time the child is 3				-0.033 (0.054)
<i>R</i> <sup>2</sup>	0.045	0.080	0.081	0.081

*Note.* Table presents unstandardized regression coefficients (SEs). City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Models 2, 3, and 4 control for baseline and demographic covariates. Results reflect imputed data for covariates only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

Table 40 shows the identified association between cohabiting mother's consideration of abortion and whether she reported spanking in the past month. Cohabiting mothers who considered an abortion were more likely to report spanking ( $OR = 1.652, p < 0.001$ ) and this identified association remained statistically significant in Model 4 ( $OR = 1.597, p < 0.01$ ) when the biological father's influence is controlled (mother's report that biological father asked for an abortion and whether mother broke-up with the biological father by the time the child was 3).

Table 40. Associations between cohabiting mother's consideration of abortion and whether reported spanking in past month when the child is 3-years-old.

	Spanking			
	Model 1	Model 2	Model 3	Model 4
	(n=1,500)	(n=1,500)	(n=1,482)	(n=1,480)
Mother considered abortion	1.660*** (0.207)	1.652*** (0.221)	1.600** (0.218)	1.597** (0.218)
Mother's report that bio dad asked for an abortion			1.390 (0.318)	1.394 (0.319)
Breaks up with child's biological father by the time the child is 1				1.074 (0.125)
$R^2$	0.056	0.097	0.097	0.097

*Note.* Table presents odds ratios (SEs). City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Models 2, 3, and 4 control for baseline and demographic covariates. Results reflect imputed data for covariates only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

Table 11 in Appendix A depicts associations between mother's consideration of abortion and observed parenting measures. According to Model 1 of Table 41, there is no evidence of a statistically significant association between cohabiting mother's consideration of abortion and observed warmth ( $\beta = 0.102, > 0.05$ ). Yet, when important baseline and demographic covariates are controlled in, the association between cohabiting mother's consideration of abortion observed warmth becomes statistically significant ( $\beta = 0.173, p < 0.05$ ). This identified positive association  $\beta = 0.175, p < 0.05$  holds in Model 4 when the biological

father's influence is controlled (mother's report that biological father asked for an abortion and whether mother broke-up with the biological father by the time the child was 3).

Table 41. Associations between cohabiting mother's consideration of abortion and observed warmth when the child is 3-years-old.

	Observed warmth			
	Model 1	Model 2	Model 3	Model 4
	( <i>n</i> =788)	( <i>n</i> =788)	( <i>n</i> =779)	( <i>n</i> =778)
Mother considered abortion	0.102 (0.078)	0.173* (0.081)	0.181* (0.062)	0.175* (0.082)
Mother's report that bio dad asked for an abortion			0.021 (0.136)	0.223 (0.136)
Breaks up with child's biological father by the time the child is 3				0.291 (0.073)
<i>R</i> <sup>2</sup>	0.085	0.155	0.155	0.157

*Note.* Table presents unstandardized regression coefficients (SEs). City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Models 2, 3, and 4 control for baseline and demographic covariates. Results reflect imputed data for covariates only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

No statistically significant associations between mother's consideration of abortion and other measures of observed parenting (HOME harsh parenting or HOME learning) were identified (Table 42 below).

Table 42. Insignificant associations between cohabiting mother's consideration of abortion and observed measures of parenting when the child is 3-years-old.

	Observed harsh parenting ( <i>n</i> =793)	Observed home learning ( <i>n</i> =1,210)
Mother considered abortion	-0.045 (0.078)	-0.085 (0.064)
<i>R</i> <sup>2</sup>	0.065	0.071

*Note.* Table presents unstandardized regression coefficients (SEs). City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Results reflect imputed data for covariates only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

***Co-parenting when child is 3.*** Table 12 in Appendix A shows results regarding associations between both single and cohabiting mothers' consideration of abortion and co-parenting with child's biological father. Results in Model 2 of Table 43 show that single mother's consideration of abortion is associated with reduced self-reported co-parenting with child's biological father for single mothers ( $\beta = -0.325, p < 0.01$ ). This association ( $\beta = -0.318, p < 0.001$ ) remains statistically significant in Model 4 when biological father's consideration of abortion and whether or not the mother broke-up with the father by age 3 were controlled.

Table 43. Associations between single mother's consideration of abortion and self-reported co-parenting with the child's biological father when the child is 3-years-old.

	Co-parenting with child's biological father			
	Model 1	Model 2	Model 3	Model 4
	( <i>n</i> =603)	( <i>n</i> =603)	( <i>n</i> =601)	( <i>n</i> =601)
Mother considered abortion	-0.242* (0.094)	-0.325** (0.098)	-0.320** (0.099)	-0.318*** (0.083)
Mother's report that bio dad asked for an abortion			-0.079 (0.127)	-0.069 (0.105)
Longitudinal relationship with bio dad (ref: stably romantic)				
Stably not romantic				-1.374*** (0.093)
Romantic when child is 1 and break-up by age 3				-0.988*** (0.119)
Not romantic when child is 1 but become romantic by age 3				-0.014 (0.152)
<i>R</i> <sup>2</sup>	0.038	0.085	0.084	0.374

*Note.* Table presents unstandardized regression coefficients (SEs). City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Models 2, 3, and 4 control for baseline and demographic covariates. Results reflect imputed data for covariates only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

Table 44 shows that no statistically significant association between cohabiting mother's consideration of abortion and co-parenting with the child's biological father was identified. Yet, when mother's report that the biological father asked her to have an abortion is added as a covariate in Model 3, this form of consideration of abortion is associated with reduced co-parenting quality ( $\beta = -0.443, p < 0.01$ ).

Table 44. Associations between cohabiting mother's consideration of abortion and self-reported co-parenting with the child's biological father when the child is 3-years-old.

	Co-parenting with child's biological father			
	Model 1	Model 2	Model 3	Model 4
	(n=620)	(n=620)	(n=620)	(n=778)
Mother considered abortion	-0.064 (0.083)	-0.115 (0.088)	-0.090 (0.088)	-0.091 (0.085)
Mother's report that bio dad asked for an abortion			-0.443** (0.166)	-0.408* (0.159)
Breaks up with child's biological father by the time the child is 3				-0.534*** (0.072)
<i>R</i> <sup>2</sup>	0.056	0.106	0.117	0.157

*Note.* Table presents unstandardized regression coefficients (SEs). City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Models 2, 3, and 4 control for baseline and demographic covariates. Results reflect imputed data for covariates only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

**Developmental models.** An additional set of lagged models were tested in order to examine whether associations between mother's consideration of abortion and maternal mental

health and parenting identified at age three were explained by associations when the child was one. Interactions between the lag outcome and consideration of abortion were also included in additional models to test whether associations with consideration of abortion were accentuated if mothers had high levels of the particular outcome when the child was 1. No statistically significant interactions between age 1 outcome and consideration of abortion were identified so they are not discussed further. These non-significant results can be seen in Model 4 of tables within Appendix A.

While no statistically significant interactions were identified, there was some evidence that age three associations are continuations of links identified at age one and in some models controlling for this lag changed results regarding associations between mother's consideration of abortion and examined outcomes.

***Mental health for single mothers.*** When assessing the lag model as evidenced by Table 45, associations between single mother's consideration of abortion and depressive symptoms when the child is 3 is no longer statistically significant ( $\beta = 0.101, p > 0.05$ ) due to the control of depressive symptoms when the child is 1. Similarly, associations between single mother's consideration of abortion and parenting stress are also no longer statistically significant ( $\beta = 0.065, > 0.05$ ) after controlling for parenting stress when the child is 1. In both models, the outcome assessed when the child is 1 explains the variance in the outcome at age 3. These findings suggest that associations between single mother's consideration of abortion and mental health at age 3 are not robust against previous history of maternal mental health when the child is 1-year-old

Table 45. Developmental models for single mother's consideration of abortion and maternal mental health when the child is 3-years-old.

	Depressive symptoms ( <i>n</i> =1,408)	Parenting stress ( <i>n</i> =1,315)
Mother considered abortion	0.101 (0.057)	0.065 (0.052)
Depressive symptoms when child is 1	0.732*** (0.066)	
Parenting stress when child is 1		0.488*** (0.024)
<i>R</i> <sup>2</sup>	0.145	0.306

*Note.* Table presents unstandardized regression coefficients (SEs). City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Models control for baseline, demographic, and father covariates. Results reflect imputed data for covariates only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

***Co-parenting for single mothers.*** As evidenced by Table 46, The negative association ( $\beta = -0.266, p < 0.001$ ) between single mother's consideration of abortion and co-parenting when the child is 3 remains statistically significant when co-parenting at age 1 is controlled. These results suggest the negative association between mother's consideration of abortion and longitudinal co-parenting quality to be robust.



Table 46. Developmental models for single mother's consideration of abortion and co-parenting with the child's biological father when the child is 3-years-old.

	Co-parenting with biological father ( <i>n</i> =528)
Mother considered abortion	-0.266** (0.078)
Co-parenting with biological father when child is 1	0.402*** (0.039)
<i>R</i> <sup>2</sup>	0.494

*Note.* Table presents unstandardized regression coefficients (SEs). City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Models control for baseline, demographic, and father covariates. Results reflect imputed data for covariates only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

***Mental health for cohabiting mothers.*** When assessing the lag model as evidenced by Table 47, associations between cohabiting mother's consideration of abortion and depressive symptoms when the child is 3 is no longer statistically significant ( $\beta = 0.123, p > 0.05$ ) due to the control of depressive symptoms when the child is 1. Yet, associations between mother's consideration of abortion and parenting stress in Model 3 do remain statistically significant ( $\beta = 0.215, p < 0.001$ ) after controlling for parenting stress when the child is 1 suggesting robustness in the identified association for cohabiting mothers.

Table 47. Developmental models for cohabiting mother's consideration of abortion and maternal mental health when the child is 3-years-old.

	Depressive symptoms ( <i>n</i> =1,341)	Parenting stress ( <i>n</i> =1,206)
Mother considered abortion	0.123 (0.065)	0.215*** (0.058)
Depressive symptoms when child is 1	0.749*** (0.067)	
Parenting stress when child is 1		0.532*** (0.024)
<i>R</i> <sup>2</sup>	0.157	0.340

*Note.* Table presents unstandardized regression coefficients (SEs). City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Models control for baseline, demographic, and father covariates. Results reflect imputed data for covariates only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

***Parenting behaviors for cohabiting mothers.*** When assessing the lag model as evidenced by Table 48, associations between cohabiting mother's consideration of abortion and engagement in parenting when the child is 3 years old continues to remain statistically significant ( $\beta = -0.171, p < 0.01$ ), as well as associations between mother's consideration of abortion and reported spanking ( $OR = 1.544, p < 0.01$ ) suggesting robustness in the identified associations.

Table 48. Developmental models for cohabiting mother's consideration of abortion and parenting behaviors when the child is 3-years-old.

	Engagement in parenting ( <i>n</i> =1,209)	Spanking ( <i>n</i> =1,400)
Mother considered abortion	-0.171** (0.061)	1.544** (0.226)
Engagement in parenting when child is 1	0.456*** (0.026)	
Spanking when child is 1		4.964*** (0.775)
<i>R</i> <sup>2</sup>	0.268	0.173

*Note.* Model for engagement in parenting presents unstandardized regression coefficients (SEs). Model for spanking presents odds ratios (SEs). City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Models control for baseline, demographic, and father covariates. Results reflect imputed data for covariates only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

***Observed parenting behaviors for cohabiting mothers.*** Observed measures of parenting were not collected in the FFCWS when children were 1-year-old. In an attempt to assess the developmental model in terms of maternal observed warmth, I use engagement in parenting when the child is 1, as it should theoretically influence mothers' observed warmth later. Once cohabiting mother's engagement in parenting measured when the child is 1 is controlled for in the lag model as evidenced by Table 49, the originally identified positive association between cohabiting mother's consideration of abortion and observed warmth is no longer statistically significant ( $\beta = 0.118, p > 0.05$ ). Engagement in parenting when the child is 1 was also not found to be linked to observed warmth when the child was 3 ( $\beta = 0.027, p > 0.05$ ).

Table 49. Developmental models for cohabiting mother's consideration of abortion and observed warmth when the child is 3-years-old.

	Observed warmth ( <i>n</i> =640)
Mother considered abortion	0.118 (0.086)
Engagement in parenting when child is 1	0.027 (0.037)
<i>R</i> <sup>2</sup>	0.165

*Note.* Table presents unstandardized regression coefficients (SEs). City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Models control for baseline, demographic, and father covariates. Results reflect imputed data for covariates only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

### Propensity Score Analysis

**Does selection into consideration of an abortion bias results?** As a sensitivity analysis, the author employed propensity score analysis to better understand possible self-selection into consideration of abortion and bias in OLS regression estimates for outcomes assessed when the child was 3-years-old. Initial balance on covariates were assessed separately for mothers who were single at birth and mothers who were cohabiting with the biological father at birth. Appendix E includes all figures depicting balance. Figures 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, and 21 represent initial balance on covariates for all outcomes assessed with propensity score pair matching techniques. Figures 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, and 22 represent final covariate balance after propensity score pair matching was conducted and non-overlapping cases with a caliper of 0.1 were dropped. For the majority of outcomes, covariate balance improved greatly after utilizing propensity score pair matching techniques.

The author chose to calculate the average treatment effect on the treated (ATT), in order to present the estimated average causal effect of consideration of abortion on later maternal depressive symptomology, parenting stress, engagement in parenting, co-parenting with

biological father, spanking, and observed warmth for those women who would consider an abortion. The ATT for each maternal mental health and parenting outcome was estimated using one-to-one pair matching by propensity scores and estimated separately by mothers who were single at the child's birth and mothers who were cohabiting with the child's biological father at the child's birth.

*Estimated ATT for single mothers at child's birth.* Table 13 in Appendix A presents results for propensity score pair matching analyses. For mothers who are single at their child's birth, the ATT estimates for parenting stress and co-parenting with biological father when the child is 3-years-old are statistically significant and in the same direction as identified in OLS regression models. The ATT estimate for parenting stress suggests increased parenting stress for mothers who considered an abortion ( $\beta = 0.220, p < 0.001$ ). In addition, the ATT estimate for co-parenting with the child's biological father suggests decreased co-parenting quality when the child is 3 for mothers who considered an abortion ( $\beta = -0.327, p < 0.01$ ). There was no statistically significant ATT estimate identified for depressive symptoms. This finding suggests that the positive associations between mother's consideration of abortion and depressive symptoms identified by Model 1 and Model 2 of OLS regressions (Table 6 of Appendix A) might be subject to bias. Additionally, identified associations were not robust to the OLS regression lag model (Model 3). No statistically significant ATT estimate was identified for spanking which is in agreement with what was found in the OLS regression models.

*Estimated ATT for cohabiting mothers at child's birth.* Table 14 in Appendix A presents results for propensity score pair matching analyses. For mothers who are cohabiting at their child's birth, the ATT estimates for depressive symptoms, parenting stress, engagement in parenting activities, spanking behaviors, and observed HOME warmth when the child is 3-years-

old are statistically significant in the same direction as identified in OLS regression models. The ATT estimate for depressive symptoms suggests an increase in depressive symptoms for mothers who considered an abortion ( $\beta = 0.165, p < 0.05$ ). Additionally, the ATT estimate for parenting stress suggests an increase in parenting stress for mothers who considered an abortion ( $\beta = 0.319, p < 0.001$ ). The ATT estimate for engagement in parenting suggests a decrease in engagement in parenting for mothers who considered an abortion ( $\beta = -0.213, p < 0.001$ ). The ATT estimate for spanking suggests an increase in odds of spanking if mother's considered an abortion ( $\beta = 0.089, p < 0.001$ ). Lastly, the ATT estimate for observed HOME warmth is also statistically significant suggesting that mothers who considered an abortion display increased warmth towards their children ( $\beta = 0.230, p < 0.01$ ). There was no statistically significant ATT estimate identified for co-parenting with the biological father which is in agreement with OLS regression models.

### **Moderation Analyses**

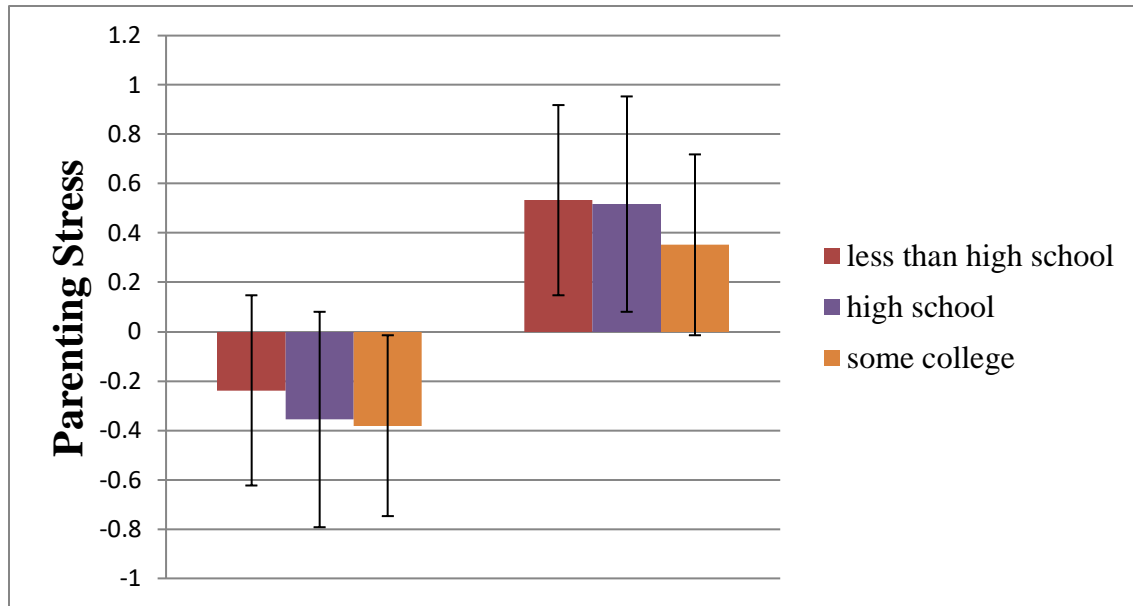
**Do maternal demographics (ratio in poverty and education level at child's birth) moderate the association?** OLS regression models with added interaction terms for ratio in poverty and maternal education level at child's birth were utilized to assess possible moderation by maternal demographics. Models were estimated separately for mothers who were single at baseline and mothers who were cohabiting with the child's biological father at baseline.

***Moderation by ratio in poverty.*** All models assessing moderation by ratio in poverty failed to detect statistically significant associations between the interaction of mother's household income/poverty threshold and mother's consideration of abortion.

***Moderation by maternal baseline education level.*** Table 15 in Appendix A depicts results regarding moderation by maternal baseline education level and parenting stress and

engagement in parenting among mothers who were single at baseline and mothers who were cohabiting with the biological father at baseline. No moderation of associations was identified for single mothers. For mothers who were cohabiting at baseline, the interaction between mother's consideration of abortion and having less than a high school education was found to be associated with increased parenting stress as compared to mothers who considered an abortion and had a college degree ( $\beta = 0.851, p < 0.05$ ). Additionally, mothers who considered an abortion and had a high school diploma were also found to be associated with increased parenting stress compared to mothers who considered an abortion and had a college degree ( $\beta = 0.792, p < 0.05$ ). This identified moderation remained statistically significant when age 1 parenting stress was controlled in Model 2. These interactions are visually displayed in Figure 5 below.

Figure 5. Parenting stress when child is 3 by whether or not a cohabiting mother considered an abortion and baseline education level.

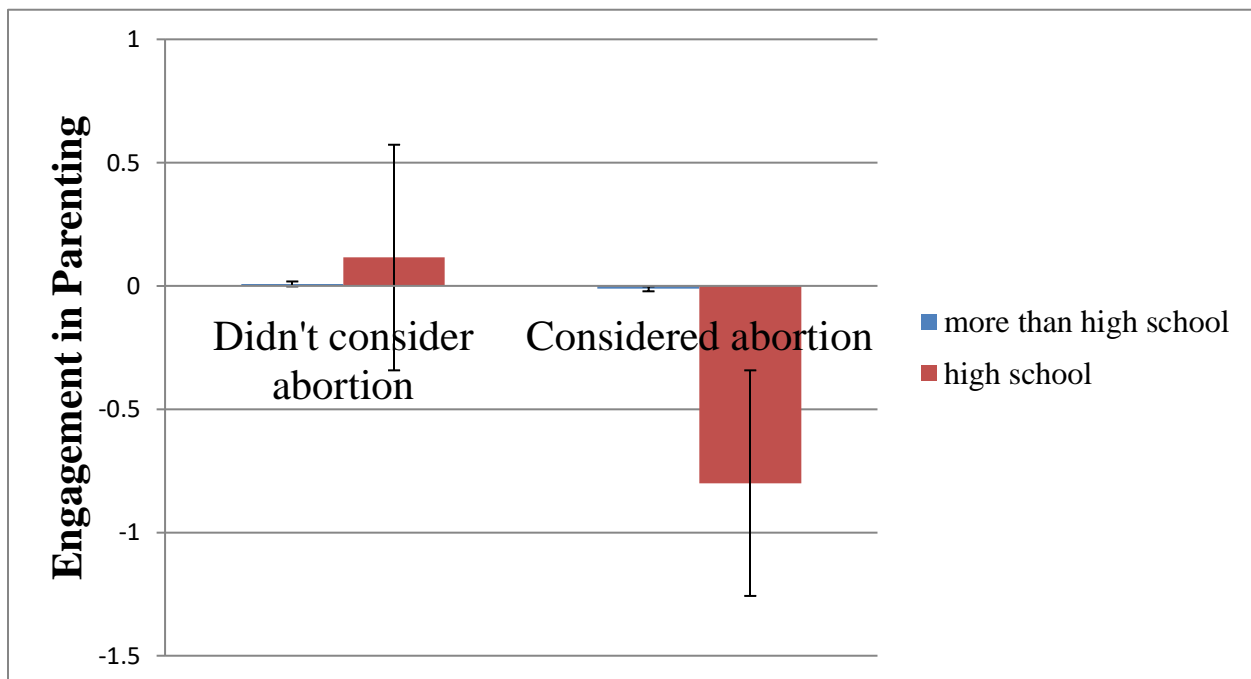


*Note.* Figure presents standardized measure of parenting stress.



For engagement in parenting, Model 1 identifies moderation such that mothers who considered an abortion and have a high school diploma were associated with reduced engagement in parenting as compared to mothers who considered an abortion and completed college ( $\beta = -0.895, p < 0.05$ ). This interaction is visually displayed in Figure 6. Yet, when age 1 engagement in parenting was controlled in Model 2, identified moderation was no longer statistically significant ( $\beta = -0.616, p > 0.05$ ).

Figure 6. Engagement in parenting when child is 3 by whether or not a cohabiting mother considered an abortion and whether or not she completed high school



*Note.* Figure presents standardized measure of engagement in parenting.

### **Categories of Consideration of Abortion**

Another way to approach analyses within the FFCWS is to evaluate associations between different categories of consideration of abortion (mother considered abortion only, mother's report that biological father only considered an abortion, mother's report that both she and father considered an abortion, and neither parent considered an abortion (reference group)) and maternal mental health and parenting outcomes when the child is 3-years-old. In analyses presented in Appendix A (of which results are outlined above), the measurement of mother's consideration of abortion included mothers who only considered and mothers who considered abortion and also reported that the child's biological father considered abortion. I rerun OLS regressions with consideration of abortion categories to assess whether identified associations are similar based on these two ways of measuring consideration of abortion in the FFCWS. Tables within Appendix B demonstrate that identified associations for the most part remain stable between the two measurements of mother's consideration of abortion. There are only two identifiable differences. In Table 16 of Appendix B, the positive association between mother considered abortion only and maternal depressive symptoms remains statistically significant ( $\beta = 0.155, p < 0.05$ ) for mothers who were single at baseline in Model 3 when controlling for whether the mother reported depressive symptoms when the child was 1. When assessing Model 3 using the measure of mother's consideration of abortion that included both her own consideration and the possible overlap between her consideration and the biological father's consideration, this positive association lost statistical significance (Table 6, Appendix A). Secondly, in Table 21 of Appendix B, the positive association between mother's consideration of abortion only and observed HOME warmth for mothers who were cohabiting at baseline is no longer statistically significant ( $\beta = 0.141, p > 0.05$ ) unlike was identified in Table 11 of

Appendix A. Instead, mother's report that both she and the father considered an abortion is positively associated with observed HOME warmth ( $\beta = 0.358, p < 0.05$ ) in Model 1 and Model 2 ( $\beta = 0.357, p < 0.05$ ). Therefore, it is possible that the identified positive association between mother's consideration of abortion and observed HOME warmth is driven by the concordance between parents' consideration of abortion.

## **BSF Project**

### **Covariates Associated with Unwanted and Mistimed Pregnancy**

Twenty-three percent of single mothers in the BSF Project indicated that their pregnancy was unwanted and seventy-one percent of single mothers had mistimed pregnancies. Whereas, thirteen percent of cohabiting mothers indicated that their pregnancy was unwanted and sixty-one percent of cohabiting mothers had mistimed pregnancies. Table 23 in Appendix C represents results from logistic regression models with unwanted pregnancy and mistimed pregnancy as the outcomes of interest. Logistic regression models were fitted separately for mothers who were single at baseline and mothers who were cohabiting with the child's biological father at baseline. As shown in Table 50 below, single mothers who had greater psychological distress ( $OR = 1.077, p < 0.001$ ) and knew the biological father of the child for less than a year ( $OR = 1.406, p < 0.05$ ) were more likely to have an unwanted pregnancy. Results also indicate that single mothers with a high school diploma were less likely to have an unwanted pregnancy ( $OR = 0.648, p < 0.01$ ). For cohabiting mothers, greater psychological distress was also associated with increased odds of having an unwanted pregnancy ( $OR = 1.071, p < 0.001$ ).

Table 50. Covariates for unwanted pregnancy of abortion by family structure.

	Single (n=1,244)	Cohabiting (n=2,391)
Assigned to BSF	1.303 (0.182)	0.873 (0.106)
Mother's age at child's birth	1.028 (0.019)	1.022 (0.016)
Maternal race/ethnicity (ref: White)		
Black	0.908 (0.258)	1.148 (0.215)
Hispanic	0.819 (0.311)	1.034 (0.220)
Other	1.761 (0.878)	1.838 (0.623)
Child female	0.967 (0.136)	1.076 (0.131)
Mother's household income	1.000 (<0.001)	1.000 (<0.001)
High school graduate	0.648** (0.100)	1.224 (0.174)
Mother knows biological father of child <1 year	1.406* (0.223)	1.130 (0.160)
Frequency of attendance to religious services	1.077 (0.752)	0.961 (0.059)
Baseline psychological distress	1.077*** (0.016)	1.071*** (0.143)
Intercept	0.049*** (0.027)	0.026*** (0.012)
$R^2$	0.060	0.024

*Note.* Table presents odds ratios (SEs). City fixed effects for 8 cities where BSF programs occurred are included in all models to adjust for clustering by city. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

Results for likelihood of having a mistimed pregnancy are displayed in Table 51. In terms of mistimed pregnancy among single mothers, mother's household income ( $OR = 1.000, p < 0.05$ ), frequency of attendance to religious services ( $OR = 1.241, p < 0.01$ ), and baseline psychological distress ( $OR = 1.047, p < 0.01$ ) were associated with increased odds of having a mistimed pregnancy. As mother's age at child's birth increased, odds of having a mistimed pregnancy for both single ( $OR = 0.926, p < 0.001$ ) and cohabiting mothers ( $OR = 0.938, p < 0.001$ ) was reduced. Being Hispanic compared to White was associated with reduced odds of having a mistimed pregnancy for cohabiting mothers ( $OR = 0.520, p < 0.001$ ). Lastly, baseline psychological distress was also associated with increased odds of having a mistimed pregnancy ( $OR = 1.066, p < 0.001$ ) for cohabiting mothers.

Table 51. Covariates for mistimed pregnancy of abortion by family structure.

	Single (n=1,141)	Cohabiting (n=2,301)
Assigned to BSF	0.852 (0.106)	0.936 (0.084)
Mother's age at child's birth	0.926*** (0.018)	0.938*** (0.011)
Maternal race/ethnicity (ref: White)		
Black	1.078 (0.317)	0.855 (0.119)
Hispanic	0.730 (0.269)	0.520*** (0.079)
Other	3.187 (2.174)	0.716 (0.210)
Child female	0.984 (0.135)	1.097 (0.098)
Mother's household income	1.000* ( $<0.001$ )	1.000 ( $<0.001$ )
High school graduate	1.121 (0.171)	1.141 (0.114)
Mother knows biological father of child <1 year	1.501 (0.256)	1.026 (0.108)
Frequency of attendance to religious services	1.241** (0.085)	0.971 (0.044)
Baseline psychological distress	1.047*** (0.017)	1.066*** (0.012)
Intercept	5.611** (3.129)	4.632*** (1.595)
$R^2$	0.071	0.060

*Note.* Table presents odds ratios (SEs). City fixed effects for 8 cities where BSF programs occurred are included in all models to adjust for clustering by city. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

**Unwanted Pregnancy and Changes in Relationship Status.**

**Single mothers at child's birth.** Table 52 below indicates that no statistically significant associations between having an unwanted pregnancy and later relationship status with the child's biological father for single mothers.

Table 52. Associations between unwanted pregnancy and single mother relationship status with the child's biological father when the child is 3.

	Stably single		Biological father moves-in by time child is 3	
	Model 1 (n=1,235)	Model 2 (n=1,235)	Model 1 (n=1,235)	Model 2 (n=1,235)
Unwanted pregnancy	1.268 (0.197)	1.326 (0.215)	1.188 (0.205)	1.202 (0.215)
$R^2$	0.021	0.053	0.006	0.021

*Note.* Table presents odds ratios (SEs). City fixed effects for 8 cities where BSF programs occurred are included in all models to adjust for clustering by city. Model 2 controls for baseline and demographic covariates. Results reflect imputed data for covariates only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .



**Cohabiting mothers at child's birth.** Results displayed in table 53 below indicate that cohabiting mothers who identified their pregnancies as being unwanted had a greater likelihood of breaking-up with the child's biological father by the time the child was 3-years-old ( $OR = 1.383, p < 0.05$ ).

Table 53. Associations between unwanted pregnancy and cohabiting mother relationship status with the child's biological father when the child is 3.

	Broke-up with biological father by the time child is 3	
	Model 1	Model 2
	( $n=2,373$ )	( $n=2,373$ )
Unwanted pregnancy	1.430** (0.174)	1.383* (0.175)
$R^2$	0.025	0.073

*Note.* Table presents odds ratios (SEs). City fixed effects for 8 cities where BSF programs occurred are included in all models to adjust for clustering by city. Model 2 controls for baseline and demographic covariates. Results reflect imputed data for covariates only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

**Mistimed Pregnancy and Changes in Relationship Status.**

**Single mothers at child's birth.** Table 54 below indicates that no statistically significant associations between having a mistimed pregnancy and later relationship status with the child's biological father for single mothers.

Table 54. Associations between mistimed pregnancy and single mother relationship status with the child's biological father when the child is 3.

	Stably single		Biological father moves-in by time child is 3	
	Model 1 (n=1,132)	Model 2 (n=1,132)	Model 1 (n=1,132)	Model 2 (n=1,132)
Unwanted pregnancy	1.123 (0.162)	1.065 (0.163)	0.878 (0.148)	0.966 (0.171)
$R^2$	0.018	0.055	0.006	0.020

*Note.* Table presents odds ratios (SEs). City fixed effects for 8 cities where BSF programs occurred are included in all models to adjust for clustering by city. Model 2 controls for baseline and demographic covariates. Results reflect imputed data for covariates only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

**Cohabiting mothers at child's birth.** Table 55 below indicates that no statistically significant associations between having a mistimed pregnancy and later relationship status with the child's biological father for single mothers.

Table 55. Associations between mistimed pregnancy and cohabiting mother relationship status with the child's biological father when the child is 3.

	Broke-up with biological father by the time child is 3	
	Model 1	Model 2
	( <i>n</i> =2,284)	( <i>n</i> =2,284)
Unwanted pregnancy	1.135 (0.099)	0.976 (0.091)
<i>R</i> <sup>2</sup>	0.024	0.069

*Note.* Table presents odds ratios (SEs). City fixed effects for 8 cities where BSF programs occurred are included in all models to adjust for clustering by city. Model 2 controls for baseline and demographic covariates. Results reflect imputed data for covariates only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

### **Mistimed Pregnancy and Age 3 Outcomes.**

**Is there an association between having a mistimed pregnancy and mother's mental health and parenting behaviors at child age 3?** OLS regression models were utilized to assess possible associations between having a mistimed pregnancy and mother's mental health and parenting behaviors when children were 3-years-old. Models were estimated separately for mothers who were single at baseline and mothers who were cohabiting with the child's biological father at baseline. All models failed to detect statistically significant associations between mistimed pregnancy and the outcomes of interest for this dissertation. It is possible that mistimed pregnancy is not an adequate measure of the unintended pregnancy for this sample of mothers due to the fact that such a high proportion of mothers reported having experienced a mistimed pregnancy (Appendix C, Table 22). Since 63% of the sample had a mistimed pregnancy, it is possible that there was not enough variation to detect statistically significant

differences between mothers who had mistimed pregnancies and mothers who did not have mistimed pregnancies in terms of mental health and parenting behaviors when their children were 3.

### Unwanted Pregnancy and Age 3 Outcomes.

#### Maternal Mental Health.

*Single mothers at child's birth.* As shown in Table 24 in Appendix C, models fail to identify statistically significant associations between unwanted pregnancy and depressive symptoms and parenting stress for single mothers for the BSF sample. Insignificant associations are reproduced below in Table 56 for models only controlling for BSF program assignment and city fixed effects.

Table 56. Insignificant associations between single mother's unwanted pregnancy and maternal mental health when the child is 3-years-old.

	Depressive symptoms	Parenting stress
	( <i>n</i> =1,244)	( <i>n</i> =1,244)
Unwanted pregnancy	0.046 (0.037)	0.058 (0.036)
<i>R</i> <sup>2</sup>	0.007	0.009

*Note.* Table presents unstandardized regression coefficients (SEs). City fixed effects for 8 cities where BSF programs occurred are included in all models to adjust for clustering by city. Results reflect imputed data for covariates only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$

***Cohabiting mothers at child's birth.*** Table 27 in Appendix C depicts all OLS regression results for depressive symptoms and parenting stress controlling for a number of important demographic and socioeconomic covariates. No associations were identified on the  $p < 0.05$  level for unwanted pregnancy and cohabiting mother's depressive symptoms. Insignificant associations are reproduced below in Table 57.

Table 57. Associations between cohabiting mother's unwanted pregnancy and self-reported depressive symptoms when the child is 3-years-old.

	Depressive symptoms		
	Model 1	Model 2	Model 3
	( $n=2,391$ )	( $n=2,391$ )	( $n=2,391$ )
Unwanted pregnancy	0.089 (0.059)	0.010 (0.057)	-0.006 (0.057)
Breaks up with child's biological father by the time the child is 3			0.217*** (0.040)
$R^2$	0.017	0.096	0.107

*Note.* Table presents unstandardized regression coefficients (SEs). City fixed effects for 8 cities where BSF programs occurred are included in all models to adjust for clustering by city. Models 2 and 3 control for baseline and demographic covariates. Results reflect imputed data for covariates only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

According to Model 2 of Table 58, cohabiting mother’s indication that her pregnancy was unwanted was associated with greater reported parenting stress ( $\beta = 0.142, p < 0.05$ ).

Associations remained statistically significant ( $\beta = 0.134, p < 0.05$ ) in Model 3 when longitudinal relationship with the biological father was controlled (broke-up with biological father by the time the child was 3).

Table 58. Associations between cohabiting mother’s unwanted pregnancy and self-reported depressive symptoms when the child is 3-years-old.

	Parenting stress		
	Model 1	Model 2	Model 3
	( <i>n</i> =2,375)	( <i>n</i> =2,375)	( <i>n</i> =2,375)
Unwanted pregnancy	0.186** (0.060)	0.142* (0.060)	0.134* (0.060)
Breaks up with child’s biological father by the time the child is 3			0.104* (0.042)
<i>R</i> <sup>2</sup>	0.014	0.051	0.053

*Note.* Table presents unstandardized regression coefficients (SEs). City fixed effects for 8 cities where BSF programs occurred are included in all models to adjust for clustering by city. Models 2 and 3 control for baseline and demographic covariates. Results reflect imputed data for covariates only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

**Parenting Behaviors.**

**Single mothers at child’s birth.** Models fail to identify statistically significant associations between single mother’s unwanted pregnancy and engagement in parenting and spanking within the past month (Table 25, Appendix C). Lastly, Table 26 in Appendix C shows that there were no statistically significant associations between unwanted pregnancy and

observed parenting (HOME warmth, observed responsiveness, and observed harsh parenting).

Insignificant associations are reproduced below in Table 59 for models only controlling for BSF program assignment and city fixed effects.

Table 59. Insignificant associations between single mother's unwanted pregnancy and parenting behaviors when the child is 3-years-old.

	Engagement in parenting <i>(n=1,188)</i>	Spanking <i>(n=1,187)</i>	Observed warmth <i>(n=615)</i>	Observed responsiveness <i>(n=600)</i>	Observed harsh parenting <i>(n=600)</i>
Unwanted pregnancy	-0.131 (0.068)	1.036 (0.156)	0.027 (0.106)	0.106 (0.098)	-0.091 (0.100)
$R^2$	0.007	0.007	0.056	0.046	0.019

*Note.* Models for spanking present odds ratios (SEs). Models for observed parenting measures present unstandardized regression coefficients (SEs). City fixed effects for 8 cities where BSF programs occurred are included in all models to adjust for clustering by city. Results reflect imputed data for covariates only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$

***Cohabiting mothers at child's birth.*** In Table 60, Model 2 shows cohabiting mother's unwanted pregnancy to be negatively associated with engagement in parenting ( $\beta = -0.207, p < 0.01$ ). This identified association ( $\beta = -0.196, p < 0.01$ ) remains statistically significant in Model 3 when controlling for breaking up with the biological father by the time the child was 3.

Table 60. Associations between cohabiting mother's unwanted pregnancy and self-reported engagement in parenting when the child is 3-years-old.

	Engagement in parenting		
	Model 1	Model 2	Model 3
	( <i>n</i> =2,290)	( <i>n</i> =2,290)	( <i>n</i> =2,290)
Unwanted pregnancy	-0.214** (0.062)	-0.207** (0.062)	-0.196** (0.062)
Breaks up with child's biological father by the time the child is 3			-0.150** (0.044)
<i>R</i> <sup>2</sup>	0.014	0.026	0.023

*Note.* Table presents unstandardized regression coefficients (SEs). City fixed effects for 8 cities where BSF programs occurred are included in all models to adjust for clustering by city. Models 2 and 3 control for baseline and demographic covariates. Results reflect imputed data for covariates only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .



Model 2 of Table 61 shows that cohabiting mother’s unwanted pregnancy was associated with an increased odds of mothers spanking their children within the past month ( $OR = 1.440, p < 0.01$ ). This identified association ( $OR = 1.467, p < 0.01$ ) remains statistically significant in Model 2 when controlling for breaking up with the biological father by the time the child was 3.

Table 61. Associations between cohabiting mother’s unwanted pregnancy and self-reported spanking when the child is 3-years-old.

	Spanking		
	Model 1	Model 2	Model 3
	( $n=2,286$ )	( $n=2,286$ )	( $n=2,286$ )
Unwanted pregnancy	1.485** (0.193)	1.440** (0.192)	1.467** (0.196)
Breaks up with child’s biological father by the time the child is 3			0.786* (0.078)
$R^2$	0.014	0.032	0.035

*Note.* Table presents odds ratios (SEs). City fixed effects for 8 cities where BSF programs occurred are included in all models to adjust for clustering by city. Models 2 and 3 control for baseline and demographic covariates. Results reflect imputed data for covariates only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

Lastly, Table 29 in Appendix C shows no identified associations between unwanted pregnancy and observed parenting outcomes (observed HOME warmth, observed responsiveness, and observed harsh parenting). Insignificant associations are reproduced below in Table 62 for models only controlling for BSF program assignment and city fixed effects.

Table 62. Insignificant associations between cohabiting mother's unwanted pregnancy and observed parenting when the child is 3-years-old.

	Observed warmth ( <i>n</i> =1,164)	Observed responsiveness ( <i>n</i> =1,131)	Observed harsh parenting ( <i>n</i> =1,131)
Unwanted pregnancy	-0.071 (0.075)	-0.028 (0.083)	-0.028 (0.083)
<i>R</i> <sup>2</sup>	0.058	0.021	0.021

*Note.* Table presents unstandardized regression coefficients (SEs). City fixed effects for 8 cities where BSF programs occurred are included in all models to adjust for clustering by city. Results reflect imputed data for covariates only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$

**Co-parenting when child is 3.**

*Single mothers at child's birth.* Table 30 in Appendix C shows results regarding co-parenting with child's biological father by both single and cohabiting mothers at baseline. Results in Model 2 of Table 63 show that single mother's unwanted pregnancy is associated with lower quality self-reported co-parenting with the child's biological father ( $\beta = -0.237, p < 0.01$ ). Negative associations between single mother's unwanted pregnancy and co-parenting remain statistically significant in Model 3 ( $\beta = -0.174, p < 0.01$ ) when longitudinal relationship with the child's biological father is controlled (stably single from child's birth to when the child is 3).

Table 63. Associations between single mother's unwanted pregnancy and self-reported co-parenting quality with the child's biological father when the child is 3-years-old.

	Co-parenting with biological father		
	Model 1 ( <i>n</i> =1,184)	Model 2 ( <i>n</i> =1,184)	Model 3 ( <i>n</i> =1,184)
Unwanted pregnancy	-0.255** (0.073)	-0.237** (0.075)	-0.174** (0.067)
Stably single from child's birth to when child is 3			-1.042*** (0.061)
<i>R</i> <sup>2</sup>	0.026	0.044	0.235

*Note.* Table presents unstandardized regression coefficients (SEs). City fixed effects for 8 cities where BSF programs occurred are included in all models to adjust for clustering by city. Models 2 and 3 control for baseline and demographic covariates. Results reflect imputed data for covariates only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

***Cohabiting mothers at child's birth.*** Results in Model 2 of Table 64 show that cohabiting mother's unwanted pregnancy is associated with lower quality co-parenting with child's biological father ( $\beta = -0.176, p < 0.01$ ). Identified negative associations remain statistically significant in Model 3 ( $\beta = -0.099, p < 0.05$ ), although size of the association and significance level is reduced when controlling for whether the mother broke-up with the child's biological father by age 3.

Table 64. Associations between cohabiting mother's unwanted pregnancy and self-reported co-parenting quality with the child's biological father when the child is 3-years-old.

	Co-parenting with biological father		
	Model 1	Model 2	Model 3
	( <i>n</i> =2,298)	( <i>n</i> =2,298)	( <i>n</i> =2,298)
Unwanted pregnancy	-0.207*** (0.058)	-0.176** (0.058)	-0.099* (0.049)
Breaks up with child's biological father by the time the child is 3			-1.013*** (0.035)
<i>R</i> <sup>2</sup>	0.020	0.055	0.314

*Note.* Table presents unstandardized regression coefficients (SEs). City fixed effects for 8 cities where BSF programs occurred are included in all models to adjust for clustering by city. Models 2 and 3 control for baseline and demographic covariates. Results reflect imputed data for covariates only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

## **Moderation Analyses**

**Do maternal demographics (household income and education level at child's birth) moderate the associations?** OLS regression models with added interaction terms for maternal household income and whether or not mother had a high school diploma at baseline were utilized to assess possible moderation by maternal demographics. Models were estimated separately for mothers who were single at baseline and mothers who were cohabiting with the child's biological father at baseline.

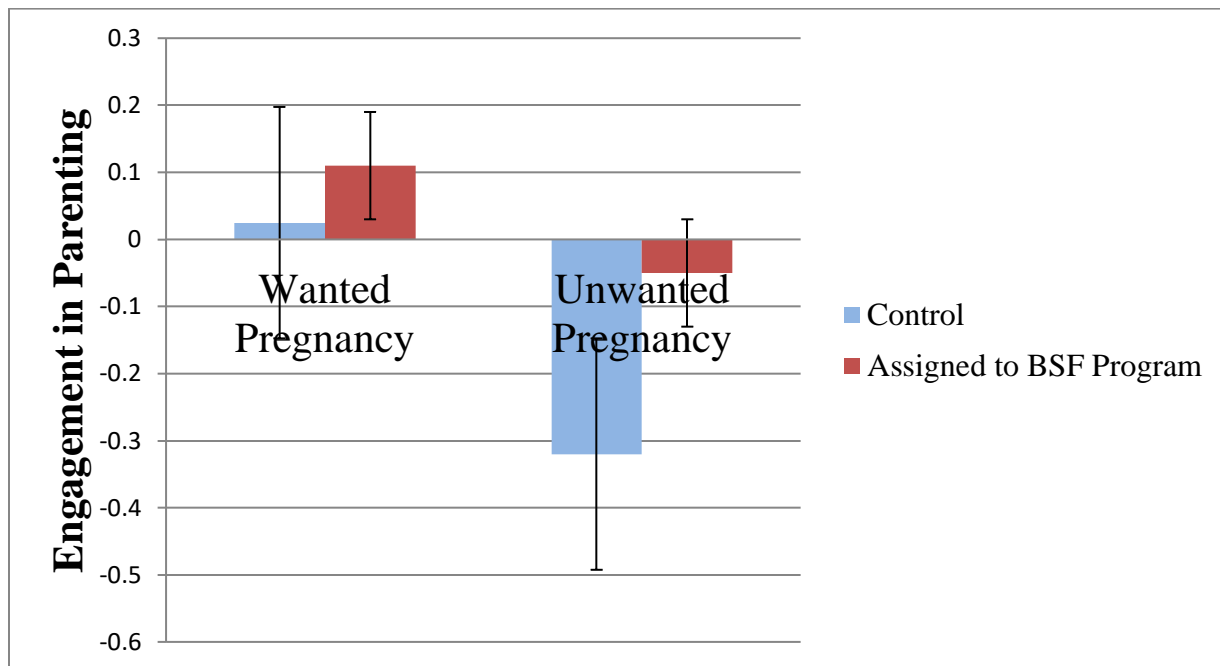
***Moderation by income.*** All models assessing moderation by maternal household income failed to detect statistically significant associations between the interaction of mother's household income and unwanted pregnancy.

***Moderation by maternal baseline education level.*** All models assessing moderation by whether or not mother had a high school diploma at baseline failed to detect statistically significant associations between the interaction of mother's household income and unwanted pregnancy.

**Does access to relationship building programs, such as the BSF Program (group sessions, family coordinators, and referrals to support services), serve as protective factors for women with unintended pregnancies?** Table 31 in Appendix C depicts results regarding moderation by assignment to a BSF program and engagement in parenting among single and cohabiting mothers. For cohabiting mothers, the interaction between unwanted pregnancy and assignment to the BSF program for engagement in parenting was statistically significant ( $\beta = 0.277, p < 0.05$ ). As shown in Figure 7, there was no negative link between cohabiting mother's unwanted pregnancy and engagement in parenting in the treatment group, whereas there was a negative link in the control group. This interaction between assignment into a BSF program

remains statistically significant ( $\beta = 0.274, p < 0.05$ ) in Model 2 when break-up with biological father by age 3 is controlled.

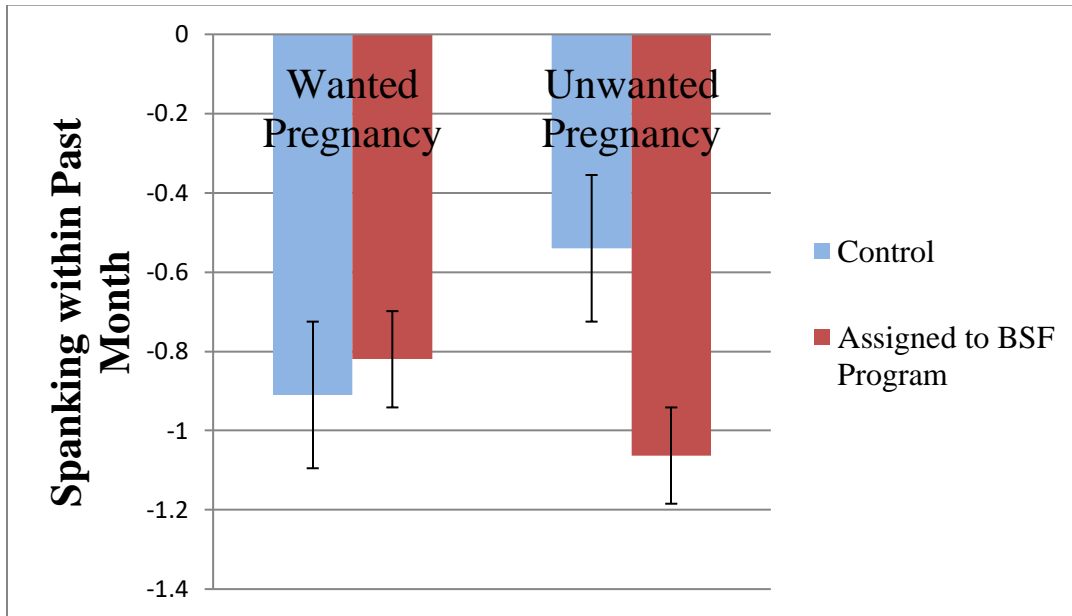
Figure 7. Engagement in parenting when child is 3 by whether or not a cohabiting mother had an unwanted pregnancy and whether or not she was assigned to the BSF Program.



*Note.* Figure presents standardized measure of engagement in parenting.

Another statistically significant interaction with BSF program assignment is demonstrated in Table 32 in Appendix C where the interaction between single mother’s unwanted pregnancy and assignment to the BSF program is associated with reduced odds in spanking within the past month ( $\beta = 0.531, p < 0.05$ ). As shown in Figure 8, there was a reduction in spanking behaviors among those single mothers assigned to the treatment group. Again, this interaction remains statistically significant ( $\beta = 0.530, p < 0.05$ ) in Model 2 after controlling for being stably single from child’s birth to when the child is 3.

Figure 8. Spanking when child is 3 by whether or not a single mother had an unwanted pregnancy and whether or not she was assigned to the BSF Program.



Note. Figure presents standardized measure of spanking.

## Chapter 5

### DISCUSSION

The purpose of this research was to gain a better understanding of whether unintended pregnancy was associated with longstanding differences in maternal mental health and parenting as children age. Specifically, I wanted to test whether associations between unintended pregnancy and maternal mental health and parenting behaviors were detectable once the child was three-years-old, as previous research in this area has focused on associations postpartum and when children are 1. Moreover, I wanted to utilize propensity score pair matching techniques in order to examine whether detectable associations were robust if covariate balance can be modeled in a more transparent way. A second goal of this research was to examine whether three ways of measuring unintended pregnancy (consideration of abortion, unwanted pregnancy, and mistimed pregnancy) appear to operate in similar ways in mothers' lives or if there was a gradient in associations as prior research suggests (Maxson and Miranda, 2011). Lastly, the third and possibly most important aim of this research was to begin to understand the potential risk that unintended pregnancy might pose for early motherhood, how that risk might look similar or different depending on family structure, and how associations might look different depending on the existence of possible protective factors in a mother's life.

#### **Summary of Results**

Results from the FFCWS and BSF Project suggest that consideration of abortion and unwanted pregnancies are similar. Results across the two studies show that both measures of unintended pregnancy were associated with considerable longstanding risk for maternal mental health and parenting behaviors, especially for mothers who report cohabiting with their child's biological father at baseline. Within both sources of data, unintended pregnancy posed risk for



cohabiting mothers' reported parenting stress, engagement in parenting, and spanking behaviors. In addition, both studies identified a different additional risk for cohabiting mothers. Within the FFCWS, associations between mother's consideration of abortion and increased depressive symptoms were identified. Within the BSF Project, associations between unwanted pregnancy and reduced co-parenting quality with the biological father were identified. Unwanted pregnancy for single mothers within the BSF project was only associated with reduction in co-parenting quality at age 3, whereas, consideration of abortion was found to be associated with one additional measure of maternal mental health (increased parenting stress) and in some models was associated with increased maternal depressive symptoms within the FFCWS.

No negative associations were identified in terms of observational parenting behaviors in either data source. In fact, one positive association between considering an abortion and observed HOME warmth was identified for cohabiting mothers in the FFCWS. This positive association was not replicated with the BSF project data. Therefore, it is possible that any risk posed by unintended pregnancy is isolated to self-reported measures of mental health and parenting versus actual observed behaviors with children. While future research is warranted to further investigate possible associations between unintended pregnancy and observational parenting outcomes, especially observational parenting earlier in a child's life which could not be tested in the scope of this dissertation with the data utilized, this might be an important non-statistical finding. If future research continues to replicate the inability to detect risk in terms of observational parenting, then efforts to support mothers who have experienced an unintended pregnancy can focus on mental health and guiding parenting behaviors versus an intervention approach necessarily aimed at mother's attachment with child, positive affect, or expressed negativity.

**Robustness of Identified Associations for Consideration of Abortion**

Estimates generated from the OLS regression models statistically controlling for all of the measured confounding variables appears sufficient and withstands three sensitivity analyses (introducing additional controls for biological father's influence, testing lag models, and conducting propensity score pair matching analyses). Conducted propensity score analyses suggest a pervasive association between consideration of abortion and later maternal mental health and parenting behaviors when the child is 3 years of age. In fact, the only association identified by OLS regression that did not hold after utilizing propensity score pair matching techniques was the association between considering an abortion and maternal depressive symptoms for mothers who reported being single at their child's birth.

**Possible Avenues for Protection**

This dissertation identifies two different potential moderators of associations between unintended pregnancy and maternal mental health and parenting outcomes. One possible protective factor emerging from FFCWS analyses is mother's baseline education level. Moderation analyses suggest that risk from considering an abortion, at least in terms of self-reported parenting stress and engagement in parenting could be more salient for mothers who do not pursue education beyond high school. Yet, this possible protective effect of mother's having a higher level of education that was identified in the FFCWS is specific to mothers who were cohabiting at baseline and was not replicated in the BSF Project. Failure to replicate might be due to the fact that the BSF Project did not measure maternal baseline education level with enough variation for moderation to be detected in that the study only measures whether or not a mother completed a high school diploma versus having completed some college or earned a college degree like measured in the FFCWS. The failure to detect moderation by maternal

education level in the BSF could also reflect some meaningful distinction between considering an abortion with a higher education level and having an unwanted pregnancy with a higher education level that this dissertation is unable to disentangle due to the data available.

The second, more policy-oriented, moderator detected was that assignment to the BSF Program was found to be protective for the risk unwanted pregnancy posed for engagement in parenting for mothers who were cohabiting at baseline and spanking behaviors for mothers who were single at baseline. These findings suggest the possibility that an organized program could alter longitudinal associations between unintended pregnancy and parenting behaviors, even if the program is not targeting experiences of unintended pregnancy specifically. Ideally, a more targeted program could and should be developed to help support mothers experiencing an unintended pregnancy, but preliminary evidence to suggest that program support (a relationship building program) could help alter associations is important to note.

Identified moderation from assignment to the BSF Program is important because it demonstrates that relationship building programs might be particularly helpful for mothers who experience an unwanted pregnancy. It is possible that one of the reasons mothers report their pregnancies as being unwanted is because their relationships with the child's biological father are not stable and/or supportive. If a BSF program can afford mothers the skills and perceived support to improve their relationships with the child's biological father by addressing any concerns a mother has regarding co-parenting, then it is possible that parenting behaviors will improve over time in conjunction. It is also important to note that this moderation was demonstrated for both single and cohabiting mothers, which suggests that relationship building programs are able to support mothers who indicate that their pregnancies were unwanted, regardless of reported relationship status with the child's biological father.

### **Findings in Terms of Existing Literature Base**

By conducting analyses separate by family structure, this dissertation provides a more nuanced understanding of how unintended pregnancy may be associated with maternal mental health. Previous research has focused on the effects of unintendedness or unwantedness on postpartum depressive symptomology and found a positive relationship (Leathers & Kelley; Cheng, Schwarz, Douglas, & Horon, 2009; Rich-Edwards, et al., 2006). Yet, when examining maternal depressive symptomology by family structure when the child is 1, as done in the current dissertation, associations between considering an abortion and maternal depressive symptoms lose statistical significance once models control for potential influence from the child's biological fathers. Moreover, the results of analyses examining maternal depressive symptoms when children are 3 extend risk for maternal depressive symptomology longitudinally but only for mothers who were cohabiting with their children's biological father within the FFCWS. Therefore, it is possible that taking into account biological father involvement and family structure is important for understanding whether unintended pregnancy is a risk for maternal depressive symptomology. This dissertation also adds to the literature by providing evidence suggesting that consideration of abortion increases parental stress years after child's birth for both single and cohabiting mothers and that unwanted pregnancy is associated with increased parenting stress for cohabiting mothers.

In addition, this dissertation demonstrates direct effects on parenting – engagement of parenting within the context of parent-child activities, spanking, and co-parenting quality with the child's biological father within two sources of data. Little prior research has examined parenting outcomes in relation to unintended pregnancy. Research conducted with adolescent mothers did find lower prenatal intendedness, as measured by a composite score of individual

questions asking adolescents to rate how planned or intended their pregnancies were, to be associated with greater self-reports of harsh parenting, but associations were only assessed when children were 6 and 12 months of age (East, Chien, & Barber, 2012). The current dissertation's extension of identified associations to when children are 3 and ability to provide preliminary replication of findings between two datasets is important for adding to the emerging research base on unintended pregnancy and parenting behaviors.

### **Limitations**

This dissertation is limited in a number of ways. First, this dissertation relies on retrospective reports of abortion consideration and unwanted pregnancy that are asked at the child's birth or near the child's birth. It is possible that as time goes by during pregnancy some women who may have actually experienced an unintended pregnancy change their views of their pregnancy and end up not reporting their pregnancies as being unintended once they give birth. If this possibility resulted in a systematic measurement error regarding unintended pregnancy, then my results might not reflect a concept of general unintendedness but rather represent an "at-risk" group of mothers who harbor feelings of unintendedness throughout their pregnancies that do not go away once they give birth. While still a limitation theoretically, practically this is not problematic as my analyses suggest that retrospectively reporting having considered an abortion or having had an unwanted pregnancy could be an early indicator of mental health and parenting risk that could allow practitioners to offer psychological and parenting interventions to those mothers who did not intend their pregnancies but ultimately carried to term. In other words, the mothers who report having had an unintended pregnancy just before or after they give birth may be the group of mothers in the most need of supports.

Second, comparability between the FFCWS and BSF Project was not ideal. Some covariate measurements in the BSF Project, namely maternal education, were limited and prevented a comparable test of whether the finding regarding moderation by maternal education would replicate with a different sample of mothers. Third, although propensity score pair matching techniques were utilized for the FFCWS to attempt to generate an appropriate comparison between mothers who considered an abortion and mothers who did not, the ideal counterfactual (a mother who considered an abortion and ended up terminating her pregnancy) for this dissertation could not be utilized. This research could have been improved if it was possible to understand more about what influenced a particular mother to report that she had considered an abortion. In particular, this added qualitative detail could have been helpful in understanding why risk associated with considering an abortion is particularly salient for mothers who are cohabiting with their child's biological father at the child's birth. This dissertation cannot adequately explain why cohabiting mothers are at particular risk if they considered an abortion. It is possible that considering an abortion for a mother who is cohabiting with a romantic partner could be a meaningful proxy for an unstable relationship. In contrast, consideration of an abortion for a single mother might be more individualistic and less in relation to the biological father since the woman is not living with the child's biological father or does not choose to move in with him in relation to the coming child. Yet, this dissertation provides no evidence supporting these hypotheses. Future research is needed to address these remaining questions.

Lastly, the  $R^2$  for the majority of my analytic models are small with some being less than 0.1 in size. There are two possible reasons explaining why the  $R^2$  might be small. First, I calculate models separately by baseline relationship status with the child's biological father,

which would be in of itself an important predictor of maternal mental health and parenting outcomes that is no longer part of the models explaining variance in the outcome. Second, the ability to explain the variance in outcomes by the predictors is affected by noise in outcome measurement. It is possible that since many of my outcomes of interest were self-reported by the mother, there was considerable noise in measurement. For example, the  $R^2$  values for FFCWS models examining observed parenting outcomes are slightly larger in size. This increase in  $R^2$  could be due to a more precise measurement of parenting outcomes, which utilized trained observers and reliability criterion. In addition to possible measurement noise in outcomes, I am likely to be under-measuring consideration of abortion and unwanted pregnancy, which means that my estimated associations are attenuated by this measurement error which could also influence  $R^2$  size.

### **Implications**

This research has implications for policy and practice as findings suggest a potential risk for women who become pregnant, consider an abortion or deem their pregnancy as unwanted, and decide to ultimately carry that pregnancy to term and become mothers. This dissertation's findings are in line with past research utilizing the FFCWS which found associations between considering an abortion and greater parenting stress when children are 1 year of age (Claridge & Chaviano, 2013). This dissertation demonstrates that previously identified associations are still pervasive two years later.

In the end, this story of risk due to unintended pregnancy is coupled with possible avenues for support that should be examined more fully. Past research (Claridge, et al., 2017; Claridge & Chaviano, 2013) and current analyses with the FFCWS suggest that there might be something about achieving a higher level of education (college completion) that may compensate

for the potential negative effects of considering an abortion on long-term maternal mental health and parenting. Yet, similar moderation analyses did not prove statistically significant in the BSF Project data. Instead, assignment to a BSF program was found to be protective for some parenting behaviors. This avenue for support is particularly important and warrants further study to understand the mechanisms behind how relationship building programs yield such positive associations for mothers who had unwanted pregnancies. The rate of unintended births is high enough within the United States that continuing to examine possible associations and ways to prevent identified risk in terms of postpartum and long-term depression, parenting stress, and non-optimal parenting behaviors would be worthwhile and advantageous.



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## Appendix A

Table 1. Descriptive statistics for FFCWS study variables.

	Total (n = 4,231)	Single at Baseline (n = 1,647)	Cohabiting at Baseline (n = 1,531)	Married at Baseline (n = 1,052)
	M (SD) / %	M (SD) / %	M (SD) / %	M (SD) / %
Unintended Pregnancy				
Mother considered an abortion	27%	40%	26%	9%
Controls				
Mother's report that biological father asked for abortion	10%	18%	7%	3%
Mother's age at child's birth	25.24 (6.07)	23.61 (5.67)	24.18 (5.47)	29.35 (5.63)
Black	48%	66%	45%	25%
Hispanic	26%	21%	33%	24%
Other race/ethnicity	4%	2%	3%	7%
White	22%	11%	19%	44%
Child female	47%	47%	49%	47%
Child low birth weight	10%	12%	10%	6%
Child is mother's first	39%	43%	36%	35%



Mother's household				
income/poverty threshold	2.26 (2.44)	1.40 (1.36)	1.81 (1.72)	4.27 (3.36)
# of children in home	1.26 (1.30)	1.44 (1.39)	1.18 (1.26)	1.09 (1.17)
Mother <HS education	38%	45%	45%	17%
Mother HS education	26%	29%	28%	18%
Mother some college	25%	23%	24%	29%
Mother college graduate	11%	3%	3%	36%
Single when child is 3	49%	79%	42%	10%
Cohabiting when child is 3	19%	15%	37%	1%
Married when child is 3	32%	6%	21%	89%
Frequency of mother's attendance to religious services	3.06 (1.38)	3.00 (1.40)	2.82 (1.31)	3.52 (1.33)
First visited the doctor for pregnancy at or after 4 <sup>th</sup> month of pregnancy	18%	24%	19%	8%
Mother drank during pregnancy	10%	11%	9%	11%
Mother did drugs during pregnancy	5%	8%	5%	1%
Mother appeared anxious and/or depressed at child's birth	8%	12%	6%	4%

## Maternal mental health

Mother reports having felt

sad, blue, or depressed

when child is 1                      20%                      22%                      22%                      16%

Maternal depressive

symptoms when child is 3      1.15 (2.24)      1.27 (2.36)      1.26 (2.32)      0.80 (1.89)

Maternal parenting stress

when child is 1                      2.18 (0.67)      2.25 (0.71)      2.14 (0.70)      2.14 (0.62)

Maternal parenting stress

when child is 3                      2.25 (0.67)      2.28 (0.70)      2.22 (0.66)      2.24 (0.63)

## Maternal parenting

Mom engagement in 8

parenting activities when

child is 1                      5.30 (0.99)      5.27 (1.01)      5.29 (1.00)      5.37 (0.95)

Mom engagement in 13

parenting activities when

child is 3                      4.99 (0.91)      5.00 (0.92)      4.96 (0.91)      5.00 (0.87)

Co-parenting with child's

biological father when

child is 1                      1.63 (0.51)      1.46 (0.60)      1.68 (0.46)      1.78 (0.35)

Co-parenting with child's biological father when child is 3	1.50 (0.58)	1.29 (0.648)	1.57 (0.52)	1.70 (0.42)
Observed warmth when child is 3	0.85 (0.23)	0.83 (0.25)	0.84 (0.23)	0.91 (0.17)
Observed harsh parenting when child is 3	0.1 (0.21)	0.13 (0.23)	0.09 (0.21)	0.05 (0.14)
Observed home learning when child is 3	3.15 (0.54)	3.08 (0.53)	3.10 (0.54)	3.31 (0.50)
Spanked in past month when child is 1	27%	31%	27%	19%
Spanked in past month when child is 3	52%	40%	36%	24%

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*Note.* Table presents means and standard deviations for unstandardized maternal mental health and parenting outcomes. Ranges for outcomes when child is 1 are as follows: range for parenting stress is 1 to 4; range for mom engagement in 8 parenting activities is 0.5 to 7; and range for co-parenting with biological father is 0 to 2. Ranges for outcomes when child is 3 are as follows: range for maternal depressive symptoms is 0 to 7; range for maternal parenting stress is 1 to 4; range for mom engagement in 13 parenting activities is 0 to 7; range for co-parenting with biological father is 0 to 2; range for observed warmth is 0 to 1; range for observed harsh parenting is 0 to 1; and range for observed home learning is 0 to 4.

Table 2. Multinomial logit results predicting categories of consideration of abortion with FFCWS sample by relationship status with biological father at birth of child. The reference group is neither mother nor biological father considered an abortion.

	Single			Cohabiting		
	Mother only considered an abortion	Mother's report that bio dad only considered an abortion	Mother's report that both she and bio father considered an abortion	Mother only considered an abortion	Mother's report that bio dad only considered an abortion	Mother's report that both she and bio father considered an abortion
	(n=1,647)			(n=1,531)		
Mother's age at child's birth	0.969* (0.013)	1.016 (0.019)	0.957* (0.020)	0.982 (0.014)	0.988 0.033	0.977 (0.030)
Maternal race/ethnicity (ref: White)						
Black	1.989** (0.468)	0.712 (0.219)	2.130* (0.775)	2.231*** (0.489)	1.163 (0.520)	0.726 (0.319)
Hispanic	1.100 (0.302)	0.446* (0.155)	1.417 (0.621)	0.664 (0.173)	0.401 (0.237)	0.615 (0.290)
Other	1.982 (0.840)	1.383 (0.728)	0.427 (0.464)	1.224 (0.560)	1.591 (1.386)	0.302 (0.339)
Mother's household income/poverty threshold	0.991 (0.054)	0.960 (0.074)	1.179* (0.086)	1.014 (0.045)	1.008 (0.100)	0.836 (0.092)
Maternal education (ref: college)						
<High school	0.702 (0.292)	0.977 (0.608)	0.528 (0.296)	1.029 (0.491)	0.822 (0.714)	0.420 (0.355)
High school	0.939 (0.386)	0.905 (0.565)	0.947 (0.517)	1.154 (0.543)	0.504 (0.440)	0.365 (0.313)
Some college	0.953 (0.386)	1.836 (1.098)	0.924 (0.492)	1.510 (0.700)	1.068 (0.878)	0.953 (0.784)

Frequency of attendance to religious services	0.843*** (0.037)	0.865* (0.062)	0.803** (0.056)	0.849** (0.046)	0.869 (0.109)	0.684** (0.084)
First visited the doctor for pregnancy at or after 4 <sup>th</sup> month of pregnancy	1.733*** (0.241)	0.933 (0.230)	1.069 (0.245)	1.664** (0.281)	1.054 (0.469)	1.646 (0.556)
This pregnancy is mother's first child	0.485*** (0.071)	1.000 (0.222)	0.530** (0.117)	0.467*** (0.079)	0.825 (0.297)	0.737 (0.243)
Mother drank during pregnancy	2.192*** (0.443)	1.164 (0.421)	1.354 (0.441)	1.677* (0.408)	2.403 1.145	2.251* (0.923)
Mother did drugs during pregnancy	1.485 (0.286)	0.371 (0.235)	1.605 (0.582)	2.666* (0.786)	0.995 (0.784)	4.822*** (2.083)
Intercept	1.748 (1.208)	0.308 (0.312)	0.902 (0.923)	0.926 (0.696)	0.158 (0.256)	1.007 (1.480)
<i>R</i> <sup>2</sup> / pseudo <i>R</i> <sup>2</sup>	0.079			0.090		

*Note.* Table presents relative risk ratios (SEs). Relative risk ratios represent the ratio of the probability of being in the consideration of abortion category over the probability of not reporting having considered an abortion (reference group). City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Results reflect imputed data for predictors only.

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

Table 3. Associations between mother's consideration of abortion and self-reported maternal mental health and parenting behaviors when the child is 1-year-old for mothers who are single at child's birth.

	Mental health				Parenting behaviors			
	Depressive symptoms		Parenting stress		Engagement in parenting		Spanking	
	Model 1 (n=1,527)	Model 2 (n=1,509)	Model 1 (n=1,336)	Model 2 (n=1,331)	Model 1 (n=1,336)	Model 2 (n=1,331)	Model 1 (n=1,515)	Model 2 (n=1,499)
Mother considered abortion	1.372* (0.182)	1.288 (0.174)	0.189** (0.060)	0.163** (0.061)	-0.024 (0.058)	-0.011 (0.058)	1.548** (0.196)	1.532** (0.197)
Mother's report that biological father asked to have abortion		1.303 (0.213)		0.081 (0.077)		-0.045 (0.073)		1.161 (0.185)
Becomes romantic with bio father when child is 1		0.656** (0.090)		-0.272*** (0.059)		0.096 (0.057)		1.051 (0.133)
Mother's age at child's birth	1.004 (0.013)	1.000 (0.014)	-0.001 (0.006)	-0.003 (0.006)	-0.015** (0.006)	-0.015* (0.006)	0.979 (0.013)	0.979 (0.013)
Maternal race/ethnicity (ref: White)								
Black	0.785 (0.190)	0.750 (0.183)	0.165 (0.104)	0.169 (0.104)	-0.310** (0.099)	-0.309** (0.099)	2.056** (0.495)	2.077** (0.507)
Hispanic	1.480 (0.410)	1.493 (0.417)	0.123 (0.125)	0.126 (0.124)	-0.403** (0.119)	-0.402** (0.119)	0.957 (0.274)	0.963 (0.278)
Other	1.101 (0.499)	1.081 (0.492)	-0.200 (0.218)	-0.204 (0.217)	-0.018 (0.208)	-0.013 (0.208)	0.639 (0.331)	0.652 (0.339)
Child female	0.869 (0.112)	0.872 (0.113)	-0.131* (0.058)	-0.119* (0.058)	0.065 (0.055)	0.059 (0.055)	0.783* (0.096)	0.786 (0.097)

Child low birth weight	1.238 (0.238)	1.218 (0.237)	0.034 (0.090)	0.035 (0.089)	-0.041 (0.085)	-0.040 (0.086)	0.650* (0.128)	0.649* (0.128)
Number of children in household at child's birth	0.952 (0.049)	0.959 (0.050)	0.028 (0.023)	0.030 (0.023)	-0.038 (0.022)	-0.039 (0.022)	0.899* (0.046)	0.895* (0.046)
Mother's household income/poverty threshold	0.913 (0.056)	0.908 (0.056)	-0.027 (0.025)	-0.024 (0.025)	0.009 (0.024)	0.009 (0.024)	1.009 (0.053)	1.005 (0.053)
Child is mother's first	0.906 (0.143)	0.862 (0.138)	0.072 (0.071)	0.040 (0.071)	0.011 (0.067)	0.022 (0.068)	1.490** (0.223)	1.487** (0.225)
Maternal education (ref: college)								
<High school	1.721 (0.841)	1.702 (0.839)	0.176 (0.190)	0.156 (0.189)	-0.089 (0.181)	-0.083 (0.181)	1.103 (0.454)	1.099 (0.453)
High school	1.373 (0.668)	1.353 (0.664)	-0.002 (0.187)	-0.007 (0.186)	-0.106 (0.178)	-0.103 (0.178)	1.054 (0.426)	1.058 (0.429)
Some college	1.539 (0.737)	1.549 (0.747)	-0.060 (0.183)	-0.069 (0.182)	0.048 (0.174)	0.053 (0.174)	0.758 (0.302)	0.744 (0.297)
Frequency of attendance to religious services	1.010 (0.047)	1.019 (0.048)	<0.001 (0.021)	0.004 (0.021)	0.085*** (0.020)	0.084*** (0.020)	1.041 (0.047)	1.044 (0.047)
Mother appeared anxious and/or depressed at child's birth	1.188 (0.238)	1.129 (0.231)	0.020 (0.093)	0.011 (0.093)	-0.007 (0.089)	-0.004 (0.090)	0.780 (0.162)	0.779 (0.164)

First visited the doctor for pregnancy at or after 4 <sup>th</sup> month of pregnancy	0.979 (0.149)	0.978 (0.151)	0.034 (0.069)	0.028 (0.069)	-0.018 (0.066)	-0.018 (0.066)	0.811 (0.120)	0.790 (0.118)
Mother drank during pregnancy	1.116 (0.237)	1.038 (0.226)	0.047 (0.100)	0.023 (0.100)	0.032 (0.096)	0.044 (0.096)	0.956 (0.203)	0.975 (0.212)
Mother did drugs during pregnancy	1.287 (0.320)	1.440 (0.362)	0.258* (0.125)	0.276* (0.124)	-0.037 (0.119)	-0.044 (0.119)	1.324 (0.342)	1.255 (0.331)
Intercept	0.162* (0.124)	0.218* (0.169)	-0.258 (0.326)	-0.101 (0.328)	0.510 (0.310)	0.458 (0.314)	0.196* (0.143)	0.196* (0.145)
$R^2$ / pseudo $R^2$	0.040	0.048	0.052	0.069	0.074	0.075	0.142	0.144

*Note.* Models for depressive symptoms and spanking behaviors present odds ratios (SEs). Table presents unstandardized regression coefficients (SEs) for all other models. City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Results reflect imputed data for predictors only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .



Table 4. Associations between mother's consideration of abortion and self-reported maternal mental health and parenting behaviors when the child is 1-year-old for mothers who are cohabiting with the child's biological father at child's birth.

	Mental health				Parenting behaviors			
	Depressive symptoms		Parenting stress		Engagement in parenting		Spanking	
	Model 1 (n=1,445)	Model 2 (n=1,430)	Model 1 (n=1,225)	Model 2 (n=1,224)	Model 1 (n=1,226)	Model 2 (n=1,225)	Model 1 (n=1,436)	Model 2 (n=1,421)
Mother considered abortion	1.386* (0.212)	1.311 (0.205)	0.219** (0.068)	0.191** (0.068)	-0.178** (0.067)	-0.156* (0.067)	1.278 (0.196)	1.227 (0.192)
Mother's report that biological father asked to have abortion		1.690* (0.401)		0.231* (0.114)		-0.289* (0.113)		1.511 (0.369)
Breaks up with child's biological father by the time the child is 1		1.334 (0.211)		0.172* (0.069)		0.034 (0.068)		1.034 (0.161)
Mother's age at child's birth	1.014 (0.014)	1.011 (0.015)	-0.010 (0.006)	-0.009 (0.006)	-0.022*** (0.006)	-0.023*** (0.006)	0.955** (0.015)	0.958** (0.015)
Maternal race/ethnicity (ref: White)								
Black	0.690 (0.140)	0.673 (0.138)	0.182* (0.087)	0.180* (0.087)	-0.191* (0.086)	-0.204* (0.086)	1.935** (0.400)	1.944** (0.404)
Hispanic	0.465** (0.107)	0.477** (0.111)	0.006 (0.101)	-0.007 (0.101)	-0.353*** (0.100)	-0.349*** (0.100)	0.953 (0.226)	0.964 (0.230)
Other	0.607 (0.276)	0.594 (0.271)	0.255 (0.202)	0.217 (0.201)	-0.107 (0.196)	-0.113 (0.196)	1.693 (0.751)	1.734 (0.771)
Child female	0.906	0.884	0.033	0.034	-0.021	0.026	0.813	0.808

	(0.121)	(0.119)	(0.057)	(0.056)	(0.056)	(0.056)	(0.107)	(0.107)
Child low birth weight	0.987 (0.222)	0.945 (0.215)	-0.018 (0.098)	-0.032 (0.097)	-0.105 (0.094)	-0.095 (0.094)	0.907 (0.199)	0.917 (0.202)
Number of children in household at child's birth	1.008 (0.062)	1.008 (0.063)	0.010 (0.028)	0.010 (0.027)	-0.014 (0.027)	-0.011 (0.027)	0.839* (0.058)	0.842* (0.058)
Mother's household income/poverty threshold	0.879* (0.047)	0.884* (0.047)	-0.027 (0.022)	-0.006 (0.018)	0.042* (0.018)	0.041* (0.018)	0.952 (0.044)	0.952 (0.044)
Child is mother's first	0.863 (0.150)	0.843 (0.148)	0.029 (0.073)	0.030 (0.072)	-0.032 (0.072)	-0.031 (0.072)	1.390* (0.233)	1.413* (0.238)
Maternal education (ref: college)								
<High school	1.338 (0.601)	1.328 (0.601)	0.061 (0.190)	0.067 (0.189)	-0.290 (0.188)	-0.299 (0.188)	0.917 (0.385)	0.938 (0.394)
High school	0.848 (0.379)	0.866 (0.391)	-0.100 (0.187)	-0.086 (0.187)	-0.251 (0.186)	-0.266 (0.186)	1.054 (0.436)	1.061 (0.439)
Some college	0.853 (0.378)	0.869 (0.388)	-0.167 (0.184)	-0.161 (0.183)	-0.115 (0.183)	-0.116 (0.183)	0.829 (0.338)	0.841 (0.343)
Frequency of attendance to religious services	0.962 (0.051)	0.970 (0.052)	-0.027 (0.022)	-0.022 (0.023)	0.047* (0.022)	0.043 (0.022)	1.001 (0.053)	1.001 (0.053)

Mother appeared anxious and/or depressed at child's birth	0.947 (0.269)	0.945 (0.276)	0.168 (0.125)	0.143 (0.125)	0.076 (0.122)	0.083 (0.123)	0.901 (0.261)	0.976 (0.285)
First visited the doctor for pregnancy at or after 4 <sup>th</sup> month of pregnancy	1.158 (0.198)	1.159 (0.200)	0.092 (0.078)	0.091 (0.078)	-0.115* (0.183)	-0.162* (0.078)	0.856 (0.153)	0.859 (0.155)
Mother drank during pregnancy	1.551* (0.344)	1.441 (0.335)	0.198 (0.107)	0.189 (0.107)	-0.220* (0.106)	-0.208 (0.078)	1.489 (0.348)	1.390 (0.339)
Mother did drugs during pregnancy	0.984 (0.283)	0.868 (0.388)	0.031 (0.143)	0.003 (0.143)	0.029 (0.142)	0.053 (0.142)	1.744* (0.489)	1.563 (0.453)
Intercept	0.453 (0.331)	0.464 (0.344)	0.135 (0.311)	0.079 (0.310)	0.926** (0.307)	0.961** (0.307)	0.388 (0.294)	0.343 (0.262)
$R^2$ / pseudo $R^2$	0.051	0.056	0.058	0.067	0.085	0.090	0.149	0.148

*Note.* Models for depressive symptoms and spanking behaviors present odds ratios (SEs). Table presents unstandardized regression coefficients (SEs) for all other models. City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Results reflect imputed data for predictors only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

Table 5. Associations between mother's consideration of abortion and self-reported co-parenting quality with child's biological father when the child is 1-year-old.

	Co-parenting with child's biological father			
	Single		Cohabiting	
	Model 1 ( <i>n</i> =1,097)	Model 2 ( <i>n</i> =1,095)	Model 1 ( <i>n</i> =1,199)	Model 2 ( <i>n</i> =1,198)
Mother considered abortion	-0.226** (0.078)	-0.108 (0.066)	-0.190** (0.063)	-0.131* (0.054)
Mother's report that biological father asked to have abortion		-0.305*** (0.085)		-0.058 (0.091)
Becomes romantic with biological father when child is 1		1.197*** (0.063)		
Breaks up with child's biological father by the time the child is 1				-1.175*** (0.057)
Mother's age at child's birth	-0.020** (0.008)	-0.013 (0.007)	0.012* (0.006)	0.009 (0.005)
Maternal race/ethnicity (ref: White)				
Black	0.378** (0.140)	0.446*** (0.120)	0.139 (0.081)	0.179* (0.070)
Hispanic	0.345* (0.166)	0.376** (0.143)	0.063 (0.094)	0.074 (0.080)
Other	0.147 (0.288)	0.164 (0.247)	0.103 (0.182)	0.311* (0.155)
Child female	-0.040 (0.072)	-0.065 (0.062)	-0.346 (0.145)	-0.002 (0.045)

Child low birth weight	0.091 (0.115)	0.021 (0.099)	-0.053 (0.089)	0.024 (0.076)
Number of children in household at child's birth	0.001 (0.028)	-0.007 (0.024)	0.025 (0.026)	0.011 (0.022)
Mother's household income/poverty threshold	0.024 (0.033)	-0.005 (0.028)	0.019 (0.017)	0.007 (0.015)
Maternal education (ref: college)				
<High school	0.116 (0.238)	0.170 (0.204)	0.009 (0.180)	0.071 (0.154)
High school	0.286 (0.234)	0.266 (0.201)	0.002 (0.177)	0.036 (0.151)
Some college	0.221 (0.229)	0.236 (0.197)	-0.035 (0.174)	-0.160 (0.149)
Frequency of attendance to religious services	0.010 (0.027)	-0.006 (0.023)	-0.016 (0.021)	-0.025 (0.018)
Mother appeared anxious and/or depressed at child's birth	-0.013 (0.121)	-0.025 (0.104)	-0.150 (0.115)	-0.095 (0.098)
First visited the doctor for pregnancy at or after 4 <sup>th</sup> month of pregnancy	-0.075 (0.086)	-0.046 (0.074)	0.008 (0.073)	0.054 (0.063)
Mother drank during pregnancy	-0.286 (0.130)	-0.097 (0.113)	-0.056 (0.102)	-0.061 (0.087)
Mother did drugs during pregnancy	0.285 (0.130)	0.117 (0.140)	0.021 (0.134)	0.083 (0.115)

Intercept	-0.323 (0.408)	-1.129 (0.353)	-0.086 (0.289)	0.067 (0.247)
$R^2$ / pseudo $R^2$	0.055	0.308	0.042	0.303

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*Note.* Table presents unstandardized regression coefficients (SEs). City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Results reflect imputed data for predictors only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

Table 6. Associations between mother's consideration of abortion and self-reported maternal mental health when the child is 3-years-old for mothers who are single at child's birth.

	Depressive symptoms				Parenting stress			
	Model 1 (n=1,508)	Model 2 (n=1,489)	Model 3 (n=1,408)	Model 4 (n=1,408)	Model 1 (n=1,582)	Model 2 (n=1,564)	Model 3 (n=1,315)	Model 4 (n=1,315)
Mother considered abortion	0.146* (0.057)	0.117* (0.058)	0.101 (0.057)	0.107 (0.064)	0.200*** (0.055)	0.172** (0.056)	0.065 (0.052)	0.062 (0.053)
Mother's report that bio dad asked for an abortion		0.162* (0.073)	0.144* (0.071)	0.144* (0.071)		0.125 (0.069)	0.111 (0.066)	0.109 (0.066)
Longitudinal relationship with bio dad (ref: stably romantic)								
Stably not romantic			0.213** (0.067)	0.213** (0.067)		0.207** (0.066)	0.102 (0.061)	0.102 (0.061)
Romantic when child is 1 and break-up by age 3		0.198* (0.090)	0.186* (0.088)	0.186* (0.088)		-0.059 (0.088)	-0.022 (0.079)	-0.023 (0.080)
Not romantic when child is 1 but become romantic by age 3		-0.034 (0.131)	-0.008 (0.132)	-0.009 (0.132)		-0.020 (0.126)	-0.022 (0.117)	-0.025 (0.117)
Depressive symptoms when child is 1			0.732*** (0.066)	0.744*** (0.088)				

Mother considered abortion x depressive symptoms when child is 1									-0.027 (0.131)		
Parenting stress when child is 1										0.488*** (0.024)	0.479*** (0.032)
Mother considered abortion x parenting stress when child is 1											0.022 (0.048)
Mother's age at child's birth	-0.009 (0.006)	-0.010 (0.006)	-0.011 (0.006)	-0.011 (0.006)	0.001 (0.006)	-0.001 (0.006)	-0.002 (0.005)	-0.002 (0.005)			
Maternal race/ethnicity (ref: White)											
Black	-0.139 (0.098)	-0.126 (0.098)	-0.070 (0.097)	-0.069 (0.098)	0.042 (0.095)	0.054 (0.096)	-0.001 (0.089)	-0.003 (0.089)			
Hispanic	-0.024 (0.115)	0.002 (0.115)	-0.070 (0.114)	-0.068 (0.114)	0.060 (0.111)	0.061 (0.111)	-0.018 (0.107)	-0.021 (0.107)			
Other	-0.021 (0.188)	-0.071 (0.189)	0.009 (0.190)	0.011 (0.190)	-0.177 (0.183)	-0.194 (0.183)	-0.233 (0.186)	-0.238 (0.186)			
Child female	-0.028 (0.054)	-0.025 (0.054)	-0.011 (0.054)	-0.010 (0.054)	-0.045 (0.053)	-0.036 (0.053)	-0.031 (0.050)	-0.031 (0.050)			
Child low birth weight	-0.024 (0.086)	-0.036 (0.086)	-0.089 (0.084)	-0.089 (0.084)	0.048 (0.083)	0.053 (0.083)	0.020 (0.077)	0.021 (0.077)			
Number of children in household at child's birth	0.011 (0.022)	0.013 (0.022)	0.013 (0.022)	0.013 (0.022)	0.010 (0.021)	0.008 (0.021)	-0.006 (0.020)	-0.006 (0.020)			



Mother's household income/poverty threshold	-0.007 (0.023)	-0.006 (0.023)	0.002 (0.023)	0.002 (0.023)	-0.023 (0.023)	-0.022 (0.023)	-0.013 (0.021)	-0.013 (0.021)
Child is mother's first	-0.018 (0.067)	-0.033 (0.067)	-0.014 (0.066)	-0.014 (0.066)	-0.094 (0.064)	-0.123 (0.065)	-0.146* (0.061)	-0.146* (0.061)
Maternal education (ref: college)								
<High school	0.270 (0.177)	0.257 (0.176)	0.171 (0.175)	-0.172 (0.175)	0.281 (0.173)	0.282 (0.173)	0.215 (0.162)	0.217 (0.162)
High school	0.124 (0.175)	0.116 (0.174)	0.069 (0.172)	0.070 (0.172)	0.125 (0.171)	0.122 (0.171)	0.124 (0.159)	0.125 (0.159)
Some college	0.227 (0.171)	0.207 (0.170)	0.163 (0.168)	0.163 (0.168)	0.061 (0.167)	0.048 (0.167)	0.045 (0.155)	0.046 (0.155)
Frequency of attendance to religious services	-0.011 (0.020)	-0.003 (0.020)	-0.007 (0.020)	-0.007 (0.020)	-0.046* (0.019)	-0.040* (0.019)	-0.040* (0.018)	-0.039* (0.018)
Mother appeared anxious and/or depressed at child's birth	-0.001 (0.088)	-0.022 (0.088)	-0.022 (0.087)	-0.022 (0.087)	-0.051 (0.085)	-0.066 (0.085)	-0.102 (0.080)	-0.103 (0.080)
First visited the doctor for pregnancy at or after 4 <sup>th</sup> month of pregnancy	<-0.001 (0.065)	-0.037 (0.065)	-0.042 (0.065)	-0.042 (0.065)	0.017 (0.064)	0.003 (0.064)	0.005 (0.060)	0.004 (0.060)

Mother drank during pregnancy	0.239* (0.094)	0.220* (0.096)	0.246* (0.095)	0.245* (0.095)	-0.003 (0.091)	-0.002 (0.093)	0.039 (0.086)	0.039 (0.086)
Mother did drugs during pregnancy	0.173 (0.113)	0.212 (0.114)	0.173 (0.115)	0.173 (0.115)	0.103 (0.111)	0.106 (0.113)	-0.045 (0.108)	-0.046 (0.108)
Intercept	0.073 (0.303)	-0.115 (0.306)	-0.129 (0.305)	-0.133 (0.306)	-0.212 (0.294)	-0.267 (0.298)	0.058 (0.281)	0.062 (0.281)
$R^2$ / pseudo $R^2$	0.049	0.065	0.145	0.145	0.055	0.069	0.306	0.306

*Note.* Table presents unstandardized regression coefficients (SEs). City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Results reflect imputed data for predictors only.

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

Table 7. Associations between mother's consideration of abortion and self-reported parenting behaviors when the child is 3-years-old for mothers who are single at child's birth.

	Engagement in parenting				Spanking			
	Model 1 (n=1,583)	Model 2 (n=1,565)	Model 3 (n=1,316)	Model 4 (n=1,316)	Model 1 (n=1,579)	Model 2 (n=1,561)	Model 3 (n=1,479)	Model 4 (n=1,479)
Mother considered abortion	-0.059 (0.054)	-0.055 (0.055)	-0.021 (0.052)	-0.021 (0.052)	1.149 (0.128)	1.152 (0.130)	1.015 (0.123)	1.123 (0.157)
Mother's report that bio dad asked for an abortion		0.000 (0.068)	0.003 (0.065)	0.003 (0.065)		1.203 (0.169)	1.194 (0.179)	1.204 (0.181)
Longitudinal relationship with bio dad (ref: stably romantic)								
Stably not romantic		-0.054 (0.066)	-0.069 (0.060)	-0.069 (0.060)		0.806 (0.107)	0.802 (0.112)	0.798 (0.112)
Romantic when child is 1 and break-up by age 3		-0.033 (0.087)	-0.092 (0.078)	-0.092 (0.078)		0.990 (0.174)	1.077 (0.199)	1.072 (0.198)
Not romantic when child is 1 but become romantic by age 3		-0.081 (0.130)	-0.050 (0.115)	-0.050 (0.115)		0.812 (0.208)	0.876 (0.236)	0.875 (0.236)
Engagement in parenting when child is 1			0.478*** (0.025)	0.473*** (0.033)				

Mother considered abortion x engagement in parenting when child is 1					0.008 (0.050)			
Spanking when child is 1							3.818*** (0.520)	4.541*** (0.836)
Mother considered abortion x spanking when child is 1								0.686 (0.179)
Mother's age at child's birth	-0.007 (0.005)	-0.006 (0.006)	-0.003 (0.005)	-0.003 (0.005)	0.986 (0.011)	0.989 (0.011)	0.994 (0.012)	0.995 (0.012)
Maternal race/ethnicity (ref: White)								
Black	-0.127 (0.093)	-0.116 (0.094)	0.012 (0.088)	0.111 (0.088)	1.248 (0.239)	1.261 (0.244)	1.068 (0.220)	1.064 (0.220)
Hispanic	-0.152 (0.108)	-0.140 (0.109)	0.031 (0.106)	0.031 (0.106)	0.861 (0.191)	0.869 (0.195)	0.899 (0.213)	0.892 (0.211)
Other	0.013 (0.179)	0.029 (0.179)	0.142 (0.184)	0.142 (0.184)	0.846 (0.309)	0.849 (0.311)	0.891 (0.354)	0.897 (0.356)
Child female	0.011 (0.051)	0.006 (0.051)	-0.004 (0.049)	-0.004 (0.049)	0.887 (0.093)	0.879 (0.093)	0.908 (0.103)	0.908 (0.103)
Child low birth weight	0.411 (0.081)	0.038 (0.082)	0.044 (0.076)	0.044 (0.076)	0.702* (0.116)	0.700* (0.117)	0.728 (0.130)	0.726 (0.129)
Number of children in household at child's birth	-0.012 (0.021)	-0.007 (0.021)	0.007 (0.020)	0.007 (0.020)	0.925 (0.039)	0.920 (0.039)	0.935 (0.043)	0.932 (0.043)

Mother's household income/poverty threshold	-0.003 (0.022)	-0.002 (0.022)	-0.007 (0.021)	-0.007 (0.021)	1.111 (0.053)	1.107* (0.053)	1.110* (0.057)	1.109* (0.057)
Child is mother's first	0.125* (0.063)	0.139* (0.064)	0.142* (0.060)	0.142* (0.060)	1.161 (0.149)	1.216 (0.159)	1.173 (0.165)	1.163 (0.164)
Maternal education (ref: college)								
<High school	-0.120 (0.169)	-0.114 (0.170)	-0.178 (0.160)	-0.177 (0.160)	0.958 (0.336)	0.990 (0.348)	0.899 (0.340)	0.891 (0.337)
High school	0.027 (0.163)	-0.017 (0.168)	-0.102 (0.157)	-0.101 (0.157)	1.013 (0.351)	1.047 (0.364)	0.961 (0.358)	0.950 (0.354)
Some college		0.024 (0.164)	-0.131 (0.154)	-0.131 (0.154)	1.073 (0.364)	1.079 (0.367)	1.032 (0.377)	1.022 (0.373)
Frequency of attendance to religious services	0.064** (0.0188)	0.062** (0.019)	0.034 (0.018)	0.034 (0.018)	0.958 (0.037)	0.958 (0.037)	0.917* (0.038)	0.918* (0.038)
Mother appeared anxious and/or depressed at child's birth	-0.070 (0.083)	-0.067 (0.084)	-0.031 (0.080)	-0.031 (0.080)	0.937 (0.159)	0.941 (0.162)	1.000 (0.184)	1.010 (0.186)
First visited the doctor for pregnancy at or after 4 <sup>th</sup> month of pregnancy	-0.058 (0.062)	-0.049 (0.063)	-0.034 (0.059)	-0.035 (0.059)	1.151 (0.146)	1.159 (0.149)	1.268 (0.175)	1.260 (0.173)
Mother drank during pregnancy	-0.150 (0.089)	-0.123 (0.091)	-0.075 (0.085)	0.075 (0.085)	0.977 (0.179)	1.045 (0.196)	1.200 (0.242)	1.193 (0.240)

Mother did drugs during pregnancy	0.116 (0.109)	0.109 (0.111)	0.053 (0.106)	0.053 (0.106)	1.072 (0.239)	1.015 (0.231)	0.825 (0.204)	0.828 (0.204)
Intercept	0.327 (0.287)	0.322 (0.292)	0.329 (0.278)	0.330 (0.278)	1.111 (0.654)	1.055 (0.632)	1.071 (0.690)	1.034 (0.667)
$R^2$ / pseudo $R^2$	0.048	0.047	0.266	0.266	0.050	0.065	0.122	0.123

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*Note.* Models for spanking behaviors present odds ratios (SEs). Table presents unstandardized regression coefficients (SEs) for all other models. City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Results reflect imputed data for predictors only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

Table 8. Associations between categories of consideration of abortion and observed maternal parenting behaviors when the child is 3-years-old for mothers who are single at child's birth.

	Observed warmth		Observed harsh parenting		Observed home learning	
	Model 1 (n=850)	Model 2 (n=842)	Model 1 (n=852)	Model 2 (n=844)	Model 1 (n=1,265)	Model 2 (n=1,252)
Mother considered abortion	0.027 (0.076)	0.019 (0.077)	0.109 (0.081)	0.111 (0.080)	-0.010 (0.056)	-0.017 (0.057)
Mother's report that bio dad asked for an abortion		0.003 (0.096)		-0.079 (0.099)		0.111 (0.071)
Longitudinal relationship with bio dad (ref: stably romantic)						
Stably not romantic		-0.164 (0.090)		0.286** (0.094)		-0.089 (0.067)
Romantic when child is 1 and break-up by age 3		-0.138 (0.120)		0.072 (0.125)		-0.098 (0.089)
Not romantic when child is 1 but become romantic by age 3		0.173 (0.183)		0.038 (0.190)		-0.038 (0.126)
Mother's age at	0.002	0.004	0.003	-0.000	-0.011	-0.009

child's birth	(0.008)	(0.008)	(0.008)	(0.008)	(0.006)	(0.006)
Maternal race/ethnicity (ref: White)						
Black	-0.371** (0.142)	-0.377** (0.144)	0.122 (0.149)	0.108 (0.148)	-0.438*** (0.096)	-0.424*** (0.097)
Hispanic	-0.064 (0.167)	-0.074 (0.168)	-0.190 (0.175)	-0.214 (0.174)	-0.496*** (0.110)	-0.503*** (0.111)
Other	-0.267 (0.264)	-0.267 (0.265)	0.110 (0.278)	0.106 (0.275)	0.016 (0.196)	0.028 (0.197)
Child female	0.099 (0.073)	0.100 (0.073)	-0.086 (0.077)	-0.071 (0.076)	-0.084 (0.053)	-0.088 (0.053)
Child low birth weight	-0.234* (0.115)	-0.249* (0.116)	0.184 (0.121)	0.203 (0.120)	0.170* (0.084)	0.160 (0.084)
Number of children in household at child's birth	-0.068* (0.029)	-0.067* (0.029)	-0.013 (0.031)	-0.022 (0.030)	-0.028 (0.021)	-0.024 (0.021)
Mother's household income/poverty threshold	0.029 (0.034)	0.030 (0.034)	-0.021 (0.035)	-0.017 (0.035)	0.055 (0.024)	0.054* (0.024)
Child is mother's first	-0.065 (0.091)	-0.044 (0.093)	0.176 (0.096)	0.129 (0.96)	0.079 (0.065)	0.084 (0.066)



Maternal education (ref: college)						
<High school	-0.495 (0.273)	-0.490 (0.274)	0.208 (0.288)	0.199 (0.285)	-0.433* (0.182)	-0.423* (0.183)
High school	-0.462 (0.272)	-0.454 (0.272)	0.152 (0.287)	0.151 (0.283)	-0.263 (0.181)	-0.259 (0.182)
Some college	-0.335 (0.271)	-0.330 (0.271)	-0.061 (0.286)	-0.031 (0.282)	-0.166 (0.179)	-0.170 (0.179)
Frequency of attendance to religious services	-0.021 (0.027)	0.0132 (0.027)	-0.017 (0.029)	-0.009 (0.029)	0.043* (0.020)	0.044* (0.020)
Mother appeared anxious and/or depressed at child's birth	-0.031 (0.122)	0.055 (0.122)	-0.081 (0.129)	-0.089 (0.127)	-0.086 (0.086)	-0.081 (0.086)
First visited the doctor for pregnancy at or after 4 <sup>th</sup> month of pregnancy	-0.124 (0.087)	-0.112 (0.088)	-0.016 (0.092)	-0.046 (0.091)	-0.087 (0.065)	-0.081 (0.066)
Mother drank during pregnancy	-0.178 (0.123)	-0.163 (0.125)	-0.073 (0.130)	-0.088 (0.130)	0.098 (0.093)	0.107 (0.094)
Mother did drugs during pregnancy	-0.324* (0.153)	-0.352* (0.156)	-0.032 (0.161)	-0.065 (0.162)	-0.056 (0.111)	-0.065 (0.113)
Intercept	0.935*	1.061*	0.080	-0.150	0.590	0.577

	(0.458)	(0.465)	(0.482)	(0.483)	(0.298)	(0.303)
$R^2$ / pseudo $R^2$	0.147	0.158	0.099	0.114	0.161	0.163

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*Note.* Table presents unstandardized regression coefficients (SEs). City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Results reflect imputed data for predictors only.

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

Table 9. Associations between mother's consideration of abortion and self-reported maternal mental health when the child is 3-years-old for mothers who are cohabiting with the child's father at child's birth.

	Depressive symptoms				Parenting stress			
	Model 1 (n=1,434)	Model 2 (n=1,414)	Model 3 (n=1,341)	Model 4 (n=1,341)	Model 1 (n=1,500)	Model 2 (n=1,480)	Model 3 (n=1,206)	Model 4 (n=1,206)
Mother considered abortion	0.177** (0.065)	0.151* (0.066)	0.123 (0.065)	0.108 (0.073)	0.316*** (0.061)	0.291*** (0.062)	0.215*** (0.058)	0.212***
Mother's report that bio dad asked for an abortion		0.194 (0.108)	0.061 (0.107)	0.059 (0.107)		0.066 (0.103)	-0.072 (0.097)	-0.075 (0.097)
Broke-up with bio dad by age 3		0.151** (0.057)	0.141* (0.056)	0.142* (0.056)		0.093 (0.005)	0.020 (0.049)	0.021 (0.049)
Depressive symptoms when child is 1			0.749*** (0.067)	0.729*** (0.081)				
Mother considered abortion x depressive symptoms when child is 1				0.064 (0.142)				
Parenting stress when child is 1							0.532*** (0.024)	0.523*** (0.029)
Mother considered abortion x parenting stress when child is 1								0.033 (0.054)

Mother's age at child's birth	-0.003 (0.006)	-0.003 (0.006)	-0.005 (0.006)	-0.005 (0.006)	0.002 (0.005)	0.002 (0.005)	0.004 (0.005)	0.004 (0.005)
Maternal race/ethnicity (ref: White)								
Black	-0.040 (0.085)	-0.038 (0.085)	0.0123 (0.836)	0.011 (0.084)	0.092 (0.080)	0.099 (0.080)	-0.008 (0.073)	-0.006 (0.073)
Hispanic	-0.130 (0.094)	-0.102 (0.094)	-0.027 (0.929)	-0.028 (0.093)	0.235** (0.088)	0.246** (0.089)	0.198* (0.085)	0.198* (0.085)
Other	0.276 (0.191)	0.271 (0.190)	0.317 (0.185)	0.314 (0.185)	0.333 (0.177)	0.332 (0.177)	0.098 (0.170)	0.096 (0.170)
Child female	-0.047 (0.054)	-0.056 (0.054)	-0.026 (0.053)	-0.026 (0.053)	0.005 (0.051)	0.006 (0.051)	0.037 (0.048)	0.037 (0.048)
Child low birth Weight	-0.066 (0.093)	-0.082 (0.94)	-0.083 (0.091)	-0.083 (0.091)	-0.138 (0.089)	-0.123 (0.090)	-0.129 (0.081)	0.130 (0.081)
Number of children in household at child's birth	0.029 (0.026)	0.028 (0.026)	0.036 (0.026)	0.035 (0.026)	-0.002 (0.025)	0.002 (0.025)	0.006 (0.023)	0.006 (0.023)
Mother's household income/poverty threshold	0.001 (0.019)	0.003 (0.019)	0.006 (0.018)	0.006 (0.018)	-0.004 (0.173)	-0.005 (0.173)	-0.003 (0.016)	-0.002 (0.016)
Child is mother's first	-0.073 (0.070)	-0.085 (0.069)	-0.044 (0.069)	-0.045 (0.069)	-0.008 (0.064)	-0.005 (0.065)	-0.011 (0.061)	-0.012 (0.061)

Maternal education (ref: college)								
<High school	0.386*	0.415*	0.410*	0.411*	-0.074	-0.057	-0.229	-0.231
	(0.172)	(0.172)	(0.168)	(0.168)	(0.164)	(0.164)	(0.159)	(0.159)
High school	0.259	0.293	0.353*	0.355*	-0.193	-0.183	-0.227	-0.228
	(0.170)	(0.170)	(0.165)	(0.165)	(0.162)	(0.162)	(0.157)	(0.157)
Some college	0.316	0.335*	0.397*	0.399*	-0.267	-0.255	-0.251	-0.253
	(0.167)	(0.166)	(0.162)	(0.162)	(0.159)	(0.159)	(0.154)	(0.154)
Frequency of attendance to religious services	-0.026	-0.029	-0.022	-0.022	-0.059**	-0.061**	-0.053**	-0.053**
	(0.021)	(0.022)	(0.021)	(0.021)	(0.020)	(0.020)	(0.019)	(0.019)
Mother appeared anxious and/or depressed at child's birth	0.238*	0.204	0.225	0.225	0.056	0.070	-0.105	-0.104
	(0.120)	(0.123)	(0.121)	(0.121)	(0.110)	(0.113)	(0.105)	(0.105)
First visited the doctor for pregnancy at or after 4 <sup>th</sup> month of pregnancy	-0.034	-0.250	-0.075	-0.074	0.161*	0.167*	0.119	0.119
	(0.072)	(0.072)	(0.072)	(0.072)	(0.068)	(0.069)	(0.067)	(0.067)
Mother drank during pregnancy	0.338***	0.361**	0.343**	0.340**	0.116	0.134	0.114	0.114
	(0.101)	(0.104)	(0.102)	(0.102)	(0.094)	(0.097)	(0.091)	(0.091)
Mother did drugs during pregnancy	0.064	0.016	0.041	0.042	0.012	-0.021	-0.219	-0.216
	(0.126)	(0.130)	(0.127)	(0.127)	(0.126)	(0.130)	(0.125)	(0.125)

Intercept	-0.364 (0.290)	-0.458 (0.295)	-0.669* (0.291)	-0.669* (0.291)	-0.103 (0.273)	-0.177 (0.278)	-0.009 (0.262)	-0.012 (0.262)
$R^2$ / pseudo $R^2$	0.067	0.074	0.157	0.157	0.067	0.069	0.340	0.340

*Note.* Table presents unstandardized regression coefficients (SEs). City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Results reflect imputed data for predictors only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

Table 10. Associations between mother's consideration of abortion and self-reported maternal parenting behaviors when the child is 3-years-old for mothers who are cohabiting with the child's biological father at child's birth.

	Engagement in parenting				Spanking			
	Model 1 (n=1,501)	Model 2 (n=1,481)	Model 3 (n=1,209)	Model 4 (n=1,209)	Model 1 (n=1,500)	Model 2 (n=1,480)	Model 3 (n=1,400)	Model 4 (n=1,440)
Considered abortion	-0.250*** (0.061)	-0.234*** (0.062)	-0.171** (0.061)	-0.172** (0.061)	1.652*** (0.221)	1.597** (0.218)	1.544** (0.226)	1.600** (0.261)
Mother's report that bio dad asked for an abortion		-0.088 (0.104)	-0.055 (0.103)	-0.056 (0.103)		1.394 (0.319)	1.374 (0.344)	1.373 (0.343)
Broke-up with bio dad by age 3		-0.033 (0.054)	0.004 (0.052)	0.004 (0.052)		1.074 (0.125)	1.016 (0.126)	1.018 (0.127)
Engagement in parenting when child is 1			0.456*** (0.026)	0.459*** (0.030)				
Considered abortion x Engagement in parenting when child is 1				-0.013 (0.059)				
Spanking when child is 1							4.964*** (0.775)	5.184*** (0.930)
Considered abortion x spanking when child is 1								0.846 (0.282)
Mother's age at child's birth	-0.013* (0.005)	-0.013* (0.006)	-0.005 (0.005)	-0.005 (0.005)	0.984 (0.112)	0.986 (0.012)	0.991 (0.013)	0.991 (0.013)

Maternal race/ethnicity (ref: White)								
Black	-0.145 (0.081)	-0.153 (0.081)	-0.080 (0.077)	-0.079 (0.078)	1.377 (0.240)	1.364 (0.238)	1.185 (0.221)	1.184 (0.221)
Hispanic	-0.419*** (0.089)	-0.421*** (0.089)	-0.232* (0.090)	-0.231* (0.090)	0.902 (0.172)	0.936 (0.179)	0.861 (0.177)	0.861 (0.177)
Other	-0.016 (0.178)	-0.017 (0.178)	0.016 (0.177)	0.014 (0.177)	1.157 (0.439)	1.160 (0.441)	1.040 (0.419)	1.039 (0.419)
Child female	0.060 (0.051)	0.065 (0.051)	0.015 (0.050)	0.015 (0.050)	0.802* (0.088)	0.808 (0.090)	0.825 (0.098)	0.825 (0.098)
Child low birth weight	-0.096 (0.088)	-0.091 (0.088)	-0.041 (0.085)	-0.041 (0.085)	1.310 (0.255)	1.252 (0.245)	1.349 (0.285)	1.346 (0.284)
Number of children in household at child's birth	-0.027 (0.025)	-0.032 (0.025)	-0.004 (0.025)	-0.004 (0.025)	1.006 (0.054)	1.003 (0.054)	1.049 (0.062)	1.048 (0.062)
Mother's household income/poverty threshold	0.020 (0.018)	0.018 (0.017)	0.013 (0.016)	0.013 (0.016)	1.084* (0.042)	1.082* (0.042)	1.096* (0.046)	1.096* (0.046)
Child is mother's first	-0.036 (0.065)	-0.037 (0.065)	-0.014 (0.064)	-0.014 (0.064)	1.729*** (0.243)	1.727*** (0.244)	1.550** (0.238)	1.548** (0.238)
Maternal education (ref: college)								
<High school	-0.093 (0.165)	-0.106 (0.165)	0.158 (0.168)	0.157 (0.168)	0.887 (0.314)	0.910 (0.323)	0.882 (0.335)	0.883 (0.336)
High school	-0.050 (0.163)	-0.069 (0.163)	0.181 (0.166)	0.180 (0.166)	0.996 (0.348)	1.021 (0.358)	0.976 (0.366)	0.976 (0.366)
Some college	0.102 (0.160)	0.091 (0.160)	0.244 (0.163)	0.243 (0.163)	1.101 (0.379)	1.114 (0.383)	1.152 (0.422)	1.154 (0.423)



Frequency of attendance to religious services	0.170 (0.020)	0.018 (0.020)	-0.009 (0.020)	-0.009 (0.020)	0.915* (0.040)	0.911* (0.040)	0.919 (0.044)	0.920 (0.044)
Mother appeared anxious and/or depressed at child's birth	0.006 (0.110)	0.032 (0.113)	0.062 (0.111)	0.063 (0.111)	1.183 (0.283)	1.270 (0.313)	1.437 (0.385)	1.427 (0.383)
First visited the doctor for pregnancy at or after 4 <sup>th</sup> month of pregnancy	0.014 (0.068)	0.021 (0.069)	0.063 (0.070)	0.064 (0.070)	1.152 (0.171)	1.132 (0.169)	1.227 (0.199)	1.226 (0.199)
Mother drank during pregnancy	-0.023 (0.095)	-0.063 (0.098)	0.028 (0.096)	0.028 (0.096)	1.578* (0.328)	1.567* (0.339)	1.620* (0.378)	1.635* (0.382)
Mother did drugs during pregnancy	-0.008 (0.127)	-0.030 (0.131)	0.096 (0.133)	0.093 (0.133)	0.632 (0.172)	0.592 (0.167)	0.529* (0.166)	0.539* (0.169)
Intercept	0.483 (0.275)	0.524 (0.280)	-0.012 (0.278)	-0.011 (0.278)	0.595 (0.355)	0.529 (0.321)	0.455 (0.294)	0.450 (0.293)
$R^2$ / pseudo $R^2$	0.080	0.081	0.268	0.268	0.097	0.096	0.173	0.173

*Note.* Models for spanking behaviors present odds ratios (SEs). Models for engagement in parenting present unstandardized regression coefficients (SEs). City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Results reflect imputed data for predictors only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

Table 11. Associations between mother's consideration of abortion and observed parenting behaviors when the child is 3-years-old for mothers who are cohabiting with the child's biological father at child's birth.

	Observed warmth				Observed harsh parenting		Observed home learning	
	Model 1 (n=788)	Model 2 (n=778)	Model 3 (n=640)	Model 4 (n=640)	Model 1 (n=793)	Model 2 (n=783)	Model 1 (n=1,210)	Model 2 (n=1,192)
Mother considered abortion	0.173* (0.081)	0.175* (0.082)	0.118 (0.086)	0.114 (0.087)	-0.143 (0.082)	-0.138 (0.084)	-0.061 (0.064)	-0.058 (0.065)
Mother's report that bio dad asked for an abortion		0.022 (0.136)	-0.024 (0.148)	-0.025 (0.148)		0.142 (0.140)		0.089 (0.107)
Broke-up with bio dad by age 3		0.029 (0.073)	0.075 (0.078)	0.076 (0.078)		-0.046 (0.075)		0.074 (0.057)
Mother's engagement in parenting at age 1			0.027 (0.037)	0.036 (0.044)				
Considered abortion x Mother's engagement in parenting when child is 1				-0.033 (0.083)				
Mother's age at child's birth	0.016* (0.008)	0.019* (0.008)	0.025** (0.008)	0.026** (0.008)	-0.007 (0.008)	-0.007 (0.008)	-0.008 (0.006)	-0.007 (0.006)

Maternal race/ethnicity (ref: White)								
Black	-0.367**	-0.353**	-0.346**	-0.345**	0.271*	0.272*	-0.504***	-0.509***
	(0.111)	(0.111)	(0.117)	(0.117)	(0.113)	(0.114)	(0.085)	(0.085)
Hispanic	-0.355**	-0.369**	-0.327*	-0.322*	0.134	0.148	-0.582***	-0.572***
	(0.129)	(0.128)	(0.143)	(0.144)	(0.130)	(0.131)	(0.094)	(0.094)
Other	-0.051	-0.070	-0.262	-0.265	-0.109	-0.094	-0.124	-0.135
	(0.254)	(0.252)	(0.270)	(0.271)	(0.250)	(0.252)	(0.185)	(0.185)
Child female	-0.061	-0.049	-0.064	-0.064	-0.143	-0.142*	0.007	0.012
	(0.069)	(0.069)	(0.074)	(0.074)	(0.069)	(0.071)	(0.053)	(0.054)
Child low birth Weight	0.090	0.133	0.198	0.197	0.091	0.076	-0.181*	-0.172
	(0.125)	(0.125)	(0.134)	(0.134)	(0.126)	(0.127)	(0.091)	(0.092)
Number of children in household at child's birth	-0.016	-0.023	-0.036	-0.035	-0.031	-0.031	-0.026	-0.025
	(0.033)	(0.032)	(0.035)	(0.035)	(0.033)	(0.033)	(0.026)	(0.026)
Mother's household income/poverty threshold	0.029	0.027	0.024	0.025	0.029	0.029	0.070***	0.070***
	(0.024)	(0.024)	(0.024)	(0.024)	(0.024)	(0.024)	(0.018)	(0.018)
Child is mother's first	0.099	0.097	0.123	0.124	-0.032	-0.031	-0.024	-0.029
	(0.090)	(0.090)	(0.097)	(0.097)	(0.092)	(0.093)	(0.069)	(0.069)
Maternal education (ref: college)								
<High school	-0.226	-0.208	-0.245	-0.249	0.031	0.031	-0.440*	-0.421*
	(0.250)	(0.249)	(0.271)	(0.272)	(0.253)	(0.254)	(0.175)	(0.175)
High school	-0.062	-0.017	-0.100	-0.103	0.056	0.058	-0.220	-0.192
	(0.246)	(0.245)	(0.266)	(0.267)	(0.248)	(0.251)	(0.173)	(0.174)
Some college	0.098	0.115	0.078	0.073	-0.091	-0.098	-0.018	-0.006
	(0.240)	(0.238)	(0.260)	(0.260)	(0.243)	(0.244)	(0.169)	(0.170)
Frequency of attendance to religious services	0.016	0.022	0.007	0.006	-0.053	-0.051	0.043*	0.041
	(0.028)	(0.028)	(0.031)	(0.031)	(0.028)	(0.029)	(0.021)	(0.022)

Mother appeared anxious and/or depressed at child's birth	-0.321* (0.154)	-0.307* (0.156)	-0.054 (0.175)	-0.053 (0.175)	-0.095 (0.155)	-0.089 (0.159)	-0.013 (0.114)	-0.050 (0.117)
First visited the doctor for pregnancy at or after 4 <sup>th</sup> month of pregnancy	0.039 (0.098)	0.048 (0.097)	0.069 (0.107)	0.072 (0.108)	0.193 (0.099)	0.202* (0.101)	-0.044 (0.074)	-0.032 (0.075)
Mother drank during pregnancy	-0.087 (0.128)	-0.040 (0.132)	-0.029 (0.137)	-0.028 (0.137)	0.304** (0.130)	0.300* (0.135)	-0.059 (0.098)	-0.074 (0.102)
Mother did drugs during pregnancy	-0.055 (0.156)	-0.022 (0.159)	-0.028 (0.182)	-0.034 (0.183)	0.182 (0.158)	0.135 (0.164)	0.215 (0.125)	0.181 (0.130)
Intercept	-0.129 (0.409)	-0.253 (0.412)	-0.371 (0.440)	-0.369 (0.440)	0.256 (0.414)	0.253 (0.422)	0.307 (0.297)	0.220 (0.303)
$R^2$ / pseudo $R^2$	0.155	0.157	0.165	0.165	0.107	0.109	0.186	0.187

*Note.* Table presents unstandardized regression coefficients (SEs). City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Results reflect imputed data for predictors only.

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

Table 12. Associations between mother's consideration of abortion and co-parenting with child's biological father when the child is 3-years-old for mothers.

	Co-parenting with child's biological father							
	Single				Cohabiting			
	Model 1 (n=603)	Model 2 (n=601)	Model 3 (n=528)	Model 4 (n=528)	Model 1 (n=620)	Model 2 (n=618)	Model 3 (n=584)	Model 4 (n=584)
Mother considered abortion	-0.325** (0.098)	-0.318*** (0.083)	-0.266** (0.078)	-0.280*** (0.080)	-0.115 (0.088)	-0.09 (0.085)	-0.034 (0.077)	-0.045 (0.077)
Mother's report that bio dad asked for an abortion		-0.069 (0.105)	-0.036 (0.102)	-0.037 (0.102)		-0.408* (0.159)	-0.246 (0.142)	-0.203 (0.143)
Longitudinal relationship with bio dad (ref: stably romantic 1 to 3)								
Stably not romantic		-1.374*** (0.093)	-0.885*** (0.097)	-0.885*** (0.097)				
Romantic when child is 1 and break-up by age 3		-0.988*** (0.119)	-0.936*** (0.105)	-0.938*** (0.105)				
Not romantic when child is 1 but become romantic by age 3		-0.014 (0.152)	0.203 (0.144)	0.200 (0.144)				

Cohabiting mother broke-up with bio dad by age 3						-0.534*** (0.072)	-0.387*** (0.066)	-0.388*** (0.065)
Co-parenting with child's bio dad when child is 1			0.402*** (0.039)	0.425*** (0.048)			0.490*** (0.039)	0.444*** (0.045)
Mother considered abortion x co-parenting with child's bio dad when child is 1				-0.054 (0.067)				0.177* (0.086)
Mother's age at child's birth	-0.008 (0.010)	-0.004 (0.009)	0.002 (0.008)	0.002 (0.008)	0.006 (0.008)	0.002 (0.008)	0.001 (0.007)	<0.001 (0.007)
Maternal race/ethnicity (ref: White)								
Black	0.656*** (0.185)	0.646*** (0.155)	0.395* (0.160)	0.377* (0.162)	-0.124 (0.113)	-0.062 (0.109)	-0.070 (0.098)	-0.075 (0.098)
Hispanic	0.412 (0.233)	0.426* (0.195)	0.150 (0.192)	0.139 (0.192)	-0.205 (0.136)	-0.174 (0.130)	-0.131 (0.118)	-0.124 (0.118)
Other	0.834 (0.432)	0.990** (0.359)	0.620 (0.345)	0.600 (0.346)	-0.321 (0.299)	-0.242 (0.286)	-0.231 (0.252)	-0.241 (0.251)
Child female	0.016 (0.093)	-0.083 (0.078)	-0.058 (0.073)	-0.056 (0.073)	-0.034 (0.073)	-0.046 (0.070)	0.014 (0.064)	0.013 (0.064)

Child low birth Weight	0.157 (0.155)	0.078 (0.130)	0.045 (0.126)	0.045 (0.127)	0.043 (0.130)	0.062 (0.125)	0.102 (0.110)	0.084 (0.110)
Number of children in household at child's birth	-0.029 (0.037)	-0.004 (0.035)	0.010 (0.029)	0.011 (0.029)	0.064 (0.035)	0.046 (0.034)	0.024 (0.031)	0.025 (0.031)
Mother's household income/poverty threshold	-0.008 (0.042)	0.004 (0.035)	-0.016 (0.034)	-0.019 (0.034)	0.023 (0.025)	0.026 (0.024)	0.005 (0.021)	0.006 (0.021)
Child is mother's first	-0.190 (0.117)	-0.095 (0.098)	-0.064 (0.091)	-0.056 (0.092)	-0.212* (0.094)	-0.218* (0.089)	-0.146 (0.082)	-0.140 (0.082)
Maternal education (ref: college)								
<High school	0.457 (0.361)	0.469 (0.301)	0.36 (0.276)	0.367 (0.276)	0.344 (0.263)	0.197 (0.251)	-0.010 (0.229)	-0.014 (0.229)
High school	0.389 (0.357)	0.486 (0.298)	0.409 (0.273)	0.410 (0.273)	0.329 (0.257)	0.190 (0.245)	0.013 (0.224)	0.001 (0.223)
Some college	0.319 (0.352)	0.367 (0.294)	0.200 (0.270)	0.200 (0.270)	0.292 (0.252)	0.197 (0.241)	0.021 (0.220)	-0.001 (0.219)
Frequency of attendance to religious services	0.015 (0.035)	-0.021 (0.029)	-0.020 (0.028)	-0.019 (0.028)	0.003 (0.031)	0.006 (0.029)	0.008 (0.027)	0.010 (0.027)

Mother appeared anxious and/or depressed at child's birth	0.152 (0.168)	0.108 (0.139)	0.023 (0.131)	0.018 (0.132)	-0.313 (0.185)	-0.280 (0.176)	-0.036 (0.159)	-0.055 (0.158)
First visited the doctor for pregnancy at or after 4 <sup>th</sup> month of pregnancy	-0.019 (0.116)	0.126 (0.098)	0.033 (0.092)	0.033 (0.092)	0.151 (0.107)	0.153 (0.102)	0.190* (0.092)	0.200* (0.092)
Mother drank during pregnancy	-0.087 (0.176)	0.033 (0.147)	0.154 (0.143)	0.144 (0.143)	-0.154 (0.140)	-0.060 (0.134)	0.007 (0.122)	-0.005 (0.122)
Mother did drugs during pregnancy	0.368 (0.226)	0.180 (0.189)	-0.112 (0.181)	-0.096 (0.182)	0.014 (0.188)	0.038 (0.181)	0.019 (0.162)	0.033 (0.162)
Intercept	-1.120* (0.561)	-0.517 (0.473)	-0.501 (0.453)	-0.487 (0.437)	-0.146 (0.416)	0.274 (0.400)	0.197 (0.365)	0.220 (0.364)
$R^2$ / pseudo $R^2$	0.085	0.374	0.494	0.495	0.106	0.194	0.373	0.333

*Note.* Table presents unstandardized regression coefficients (SEs). City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Results reflect imputed data for predictors only.

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .



*Table 13.* Examination of whether identified associations for FFCWS mothers who were single at child's birth remain when utilizing propensity score pair matching techniques.

	Depressive symptoms <i>n</i> = (516)	Parenting Stress <i>n</i> = (540)	Engagement in parenting <i>n</i> = (540)	Co-parenting with bio dad <i>n</i> = (197)	Spanking <i>n</i> = (538)
ATT Estimate of Consideration of abortion	0.078 (0.058)	0.220*** (0.056)	-0.024 (0.055)	-0.327** (0.100)	0.018 (0.027)
Intercept	0.043 (0.036)	-0.034 (0.035)	-0.006 (0.034)	-0.301 (0.063)	0.547*** (0.017)
Multiple <i>R</i> <sup>2</sup>	0.001	0.011	0.189	0.020	<0.001

*Note.* Table presents coefficients (SEs) from propensity score one to one pair matching models.

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$

Table 14. Examination of whether identified associations for FFCWS mothers who were cohabiting with the child's biological father at child's birth remain when utilizing propensity score pair matching techniques.

	Mental health		Parenting behaviors			
	Depressive symptoms <i>n</i> = (391)	Parenting Stress <i>n</i> = (410)	Engagement in parenting <i>n</i> = (409)	Co-parenting with bio dad <i>n</i> = (165)	Spanking <i>n</i> = (408)	Observed HOME Warmth <i>n</i> = (163)
ATT Estimate of Consideration of abortion	0.165* (0.065)	0.319*** (0.060)	-0.213*** (0.062)	-0.137 (0.083)	0.089** (0.031)	0.230** (0.081)
Intercept	0.002 (0.033)	-0.140*** (0.030)	0.050 (0.032)	0.174*** (0.043)	0.493*** (0.016)	-0.073 (0.044)
Multiple <i>R</i> <sup>2</sup>	0.005	0.020	0.008	0.005	0.006	0.011

Note. Table presents coefficients (SEs) from propensity score one to one pair matching models.

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

Table 15. Moderation of associations between mother consideration of abortion and mother's mental health and parenting by maternal education level.

	Single				Cohabiting			
	Parenting stress		Engagement in parenting		Parenting stress		Engagement in parenting	
	Model 1 (n=1,564)	Model 2 (n=1,315)	Model 1 (n=1,565)	Model 2 (n=1,316)	Model 1 (n=1,480)	Model 2 (n=1,206)	Model 1 (n=1,481)	Model 2 (n=1,209)
Mother considered abortion	0.170 (0.316)	0.046 (0.293)	0.318 (0.310)	0.214 (0.290)	-0.453 (0.383)	-0.436 (0.352)	0.408 (0.389)	0.221 (0.372)
Mother's report that bio dad asked for an abortion	0.123 (0.070)	0.110 (0.066)	-0.003 (0.068)	0.001 (0.065)	0.069 (0.103)	-0.074 (0.097)	-0.105 (0.104)	-0.063 (0.103)
Maternal education (ref: college)								
<High school	0.248 (0.216)	0.167 (0.206)	0.062 (0.212)	-0.083 (0.204)	-0.216 (0.178)	-0.382* (0.175)	-0.004 (0.179)	0.222 (0.185)
High school	0.128 (0.217)	0.142 (0.204)	0.115 (0.213)	0.001 (0.202)	-0.329 (0.177)	-0.369* (0.174)	0.106 (0.178)	0.316 (0.184)
Some college	0.085 (0.213)	0.073 (0.201)	0.157 (0.209)	-0.022 (0.199)	-0.342 (0.175)	-0.358* (0.172)	0.163 (0.176)	0.293 (0.182)
Mother considered abortion x less than high school	0.064 (0.325)	0.114 (0.302)	-0.442 (0.319)	-0.227 (0.299)	0.851* (0.392)	0.734* (0.362)	-0.604 (0.398)	-0.334 (0.382)

Mother considered abortion x high school	-0.012 (0.329)	-0.041 (0.305)	-0.336 (0.323)	-0.246 (0.303)	0.792* (0.399)	0.680 (0.366)	-0.895* (0.405)	-0.616 (0.387)
Mother considered abortion x some college	-0.097 (0.333)	-0.076 (0.309)	-0.333 (0.327)	-0.263 (0.306)	0.584 (0.399)	0.543 (0.367)	-0.498 (0.406)	-0.271 (0.388)
Longitudinal relationship with bio dad (ref: stably romantic 1 to 3)								
Stably not Romantic	0.208** (0.066)	0.102 (0.061)	-0.056 (0.066)	-0.071 (0.060)				
Romantic when child is 1 and break-up by age 3	-0.059 (0.088)	-0.022 (0.080)	-0.033 (0.087)	-0.092 (0.078)				
Not romantic when child is 1 but become romantic by age 3	-0.019 (0.126)	-0.016 (0.117)	-0.086 (0.130)	-0.051 (0.115)				
Broke-up with bio dad by age 3					0.093 (0.053)	0.020 (0.049)	-0.034 (0.054)	-0.000 (0.052)
Engagement in parenting when child is 1				0.476*** (0.025)				0.453*** (0.026)
Parenting stress when child is 1		0.290*** (0.024)				0.529*** (0.024)		
Mother's age at child's birth	-0.002 (0.006)	-0.002 (0.005)	-0.006 (0.006)	-0.003 (0.005)	0.003 (0.005)	0.005 (0.005)	-0.0135 (0.006)	-0.006 (0.005)

Maternal race/ethnicity (ref: White)								
Black	0.054 (0.096)	-0.004 (0.089)	-0.122 (0.094)	0.008 (0.088)	0.103 (0.080)	-0.002 (0.073)	-0.161* (0.081)	-0.089 (0.077_
Hispanic	0.064 (0.112)	-0.019 (0.107)	-0.151 (0.109)	0.0270 (0.107)	0.249** (0.089)	0.201* (0.085)	-0.0419*** (0.089)	-0.233* (0.090)
Other	-0.193 (0.183)	-0.201 (0.186)	0.027 (0.179)	0.141 (0.184)	0.333 (0.177)	0.095 (0.170)	-0.0134 (0.178)	0.011 (0.177)
Child female	-0.036 (0.053)	-0.030 (0.050)	0.008 (0.052)	-0.004 (0.049)	0.009 (0.051)	0.942 (0.048)	0.060 (0.051)	0.011 (0.050)
Child low birth Weight	0.051 (0.083)	0.016 (0.077)	0.041 (0.082)	0.043 (0.077)	-0.122 (0.090)	-0.125 (0.081)	-0.084 (0.088)	-0.035 (0.085)
Number of children in household at child's birth	0.008 (0.021)	-0.006 (0.020)	-0.008 (0.021)	0.007 (0.020)	0.003 (0.025)	0.006 (0.023)	-0.034 (0.025)	-0.006 (0.025)
Mother's household income/poverty threshold	-0.021 (0.023)	-0.014 (0.021)	-0.001 (0.022)	-0.006 (0.021)	-0.007 (0.017)	-0.003 (0.016)	0.019 (0.018)	0.013 (0.017)
Child is mother's first	-0.122 (0.065)	-0.146* (0.061)	0.136* (0.064)	0.139* (0.061)	-0.004 (0.065)	-0.008 (0.061)	-0.042 (0.065)	-0.019 (0.064)
Frequency of attendance to religious services	-0.040* (0.019)	-0.040* (0.018)	0.062** (0.019)	0.035 (0.018)	-0.058** (0.020)	-0.050** (0.019)	0.014 (0.020)	-0.012 (0.020)
Mother appeared anxious and/or depressed at child's birth	-0.068 (0.086)	-0.103 (0.080)	-0.065 (0.084)	-0.029 (0.080)	0.086 (0.113)	-0.088 (0.106)	0.030 (0.113)	0.060 (0.111)

First visited the doctor for pregnancy at or after 4 <sup>th</sup> month of pregnancy	0.002 (0.064)	0.002 (0.060)	-0.049 (0.063)	-0.036 (0.059)	0.173* (0.069)	0.124 (0.067)	0.009 (0.069)	0.051 (0.070)
Mother drank during pregnancy	-0.000 (0.093)	0.042 (0.086)	-0.127 (0.090)	-0.076 (0.085)	0.143 (0.098)	0.132 (0.091)	-0.074 (0.098)	0.018 (0.096)
Mother did drugs during pregnancy	0.103 (0.113)	-0.051 (0.108)	0.112 (0.111)	0.052 (0.106)	-0.048 (0.130)	-0.238 (0.125)	-0.008 (0.131)	0.105 (0.133)
Intercept	-0.270 (0.320)	0.071 (0.305)	0.182 (0.315)	0.234 (0.302)	-0.084 (0.283)	0.087 (0.268)	0.442 (0.284)	-0.064 (0.284)
$R^2$ / pseudo $R^2$	0.069	0.307	0.049	0.266	0.069	0.343	0.087	0.273

*Note.* Table presents unstandardized regression coefficients (SEs). City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Results reflect imputed data for predictors only.

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

## Appendix B

Table 16. Associations between categories of consideration of abortion and self-reported maternal mental health when the child is 3-years-old for mothers who are single at child's birth.

	Mental health					
	Depressive symptoms			Parenting stress		
	Model 1 (n=1,489)	Model 2 (n=1,489)	Model 3 (n=1,408)	Model 1 (n=1,564)	Model 2 (n=1,564)	Model 3 (n=1,315)
Mother considered abortion only	0.189** (0.064)	0.172** (0.064)	0.155* (0.062)	0.196** (0.062)	0.179** (0.062)	0.079 (0.058)
Mother's report that bio dad only considered an abortion	0.342** (0.102)	0.309** (0.102)	0.285** (0.010)	0.183 (0.098)	0.144 (0.098)	0.150 (0.095)
Mother's report that both she and father considered an abortion	0.199* (0.099)	0.184 (0.099)	0.154 (0.098)	0.316** (0.094)	0.285** (0.094)	0.152 (0.089)
Longitudinal relationship with bio dad (ref: stably romantic 1 to 3)						
Stably not romantic		0.267*** (0.069)	0.207** (0.067)		0.207** (0.066)	0.101 (0.061)
Romantic when child is 1 and break-up by age 3		0.195 (0.090)	0.183* (0.088)		-0.059 (0.088)	-0.022 (0.079)
Not romantic when child is 1 but become romantic by age 3		-0.317 (0.131)	-0.009 (0.132)		-0.019 (0.126)	-0.021 (0.117)

Depressive symptoms when child is 1			0.732*** (0.066)			
Parenting stress when child is 1						0.488*** (0.024)
Mother's age at child's birth	-0.010 (0.006)	-0.010 (0.006)	-0.011 (0.006)	0.000 (0.006)	-0.001 (0.006)	-0.002 (0.005)
Maternal race/ethnicity (ref: White)						
Black	-0.123 (0.098)	-0.122 (0.098)	-0.066 (0.097)	0.524 (0.096)	0.055 (0.096)	0.001 (0.089)
Hispanic	0.011 (0.116)	0.015 (0.115)	-0.059 (0.114)	0.064 (0.112)	0.062 (0.112)	-0.014 (0.107)
Other	-0.075 (0.189)	-0.086 (0.189)	-0.001 (0.190)	-0.182 (0.184)	-0.196 (0.183)	-0.236 (0.186)
Child female	-0.033 (0.055)	-0.026 (0.054)	-0.012 (0.053)	-0.041 (0.053)	-0.036 (0.053)	-0.031 (0.050)
Child low birth Weight	-0.042 (0.086)	-0.040 (0.086)	-0.092 (0.084)	0.043 (0.083)	0.053 (0.083)	0.021 (0.077)
Number of children in household at child's birth	0.015 (0.022)	0.013 (0.022)	0.012 (0.022)	0.006 (0.021)	0.008 (0.021)	-0.007 (0.020)
Mother's household income/poverty threshold	-0.008 (0.023)	-0.004 (0.023)	0.005 (0.023)	-0.025 (0.023)	-0.022 (0.023)	-0.013 (0.021)
Child is mother's first	-0.010 (0.067)	-0.032 (0.067)	-0.014 (0.066)	-0.098 (0.064)	-0.123 (0.065)	-0.146* (0.061)



Maternal education (ref: college)						
<High school	0.266 (0.177)	0.254 (0.176)	0.171 (0.174)	0.286 (0.174)	0.272 (0.173)	0.215 (0.162)
High school	0.127 (0.175)	0.116 (0.174)	0.072 (0.172)	0.126 (0.172)	0.122 (0.171)	0.125 (0.159)
Some college	0.209 (0.170)	0.197 (0.169)	0.155 (0.168)	0.050 (0.168)	0.047 (0.167)	0.043 (0.155)
Frequency of attendance to religious services	-0.005 (0.020)	-0.002 (0.020)	-0.006 (0.020)	-0.043 (0.019)	-0.040* (0.019)	-0.040 (0.018)
Mother appeared anxious and/or depressed at child's birth	-0.016 (0.088)	-0.026 (0.088)	-0.029 (0.087)	-0.052 (0.086)	-0.067 (0.086)	-0.105 (0.080)
First visited the doctor for pregnancy at or after 4 <sup>th</sup> month of pregnancy	-0.018 (0.065)	-0.041 (0.065)	-0.047 (0.065)	0.016 (0.064)	0.003 (0.064)	0.004 (0.060)
Mother drank during pregnancy	0.230* (0.096)	0.215* (0.096)	0.242* (0.095)	0.013 (0.093)	-0.003 (0.093)	0.038 (0.086)
Mother did drugs during pregnancy	0.204 (0.114)	0.219 (0.113)	0.179 (0.115)	0.090 (0.113)	0.107 (0.113)	-0.043 (0.108)
Intercept	0.008 (0.304)	-0.132 (0.306)	-0.149 (0.305)	-0.232 (0.297)	-0.0269 (0.298)	0.052 (0.281)
$R^2$ / pseudo $R^2$	0.055	0.675	0.148	0.057	0.069	0.306

*Note.* Table presents unstandardized regression coefficients (SEs). City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Results reflect imputed data for predictors only.

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

Table 17. Associations between categories of consideration of abortion and self-reported maternal parenting behaviors when the child is 3-years-old for mothers who are single at child's birth.

	Engagement in parenting			Co-parenting with bio dad			Spanking		
	Model 1 (n=1,565)	Model 2 (n=1,565)	Model 3 (n=1,316)	Model 1 (n=601)	Model 2 (n=601)	Model 3 (n=528)	Model 1 (n=1,561)	Model 2 (n=1,561)	Model 3 (n=1,479)
Mother considered abortion only	-0.036 (0.061)	-0.032 (0.061)	-0.003 (0.057)	-0.317** (0.108)	-0.313** (0.090)	-0.234** (0.084)	1.102 (0.137)	1.122 (0.140)	1.000 (0.134)
Mother's report that bio dad only considered an abortion	0.054 (0.096)	0.059 (0.096)	0.055 (0.094)	-0.072 (0.184)	-0.054 (0.152)	0.072 (0.149)	1.089 (0.214)	1.121 (0.221)	1.150 (0.242)
Mother's report that both she and father considered an abortion	-0.096 (0.092)	-0.091 (0.092)	-0.049 (0.088)	-0.402* (0.168)	-0.396** (0.140)	-0.364** (0.136)	1.406 (0.270)	1.451 (0.280)	1.240 (0.257)
Longitudinal relationship with bio dad (ref: stably romantic 1 to 3)									
Stably not romantic		-0.056 (0.066)	-0.071 (0.060)		-1.374*** (0.093)	-0.882*** (0.097)		0.807 (0.108)	0.803 (0.112)
Romantic when child is 1 and break-up by age 3		-0.033 (0.087)	-0.091 (0.078)		-0.987*** (0.119)	-0.934*** (0.105)		0.990 (0.174)	1.077 (0.199)
Not romantic when child is 1 but become romantic by age 3		-0.080 (0.130)	-0.048 (0.115)		-0.013 (0.152)	0.207 (0.144)		0.811 (0.208)	0.876 (0.236)

Engagement in parenting when child is 1			0.476***						
			(0.025)						
Co-parenting with bio dad when child is 1						0.404***			
						(0.084)			
Spanking when child is 1									3.815***
									(0.520)
Mother's age at child's birth	-0.006	-0.006	-0.003	-0.009	-0.004	0.002	0.988	0.989	0.994
	(0.005)	(0.006)	(0.005)	(0.011)	(0.009)	(0.008)	(0.011)	(0.140)	(0.012)
Maternal race/ethnicity (ref: White)									
Black	-0.113	-0.114	0.013	0.640	0.645***	0.383*	1.260	1.257	1.066
	(0.094)	(0.094)	(0.088)	(0.187)	(0.156)	(0.161)	(0.244)	(0.243)	(0.220)
Hispanic	-0.134	-0.135	0.036	0.392	0.426*	0.139	0.865	0.863	0.897
	(0.109)	(0.109)	(0.106)	(0.234)	(0.195)	(0.192)	(0.194)	(0.194)	(0.213)
Other	0.025	0.024	0.138	0.824	0.986**	0.597	0.853	0.854	0.893
	(0.179)	(0.180)	(0.184)	(0.434)	(0.360)	(0.346)	(0.313)	(0.313)	(0.355)
Child female	0.007	0.005	-0.005	0.018	-0.084	-0.622	0.886	0.879	0.909
	(0.052)	(0.052)	(0.049)	(0.094)	(0.078)	(0.073)	(0.094)	(0.094)	(0.103)
Child low birth weight	0.037	0.037	0.045	0.161	0.079	0.050	0.704*	0.701*	0.728
	(0.081)	(0.082)	(0.076)	(0.155)	(0.130)	(0.126)	(0.117)	(0.117)	(0.130)
Number of children in household at child's birth	-0.008	-0.007	0.007	-0.027	-0.004	0.111	0.921	0.920	0.935
	(0.021)	(0.021)	(0.020)	(0.037)	(0.031)	(0.029)	(0.039)	(0.039)	(0.043)
Mother's household income/poverty threshold	-0.000	-0.001	-0.006	-0.011	0.004	-0.013	1.110*	1.106*	1.109*
	(0.022)	(0.022)	(0.021)	(0.042)	(0.035)	(0.034)	(0.053)	(0.053)	(0.057)

Child is mother's first	0.134* (0.063)	0.139* (0.064)	0.142 (0.060)	-0.186 (0.118)	-0.095 (0.098)	-0.064 (0.091)	1.183 (0.153)	1.215 (0.159)	1.173 (0.165)
Maternal education (ref: college)									
<High school	-0.116 (0.170)	-0.114 (0.170)	-0.178 (0.160)	0.454 (0.362)	0.468 (0.301)	0.361 (0.276)	0.983 (0.345)	0.991 (0.348)	0.898 (0.339)
High school	-0.017 (0.168)	-0.016 (0.168)	-0.101 (0.157)	0.378 (0.358)	0.485 (0.298)	0.405 (0.273)	1.048 (0.364)	1.047 (0.364)	0.960 (0.358)
Some college	0.020 (0.164)	0.021 (0.164)	-0.135 (0.154)	0.315 (0.355)	0.365 (0.295)	0.191 (0.270)	1.085 (0.369)	1.083 (0.369)	1.033 (0.378)
Frequency of attendance to religious services	0.063** (0.019)	0.063** (0.019)	0.035 (0.018)	0.012 (0.035)	-0.206 (0.029)	-0.020 (0.028)	0.959 (0.037)	0.957 (0.037)	0.917 (0.038)
Mother appeared anxious and/or depressed at child's birth	-0.072 (0.084)	-0.070 (0.084)	-0.034 (0.080)	0.149 (0.168)	0.107 (0.139)	0.019 (0.132)	0.933 (0.160)	0.944 (0.162)	1.002 (0.185)
First visited the doctor for pregnancy at or after 4 <sup>th</sup> month of pregnancy	-0.053 (0.062)	-0.051 (0.063)	-0.036 (0.059)	-0.007 (0.117)	0.125 (0.098)	0.029 (0.092)	1.153 (0.148)	1.161 (0.149)	1.270 (0.175)
Mother drank during pregnancy	-0.130 (0.091)	-0.125 (0.091)	-0.076 (0.085)	-0.082 (0.176)	0.032 (0.148)	0.151 (0.143)	1.030 (0.193)	1.048 (0.196)	1.201 (0.242)
Mother did drugs during pregnancy	0.114 (0.111)	0.112 (0.111)	0.056 (0.106)	0.362 (0.227)	0.181 (0.189)	-0.104 (0.181)	1.024 (0.233)	1.012 (0.230)	0.824 (0.203)

Intercept	0.285 (0.290)	0.312 (0.292)	0.322 (0.278)	-1.043 (0.564)	-0.519 (0.473)	-0.517 (0.436)	0.994 (0.590)	1.066 (0.640)	1.077 (0.694)
$R^2$ / pseudo $R^2$	0.047	0.048	0.266	0.084	0.374	0.495	0.052	0.0548	0.122

*Note.* Models for spanking behaviors present odds ratios (SEs). Table presents unstandardized regression coefficients (SEs) for all other models. City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Results reflect imputed data for predictors only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

Table 18. Associations between categories of consideration of abortion and observed maternal parenting behaviors when the child is 3-years-old for mothers who are single at child's birth.

	Observed warmth		Observed harsh parenting		Observed home learning	
	Model 1 ( <i>n</i> =842)	Model 2 ( <i>n</i> =842)	Model 1 ( <i>n</i> =844)	Model 2 ( <i>n</i> =844)	Model 1 ( <i>n</i> =1,252)	Model 2 ( <i>n</i> =1,252)
Mother considered abortion only	0.067 (0.085)	-0.002 (0.085)	0.101 (0.089)	0.098 (0.089)	0.014 (0.063)	0.016 (0.063)
Mother's report that bio dad only considered an abortion	-0.051 (0.135)	-0.052 (0.135)	-0.106 (0.141)	-0.113 (0.141)	0.197* (0.100)	0.198* (0.100)
Mother's report that both she and father considered an abortion	0.060 (0.130)	0.056 (0.130)	0.069 (0.135)	0.053 (0.135)	0.038 (0.096)	0.040 (0.096)
Longitudinal relationship with bio dad (ref: stably romantic 1 to 3)						
Stably not romantic		-0.165 (0.090)		0.285** (0.008)		-0.090 (0.067)
Romantic when child is 1 and break-up by age 3		-0.141 (0.120)		0.070 (0.126)		-0.097 (0.089)

Not romantic when child is 1 but become romantic by age 3		0.170 (0.183)		0.036 (0.190)		-0.036 (0.126)
Mother's age at child's birth	0.003 (0.008)	0.004 (0.008)	0.002 (0.008)	-0.000 (0.008)	-0.010 (0.006)	-0.009 (0.006)
Maternal race/ethnicity (ref: White)						
Black	-0.378** (0.144)	-0.376** (0.144)	0.109 (0.149)	0.109 (0.148)	-0.422*** (0.097)	-0.420*** (0.097)
Hispanic	-0.063 (0.169)	-0.074 (0.168)	-0.225 (0.175)	-0.214 (0.174)	-0.493*** (0.111)	-0.495*** (0.111)
Other	-0.063 (0.266)	-0.261 (0.265)	0.101 (0.277)	0.110 (0.275)	0.027 (0.197)	0.023 (0.197)
Child female	0.109 (0.074)	0.100 (0.073)	-0.086 (0.077)	-0.071 (0.076)	-0.084 (0.053)	-0.088 (0.053)
Child low birth weight	-0.248* (0.116)	-0.250* (0.116)	0.203 (0.121)	0.202 (0.120)	0.158 (0.084)	0.160 (0.084)
Number of children in household at child's birth	-0.069* (0.029)	-0.067 (0.029)	-0.018 (0.030)	-0.022 (0.030)	-0.025 (0.021)	-0.024 (0.021)
Mother's household income/poverty threshold	0.029 (0.034)	0.029 (0.034)	-0.019 (0.035)	-0.036 (0.035)	0.058* (0.024)	0.056* (0.024)
Child is mother's first	-0.057 (0.092)	-0.043 (0.093)	0.167 (0.096)	0.129 (0.096)	0.077 (0.066)	0.084 (0.066)
Maternal education (ref: college)						
<High school	-0.483 (0.274)	-0.492 (0.274)	0.197 (0.286)	0.197 (0.285)	-0.423* (0.183)	-0.423* (0.183)
High school	-0.460 (0.273)	-0.457 (0.272)	0.151 (0.285)	0.149 (0.283)	-0.261 (0.182)	-0.258 (0.182)

Some college	-0.321 (0.272)	-0.331 (0.271)	-0.050 (0.284)	-0.032 (0.282)	-0.176 (0.179)	-0.173 (0.179)
Frequency of attendance to religious services	0.017 (0.027)	0.013 (0.028)	-0.015 (0.029)	-0.009 (0.286)	0.045* (0.020)	0.045* (0.020)
Mother appeared anxious and/or depressed at child's birth	0.043 (0.123)	0.058 (0.123)	-0.069 (0.128)	-0.087 (0.128)	-0.086 (0.086)	-0.084 (0.086)
First visited the doctor for pregnancy at or after 4 <sup>th</sup> month of pregnancy	-0.135 (0.087)	-0.113 (0.088)	-0.019 (0.091)	-0.046 (0.091)	-0.091 (0.065)	-0.083 (0.066)
Mother drank during pregnancy	0.174 (0.125)	0.168 (0.126)	-0.075 (0.131)	-0.085 (0.131)	0.097 (0.094)	0.101 (0.095)
Mother did drugs during pregnancy	-0.0357* (0.156)	-0.356* (0.156)	-0.076 (0.163)	-0.067 (0.162)	-0.052 (0.113)	-0.059 (0.113)
Intercept	0.975* (0.463)	1.071* (0.466)	-0.025 (0.482)	-0.144 (0.484)	0.503 (0.300)	0.560 (0.304)
$R^2$ / pseudo $R^2$	0.151	0.158	0.102	0.115	0.162	0.164

*Note.* Table presents unstandardized regression coefficients (SEs). City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Results reflect imputed data for predictors only.

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$



Table 19. Associations between categories of consideration of abortion and self-reported maternal mental health when the child is 3-years-old for mothers who are cohabiting with the child's biological father at child's birth.

	Mental health					
	Depressive symptoms			Parenting stress		
	Model 1 (n=1,416)	Model 2 (n=1,414)	Model 3 (n=1,341)	Model 1 (n=1,482)	Model 2 (n=1,480)	Model 3 (n=1,206)
Mother considered abortion only	0.136* (0.069)	0.130 (0.069)	0.106 (0.068)	0.307*** (0.065)	0.298*** (0.065)	0.226*** (0.060)
Mother's report that bio dad only considered an abortion	0.083 (0.160)	0.075 (0.160)	-0.037 (0.157)	0.109 (0.149)	0.103 (0.148)	-0.015 (0.133)
Mother's report that both she and father considered an abortion	0.433** (0.141)	0.426** (0.141)	0.251 (0.140)	0.333* (0.138)	0.328* (0.138)	0.089 (0.137)
Broke-up with child's bio dad by age 3		0.152** (0.057)	0.142* (0.056)		0.093 (0.053)	0.020 (0.049)
Depressive symptoms when child is 1			0.748*** (0.067)			
Parenting stress when child is 1						0.533*** (0.024)
Mother's age at child's birth	-0.005 (0.006)	-0.003 (0.006)	-0.005 (0.006)	0.001 (0.005)	0.002 (0.005)	0.004 (0.005)

Maternal race/ethnicity (ref: White)						
Black	-0.033 (0.086)	-0.034 (0.085)	0.016 (0.084)	0.093 (0.080)	0.098 (0.080)	-0.011 (0.073)
Hispanic	-0.119 (0.094)	-0.105 (0.094)	-0.029 (0.093)	0.236** (0.089)	0.247** (0.089)	0.200* (0.085)
Other	0.282 (0.191)	0.277 (0.191)	0.323 (0.185)	0.332 (0.178)	0.330 (0.177)	0.094 (0.170)
Child female	-0.054 (0.054)	-0.057 (0.054)	-0.027 (0.053)	0.007 (0.051)	0.007 (0.051)	0.372 (0.048)
Child low birth Weight	-0.084 (0.094)	-0.082 (0.094)	-0.084 (0.091)	-0.137 (0.090)	-0.123 (0.090)	-0.127 (0.081)
Number of children in household at child's birth	0.024 (0.026)	0.027 (0.026)	0.035 (0.026)	-0.006 (0.025)	0.003 (0.249)	0.006 (0.023)
Mother's household income/poverty threshold	0.004 (0.019)	0.004 (0.019)	0.006 (0.018)	-0.005 (0.017)	-0.005 (0.017)	-0.003 (0.016)
Child is mother's first	-0.094 (0.070)	-0.088 (0.069)	-0.047 (0.069)	-0.007 (0.065)	-0.005 (0.065)	-0.009 (0.061)
Maternal education (ref: college)						
<High school	0.392* (0.172)	0.418* (0.172)	0.412* (0.168)	-0.072 (0.164)	-0.058 (0.164)	-0.230 (0.159)
High school	0.267 (0.170)	0.294 (0.170)	0.354* (0.165)	-0.198 (0.162)	-0.184 (0.162)	-0.228 (0.157)
Some college	0.317 (0.166)	0.337* (0.166)	0.397* (0.162)	-0.267 (0.159)	-0.256 (0.159)	-0.253 (0.154)

Frequency of attendance to religious services	-0.025 (0.215)	-0.029 (0.022)	-0.022 (0.021)	-0.058** (0.020)	-0.061** (0.020)	-0.053** (0.019)
Mother appeared anxious and/or depressed at child's birth	0.207 (0.123)	0.198 (0.123)	0.220 (0.121)	0.074 (0.113)	0.071 (0.113)	-0.102 (0.106)
First visited the doctor for pregnancy at or after 4 <sup>th</sup> month of pregnancy	-0.030 (0.072)	-0.025 (0.072)	-0.075 (0.072)	0.161* (0.069)	0.167* (0.069)	0.119 (0.067)
Mother drank during pregnancy	0.368*** (0.105)	0.366*** (0.104)	0.346** (0.102)	0.138 (0.098)	0.134 (0.098)	0.111 (0.091)
Mother did drugs during pregnancy	0.237 (0.130)	0.009 (0.130)	0.034 (0.127)	-0.015 (0.131)	-0.019 (0.130)	-0.212 (0.126)
Intercept	-0.321 (0.292)	-0.452 (0.295)	-0.665* (0.291)	-0.097 (0.275)	-0.178 (0.278)	-0.015 (0.262)
<i>R</i> <sup>2</sup> / pseudo <i>R</i> <sup>2</sup>	0.070	0.075	0.157	0.067	0.069	0.340

*Note.* Table presents unstandardized regression coefficients (SEs). City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Results reflect imputed data for predictors only.

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

Table 20. Associations between categories of consideration of abortion and self-reported maternal parenting behaviors when the child is 3-years-old for mothers who are cohabiting with child's biological father at child's birth.

	Engagement in parenting			Co-parenting with bio dad			Spanking		
	Model 1 (n=1,483)	Model 2 (n=1,481)	Model 3 (n=1,209)	Model 1 (n=620)	Model 2 (n=618)	Model 3 (n=584)	Model 1 (n=1,482)	Model 2 (n=1,480)	Model 3 (n=1,400)
Mother considered abortion only	-0.272*** (0.065)	-0.270*** (0.655)	-0.196** (0.064)	-0.057 (0.091)	-0.065 (0.088)	-0.019 (0.079)	1.636** (0.233)	1.632** (0.233)	1.579* (0.242)
Mother's report that bio dad only considered an abortion	-0.283 (0.149)	-0.282 (0.149)	-0.185 (0.141)	-0.200 (0.242)	-0.221 (0.232)	-0.138 (0.205)	1.570 (0.513)	1.570 (0.513)	1.560 (0.554)
Mother's report that both she and father considered an abortion	-0.177 (0.139)	-0.175 (0.139)	-0.103 (0.145)	-0.722 (0.225)	-0.644** (0.216)	-0.364 (0.193)	2.020* (0.620)	2.025* (0.622)	1.909 (0.647)
Broke-up with child's bio dad by age 3		-0.032 (0.054)	0.004 (0.052)		-0.531*** (0.072)	-0.385*** (0.066)		1.074 (0.124)	1.016 (0.126)

Engagement in parenting when child is 1			0.455 (0.026)						
Co- parenting with bio dad when child is 1						0.488*** (0.039)			
Spanking when child is 1									4.962*** (0.775)
Mother's age at child's birth	-0.013* (0.005)	-0.013* (0.005)	-0.006 (0.005)	0.006 (0.008)	0.003 (0.008)	0.001 (0.007)	0.985 (0.012)	0.986 (0.012)	0.991 (0.013)
Maternal race/ethnicity (ref: White)									
Black	-0.146 (0.081)	-0.147 (0.081)	-0.074 (0.078)	-0.149 (0.113)	-0.066 (0.109)	-0.072 (0.098)	1.370 (0.239)	1.360 (0.238)	1.181 (0.221)
Hispanic	-0.422*** (0.089)	-0.425*** (0.089)	-0.238 (0.090)	-0.201 (0.136)	-0.160 (0.131)	-0.123 (0.119)	0.935 (0.179)	0.939 (0.180)	0.862 (0.177)
Other	-0.008 (0.178)	-0.007 (0.178)	0.025 (0.177)	-0.315 (0.297)	-0.250 (0.286)	-0.235 (0.252)	1.162 (0.441)	1.152 (0.437)	1.031 (0.415)
Child female	0.065 (0.051)	0.064 (0.051)	0.015 (0.050)	-0.041 (0.073)	-0.044 (0.070)	0.016 (0.064)	0.813 (0.090)	0.808 (0.090)	0.825 (0.099)
Child low birth weight	-0.087 (0.088)	-0.091 (0.088)	-0.044 (0.085)	0.054 (0.129)	0.064 (0.125)	0.103 (0.110)	1.268 (0.247)	1.250 (0.245)	1.347 (0.284)

Number of children in household at child's birth	-0.031 (0.025)	-0.033 (0.025)	-0.005 (0.025)	0.066 (0.035)	0.046 (0.034)	0.024 (0.031)	1.007 (0.054)	1.004 (0.054)	1.049 (0.062)
Mother's household income/pove rty threshold	0.019 (0.017)	0.019 (0.017)	0.013 (0.016)	0.021 (0.025)	0.024 (0.024)	0.004 (0.021)	1.082* (0.042)	1.082* (0.042)	1.096 (0.046)
Child is mother's first	-0.040 (0.065)	-0.041 (0.065)	-0.018 (0.064)	-0.207* (0.094)	-0.207* (0.089)	-0.139 (0.083)	1.737*** (0.246)	1.732*** (0.245)	1.554* (0.239)
Maternal education (ref: college)									
<High school	-0.096 (0.165)	-0.100 (0.165)	0.161 (0.168)	0.307 (0.262)	0.187 (0.251)	-0.015 (0.229)	0.902 (0.320)	0.907 (0.322)	0.879 (0.334)
High school	-0.059 (0.163)	-0.064 (0.163)	0.183 (0.166)	0.289 (0.256)	0.179 (0.245)	0.006 (0.224)	1.005 (0.352)	1.018 (0.357)	0.973 (0.365)
Some college	0.099 (0.160)	0.095 (0.160)	0.248 (0.163)	0.272 (0.252)	0.177 (0.241)	0.009 (0.220)	1.102 (0.379)	1.111 (0.382)	1.149 (0.421)
Frequency of attendance to religious services	0.017 (0.020)	0.018 (0.020)	-0.009 (0.020)	0.001 (0.031)	0.006 (0.029)	0.008 (0.027)	0.912 (0.040)	0.911 (0.040)	0.919 (0.044)
Mother appeared anxious and/or depressed at child's birth	0.024 (0.113)	0.025 (0.113)	0.055 (0.111)	-0.316 (0.184)	-0.275 (0.175)	-0.033 (0.159)	1.273 (0.314)	1.274 (0.314)	1.440 (0.386)

First visited the doctor for pregnancy at or after 4 <sup>th</sup> month of pregnancy	0.024 (0.068)	0.021 (0.069)	0.064 (0.070)	0.134 (0.106)	0.151 (0.102)	0.190* (0.092)	1.144 (0.170)	1.132 (0.169)	1.227 (0.199)
Mother drank during pregnancy	-0.062 (0.098)	-0.060 (0.098)	0.033 (0.096)	-0.136 (0.140)	-0.065 (0.134)	0.004 (0.122)	1.561 (0.337)	1.564 (0.338)	1.617* (0.377)
Mother did drugs during pregnancy	-0.043 (0.131)	-0.041 (0.131)	0.080 (0.133)	0.106 (0.189)	0.056 (0.182)	0.031 (0.163)	0.595 (0.168)	0.597 (0.169)	0.532 (0.167)
Intercept	0.503 (0.276)	0.530 (0.279)	0.001 (0.278)	-0.096 (0.415)	0.250 (0.401)	0.181 (0.366)	0.550 (0.330)	0.527 (0.319)	0.454 (0.295)
$R^2$ / pseudo $R^2$	0.083	0.083	0.270	0.120	0.196	0.373	0.097	0.097	0.173

*Note.* Models for spanking behaviors present odds ratios (SEs). Table presents unstandardized regression coefficients (SEs) for all other models. City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Results reflect imputed data for predictors only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

Table 21. Associations between categories of consideration of abortion and observed maternal parenting behaviors when the child is 3-years-old for mothers who are cohabiting with the child's biological father at child's birth.

	Observed warmth		Observed harsh parenting		Observed home learning	
	Model 1 (n=779)	Model 2 (n=778)	Model 1 (n=784)	Model 2 (n=783)	Model 1 (n=1,194)	Model 2 (n=1,192)
Mother considered abortion only	0.141 (0.085)	0.134 (0.085)	-0.131 (0.087)	-0.124 (0.88)	-0.065 (0.068)	-0.067 (0.068)
Mother's report that bio dad only considered an abortion	-0.215 (0.202)	-0.218 (0.202)	0.221 (0.207)	0.225 (0.208)	0.034 (0.161)	0.035 (0.160)
Mother's report that both she and father considered an abortion	0.358* (0.179)	0.357* (0.180)	-0.055 (0.184)	-0.052 (0.185)	0.071 (0.138)	0.066 (0.138)
Broke-up with child's bio dad by age 3		0.029 (0.073)		-0.046 (0.075)		0.074 (0.057)
Mother's age at child's birth	0.018* (0.007)	0.018* (0.008)	-0.007 (0.008)	-0.007 (0.008)	-0.007 (0.006)	-0.007 (0.006)
Maternal race/ethnicity (ref: White)						
Black	-0.347** (0.111)	-0.345** (0.111)	0.271* (0.114)	0.270* (0.114)	-0.509*** (0.085)	-0.507*** (0.085)
Hispanic	-0.377** (0.128)	-0.377** (0.128)	0.150 (0.131)	0.151 (0.131)	-0.576*** (0.094)	-0.573*** (0.094)
Other	-0.513	-0.059	-0.108	-0.098	-0.128	-0.132



	(0.252)	(0.252)	(0.252)	(0.252)	(0.186)	(0.186)
Child female	-0.0534	-0.057	-0.142*	-0.139*	0.007	0.011
	(0.069)	(0.069)	(0.070)	(0.071)	(0.054)	(0.054)
Child low birth weight	0.141	0.143	0.074	0.073	-0.177	-0.171
	(0.125)	(0.125)	(0.127)	(0.127)	(0.092)	(0.092)
Number of children in household at child's birth	-0.022	-0.024	-0.032	-0.031	-0.030	-0.025
	(0.032)	(0.032)	(0.033)	(0.033)	(0.026)	(0.026)
Mother's household income/poverty threshold	0.029	0.029	0.028	0.029	0.070***	0.070***
	(0.024)	(0.024)	(0.024)	(0.025)	(0.018)	(0.018)
Child is mother's first	0.090	0.086	-0.030	-0.027	-0.035	-0.031
	(0.090)	(0.090)	(0.093)	(0.093)	(0.069)	(0.069)
Maternal education (ref: college)						
<High school	-0.213	-0.209	0.037	0.031	-0.438*	-0.042*
	(0.248)	(0.248)	(0.254)	(0.254)	(0.175)	(0.175)
High school	-0.025	-0.015	0.070	0.058	-0.205	-0.194
	(0.244)	(0.244)	(0.250)	(0.251)	(0.174)	(0.174)
Some college	0.109	0.116	-0.090	-0.099	-0.019	-0.008
	(0.238)	(0.238)	(0.244)	(0.244)	(0.170)	(0.170)
Frequency of attendance to religious services	0.023	0.022	-0.053	-0.051	0.045*	0.041
	(0.028)	(0.028)	(0.028)	(0.029)	(0.021)	(0.022)
Mother appeared anxious and/or depressed at	-0.312*	-0.312*	-0.087	-0.087	-0.049	-0.052
	(0.156)	(0.156)	(0.159)	(0.159)	(0.117)	(0.117)

child's birth						
First visited the doctor for pregnancy at or after 4 <sup>th</sup> month of pregnancy	0.056 (0.096)	0.048 (0.096)	0.196 (0.100)	0.202* (0.101)	-0.043 (0.074)	-0.032 (0.075)
Mother drank during pregnancy	-0.040 (0.132)	-0.378 (0.131)	0.301* (0.135)	0.299* (0.135)	-0.068 (0.103)	-0.074 (0.103)
Mother did drugs during pregnancy	-0.041 (0.160)	-0.041 (0.160)	0.140 (0.164)	0.141 (0.164)	0.186 (0.130)	0.176 (0.130)
Intercept	-0.199 (0.409)	-0.217 (0.412)	0.213 (0.420)	0.241 (0.423)	0.294 (0.300)	0.227 (0.303)
$R^2$ / pseudo $R^2$	0.158	0.160	0.108	0.109	0.187	0.187

*Note.* Table presents unstandardized regression coefficients (SEs). Models for depressive symptoms and spanking behaviors present odds ratios (SEs). City fixed effects for 20 cities where sampling occurred are included in all models to adjust for clustering by city. Results reflect imputed data for predictors only. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$

## Appendix C

Table 22. Descriptive Statistics for BSF Evaluation Variables

	Total (n = 3,981)	Single at Baseline (n = 1,276)	Cohabiting at Baseline (n = 2,438)	Married at Baseline (n = 256)
	M (SD) / %	M (SD) / %	M (SD) / %	M (SD) / %
Unintended Pregnancy				
Unwanted pregnancy	16%	23%	14%	9%
Mistimed pregnancy	63%	71%	61%	52%
Controls				
Mother's age at child's birth	23.89 (4.87)	23.01 (4.56)	24.31 (4.96)	24.77 (5.14)
Black	58%	78%	49%	41%
Hispanic	23%	12%	27%	32%
Other race/ethnicity	2%	2%	3%	3%
White	17%	8%	21%	24%
Child female	55%	55%	53%	66%
Household income	6958 (7223)	7023 (6979)	6847 (7211)	7502 (8294)
Mother HS graduate	65%	64%	64%	77%
Single when child is 3	53%	71%	46%	23%
Cohabiting when child is 3	26%	18%	32%	<1%
Married when child is 3	21%	11%	22%	77%



Table 23. Prediction of unwanted and mistimed pregnancies with BSF sample by relationship status with biological father at birth of child.

	Unwanted pregnancy		Mistimed pregnancy	
	Single (n=1,244)	Cohabiting (n=2,391)	Single (n=1,141)	Cohabiting (n=2,301)
Assigned to BSF	1.303 (0.182)	0.873 (0.106)	0.852 (0.116)	0.936 (0.084)
Mother's age at child's birth	1.028 (0.019)	1.022 (0.016)	0.926*** (0.018)	0.938*** (0.011)
Maternal race/ethnicity (ref: White)				
Black	0.908 (0.258)	1.148 (0.215)	1.078 (0.317)	0.855 (0.119)
Hispanic	0.819 (0.311)	1.034 (0.220)	0.730 (0.269)	0.520*** (0.079)
Other	1.761 (0.878)	1.838 (0.623)	3.187 (2.174)	0.716 (0.210)
Child female	0.967 (0.136)	1.076 (0.131)	0.984 (0.135)	1.097 (0.098)
Mother's household income	1.000 (<0.001)	1.000 (<0.001)	1.000* (<0.001)	1.000 (<0.001)
High school graduate	0.648** (0.100)	1.224 (0.174)	1.121 (0.171)	1.141 (0.114)
Mother knows biological father of child <1 year	1.406* (0.223)	1.130 (0.160)	1.501 (0.256)	1.026 (0.108)
Frequency of attendance to religious services	1.077 (0.752)	0.961 (0.059)	1.241** (0.085)	0.971 (0.044)
Baseline psychological distress	1.077*** (0.016)	1.071*** (0.143)	1.047** (0.017)	1.066*** (0.012)
Intercept	0.049*** (0.027)	0.026*** (0.012)	5.611** (3.129)	4.632*** (1.595)
$R^2$ /pseudo $R^2$	0.060	0.024	0.071	0.060

Note. Table presents odds ratios (SEs). City fixed effects for 8 cities where BSF programs occurred are included in all models to adjust for clustering by city.

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

Table 24. Associations between mother's unwanted pregnancy and self-reported maternal mental health when the child is 3-years-old for mothers who are single at child's birth.

	Depressive symptoms		Parenting stress	
	Model 1	Model 2	Model 1	Model 2
	(n=1,244)	(n=1,244)	(n=1,238)	(n=1,238)
Unwanted pregnancy	-0.044 (0.070)	-0.050 (0.070)	0.021 (0.068)	0.016 (0.068)
Assigned to BSF	-0.005 (0.057)	-0.006 (0.057)	-0.054 (0.056)	-0.055 (0.056)
Mother's age at child's birth	0.006 (0.008)	0.007 (0.008)	0.009 (0.008)	0.010 (0.008)
Maternal race/ethnicity (ref: White)				
Black	0.076 (0.117)	0.064 (0.118)	0.127 (0.115)	0.116 (0.115)
Hispanic	-0.127 (0.153)	-0.128 (0.153)	-0.047 (0.151)	-0.047 (0.151)
Other	0.084 (0.224)	0.070 (0.224)	0.349 (0.220)	0.336 (0.219)
Child female	-0.071 (0.058)	-0.080 (0.058)	-0.064 (0.057)	-0.072 (0.057)
Mother's household income	<-0.001* (<0.001)	<-0.001* (<0.001)	<-0.001 (<0.001)	<-0.001 (<0.001)
High school graduate	-0.144* (0.064)	-0.146* (0.064)	-0.087 (0.063)	-0.088 (0.063)
Mother knows biological father of child <1 year	0.080 (0.068)	0.080 (0.068)	0.073 (0.067)	0.072 (0.067)
Stably single from child's birth to when the child is 3		0.106 (0.065)		0.096 (0.063)
Frequency of attendance to religious services	0.038 (0.030)	0.041 (0.030)	0.027 (0.028)	0.030 (0.028)
Baseline psychological distress	0.064*** (0.006)	0.064*** (0.006)	0.039*** (0.006)	0.039*** (0.006)

Intercept	-0.789** (0.235)	-0.875*** (0.241)	-0.707** (0.224)	-0.784** (0.230)
$R^2$ /pseudo $R^2$	0.105	0.107	0.050	0.052

*Note.* Table presents unstandardized regression coefficients (SEs). City fixed effects for 8 cities where BSF programs occurred are included in all models to adjust for clustering by city.

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

Table 25. Associations between mother's unwanted pregnancy and self-reported parenting Behaviors when the child is 3-years-old for mothers who are single at child's birth.

	Engagement in parenting		Spanking	
	Model 1	Model 2	Model 1	Model 2
	(n=1,188)	(n=1,188)	(n=1,187)	(n=1,187)
Unwanted pregnancy	-0.101 (0.070)	-0.097 (0.070)	1.058 (0.165)	1.058 (0.165)
Assigned to BSF	0.021 (0.057)	0.021 (0.057)	0.958 (0.124)	0.958 (0.124)
Mother's age at child's birth	-0.001 (0.008)	-0.002 (0.008)	0.978 (0.017)	0.978 (0.017)
Maternal race/ethnicity (ref: White)				
Black	-0.172 (0.116)	-0.164 (0.116)	0.912 (0.234)	0.912 (0.235)
Hispanic	-0.274 (0.151)	-0.273 (0.151)	0.789 (0.272)	0.789 (0.272)
Other	0.047 (0.221)	-0.056 (0.221)	1.322 (0.647)	1.323 (0.648)
Child female	-0.008 (0.057)	-0.003 (0.058)	1.009 (0.131)	1.010 (0.132)
Mother's household income	<-0.001 (<0.001)	<-0.001 (<0.001)	1.000** (0.000)	1.000** (0.000)
High school graduate	0.077 (0.064)	0.079 (0.064)	1.421 (0.212)	1.422 (0.212)
Mother knows biological father of child <1 year	-0.002 (0.068)	-0.003 (0.068)	1.274 (0.191)	1.275 (0.191)
Stably single from child's birth to when the child is 3		-0.063 (0.064)		0.996 (0.144)
Frequency of attendance to religious services	0.042 (0.029)	0.040 (0.029)	0.989 (0.064)	0.989 (0.064)
Baseline psychological distress	-0.015* (0.006)	-0.015* (0.006)	1.002 (0.015)	1.002 (0.015)



Intercept	0.217 (0.230)	0.268 (0.237)	0.400 (0.202)	0.401 (0.209)
$R^2$ /pseudo $R^2$	0.028	0.029	0.030	0.030

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*Note.* Table presents unstandardized regression coefficients (SEs). Models for spanking behaviors present odds ratios (SEs). City fixed effects for 8 cities where BSF programs occurred are included in all models to adjust for clustering by city. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

Table 26. Associations between mother's unwanted pregnancy and observed parenting when the child is 3-years-old for mothers who are single at child's birth.

	Observed warmth		Observed responsiveness		Observed harsh parenting	
	Model 1 (n=615)	Model 2 (n=615)	Model 1 (n=600)	Model 2 (n=600)	Model 1 (n=600)	Model 2 (n=600)
Unwanted pregnancy	0.028 (0.107)	0.040 (0.108)	0.108 (0.099)	0.129 (0.099)	-0.089 (0.101)	-0.098 (0.101)
Assigned to BSF	0.087 (0.092)	0.085 (0.092)	-0.002 (0.085)	-0.007 (0.084)	0.080 (0.087)	0.082 (0.087)
Mother's age at child's birth	-0.005 (0.012)	-0.006 (0.012)	0.004 (0.012)	0.002 (0.012)	0.007 (0.011)	0.009 (0.011)
Maternal race/ethnicity (ref: White)						
Black	-0.162 (0.174)	-0.144 (0.174)	-0.256 (0.162)	-0.218 (0.162)	0.171 (0.166)	0.155 (0.167)
Hispanic	-0.244 (0.265)	-0.246 (0.264)	-0.282 (0.248)	-0.274 (0.247)	-0.381 (0.257)	-0.385 (0.257)
Other	0.004 (0.336)	0.022 (0.336)	-0.132 (0.326)	-0.090 (0.325)	0.011 (0.335)	-0.006 (0.336)
Child female	-0.043 (0.093)	-0.036 (0.093)	0.004 (0.086)	0.017 (0.086)	-0.637 (0.088)	-0.069 (0.088)
Mother's household income	0.000* (<0.001)	0.000* (<0.001)	0.000 (<0.001)	0.000 (<0.001)	-0.000* (<0.001)	-0.000* (<0.001)
High school graduate	0.149 (0.104)	0.156 (0.104)	0.258** (0.096)	0.267** (0.095)	-0.005 (0.097)	-0.009 (0.097)
Mother knows biological father of child <1 year	0.142 (0.107)	0.145 (0.107)	0.074 (0.100)	0.078 (0.099)	-0.022 (0.102)	-0.023 (0.102)
Stably single from child's birth to when the child is 3		-0.127 (0.101)		-0.230* (0.092)		0.094 (0.095)
Frequency of attendance to religious services	-0.007 (0.045)	-0.010 (0.045)	0.035 (0.041)	0.030 (0.041)	-0.037 (0.042)	-0.034 (0.042)
Baseline psychological distress	0.001 (0.010)	0.001 (0.010)	0.001 (0.010)	0.001 (0.010)	0.004 (0.010)	0.004 (0.010)

Intercept	0.234 (0.350)	0.333 (0.359)	-0.186 (0.336)	-0.005 (0.344)	-0.202 (0.324)	-0.276 (0.333)
$R^2$ /pseudo $R^2$	0.087	0.090	0.079	0.088	0.040	0.042

*Note.* Table presents unstandardized regression coefficients (SEs). City fixed effects for 8 cities where BSF programs occurred are included in all models to adjust for clustering by city.

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

Table 27. Associations between mother's unwanted pregnancy and self-reported maternal mental health when the child is 3-years-old for mothers who are cohabiting with the child's father at child's birth.

	Depressive symptoms		Parenting stress	
	Model 1	Model 2	Model 1	Model 2
	( <i>n</i> =2,391)	( <i>n</i> =2,391)	( <i>n</i> =2,375)	( <i>n</i> =2,375)
Unwanted pregnancy	0.010 (0.057)	-0.006 (0.057)	0.142* (0.060)	0.134* (0.060)
Assigned to BSF	-0.057 (0.039)	-0.061 (0.039)	-0.029 (0.041)	-0.031 (0.041)
Mother's age at child's birth	0.003 (0.005)	0.005 (0.005)	0.016** (0.006)	0.017** (0.006)
Maternal race/ethnicity (ref: White)				
Black	0.020 (0.060)	-0.011 (0.060)	0.100 (0.062)	0.085 (0.062)
Hispanic	-0.196** (0.066)	-0.176** (0.066)	0.134 (0.069)	0.144* (0.069)
Other	-0.074 (0.122)	-0.092 (0.121)	0.072 (0.129)	0.064 (0.129)
Child female	-0.016 (0.039)	-0.021 (0.039)	-0.018 (0.041)	-0.021 (0.041)
Mother's household income	<-0.001*** (<0.001)	<-0.001*** (<0.001)	<-0.001 (<0.001)	<-0.001 (<0.001)
High school graduate	-0.041 (0.043)	-0.040 (0.043)	-0.142** (0.045)	-0.142** (0.045)

Mother knows biological father of child <1 year	0.034 (0.045)	0.014 (0.045)	-0.061 (0.048)	-0.071 (0.048)
Broke-up with bio dad by age 3		0.217*** (0.040)		0.104* (0.042)
Frequency of attendance to religious services	-0.010 (0.019)	-0.007 (0.019)	0.045* (0.020)	0.047* (0.020)
Baseline psychological distress	0.059*** (0.005)	0.057*** (0.005)	0.034*** (0.005)	0.033*** (0.005)
Intercept	-0.629*** (0.142)	-0.741 (0.144)	-0.900*** (0.159)	-0.953*** (0.161)
$R^2$ /pseudo $R^2$	0.096	0.107	0.051	0.053

*Note.* Table presents unstandardized regression coefficients (SEs). City fixed effects for 8 cities where BSF programs occurred are included in all models to adjust for clustering by city.

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

Table 28. Associations between mother's unwanted pregnancy and self-reported parenting behaviors when the child is 3-years-old for mothers who are cohabiting with the child's father at child's birth.

	Engagement in parenting		Spanking	
	Model 1 (n=2,290)	Model 2 (n=2,290)	Model 1 (n=2,286)	Model 2 (n=2,286)
Unwanted pregnancy	-0.207** (0.062)	-0.196** (0.062)	1.440** (0.192)	1.467** (0.196)
Assigned to BSF	0.023 (0.042)	0.025 (0.042)	1.036 (0.099)	1.038 (0.099)
Mother's age at child's birth	-0.002 (0.006)	-0.003 (0.006)	0.098 (0.014)	0.978 (0.015)
Maternal race/ethnicity (ref: White)				
Black	-0.120 (0.064)	-0.097 (0.065)	0.767 (0.110)	0.798 (0.116)
Hispanic	-0.345*** (0.071)	-0.357*** (0.071)	0.894 (0.142)	0.878 (0.140)
Other	-0.107 (0.133)	-0.096 (0.132)	0.877 (0.265)	0.895 (0.270)
Child female	0.006 (0.042)	0.010 (0.042)	0.961 (0.091)	0.967 (0.092)
Mother's household income	<-0.001 (<0.001)	<-0.001 (<0.001)	1.000** (<0.001)	1.000** (<0.001)
High school graduate	0.040 (0.048)	0.039 (0.048)	1.336** (0.146)	1.334** (0.146)
Mother knows biological father of child <1 year	-0.066 (0.049)	-0.052 (0.049)	1.392** (0.150)	1.425** (0.154)
Broke-up with bio dad by age 3		-0.150** (0.044)		0.786* (0.078)
Frequency of attendance to religious services	0.018 (0.021)	0.017 (0.021)	1.006 (0.048)	1.003 (0.048)
Baseline psychological distress	-0.005 (0.005)	-0.004 (0.005)	1.023* (0.012)	1.024* (0.012)
Intercept	0.139 (0.163)	0.212 (0.165)	0.301** (0.117)	0.338** (0.134)
R <sup>2</sup> /pseudo R <sup>2</sup>	0.026	0.032	0.032	0.035

Note. Table presents unstandardized regression coefficients (SEs). Models for spanking behaviors present odds ratios (SEs). City fixed effects for 8 cities where BSF programs occurred are included in all models to adjust for clustering by city. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

Table 29. Associations between mother’s unwanted pregnancy and observed parenting when the child is 3-years-old for mothers who are cohabiting with the child’s father at child’s birth.

	Observed warmth		Observed responsiveness		Observed harsh parenting	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
	(n=1,164)	(n=1,164)	(n=1,131)	(n=1,131)	(n=1,131)	(n=1,131)
Unwanted pregnancy	-0.068 (0.075)	-0.070 (0.075)	-0.034 (0.083)	-0.033 (0.083)	0.051 (0.081)	0.044 (0.081)
Assigned to BSF	0.010 (0.053)	0.010 (0.053)	0.101 (0.058)	0.101 (0.058)	0.005 (0.057)	0.006 (0.057)
Mother’s age at child’s birth	0.000 (0.006)	0.000 (0.006)	-0.017* (0.008)	-0.017* (0.008)	0.015* (0.007)	0.016 (0.007)
Maternal race/ethnicity (ref: White)						
Black	-0.044 (0.081)	-0.049 (0.082)	-0.256** (0.088)	-0.255** (0.089)	0.279** (0.086)	0.262** (0.087)
Hispanic	-0.013 (0.097)	-0.009 (0.097)	-0.123 (0.107)	-0.123 (0.107)	-0.234* (0.105)	-0.223* (0.105)
Other	-0.095 (0.150)	-0.095 (0.150)	-0.151 (0.164)	-0.150 (0.164)	-0.018 (0.161)	-0.022 (0.161)
Child female	0.014 (0.053)	0.015 (0.053)	-0.053 (0.058)	-0.054 (0.058)	-0.023 (0.057)	-0.023 (0.057)
Mother’s household income	<0.001** (<0.001)	<0.001** (<0.001)	<0.001* (<0.001)	<0.001 (<0.001)	<-0.001 (<0.001)	<-0.001 (<0.001)
High school graduate	-0.025 (0.058)	-0.025 (0.058)	0.227*** (0.065)	0.227*** (0.065)	-0.156* (0.064)	-0.156* (0.064)
Mother knows biological father of child <1 year	-0.122 (0.061)	-0.014 (0.061)	0.030 (0.067)	0.031 (0.067)	-0.006 (0.066)	-0.012 (0.066)
Broke-up with bio dad by age 3		0.025 (0.056)		-0.007 (0.061)		0.084 (0.60)

Frequency of attendance to religious services	-0.008 (0.026)	-0.008 (0.026)	-0.003 (0.029)	-0.003 (0.029)	-0.025 (0.028)	-0.025 (0.028)
Baseline psychological distress	-0.008 (0.006)	-0.008 (0.006)	-0.005 (0.007)	-0.005 (0.007)	0.009 (0.007)	0.008 (0.007)
Intercept	0.325 (0.186)	0.313 (0.189)	0.477* (0.213)	0.481* (0.215)	-0.434* (0.210)	-0.477 (0.212)
$R^2$ /pseudo $R^2$	0.071	0.071	0.056	0.056	0.069	0.071

*Note.* Table presents unstandardized regression coefficients (SEs). City fixed effects for 8 cities where BSF programs occurred are included in all models to adjust for clustering by city. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .



Table 30. Associations between mother's unwanted pregnancy and self-reported co-parenting with the child's biological father when the child is 3-years-old.

	Co-parenting with child's biological father			
	Single		Cohabiting	
	Model 1 (n=1,184)	Model 2 (n=1,184)	Model 1 (n=2,298)	Model 2 (n=2,298)
Unwanted pregnancy	-0.237** (0.074)	-0.174** (0.067)	-0.176** (0.058)	-0.099* (0.049)
Assigned to BSF	0.027 (0.061)	0.037 (0.055)	-0.028 (0.039)	-0.009 (0.033)
Mother's age at child's birth	0.016* (0.008)	0.005 (0.007)	0.012* (0.005)	0.003 (0.004)
Maternal race/ethnicity (ref: White)				
Black	0.078 (0.125)	0.216 (0.111)	0.081 (0.060)	0.229*** (0.051)
Hispanic	0.209 (0.162)	0.228 (0.145)	0.244*** (0.066)	0.153** (0.056)
Other	-0.008 (0.237)	0.138 (0.211)	0.058 (0.124)	0.123 (0.106)
Child female	-0.066 (0.062)	0.020 (0.056)	-0.040 (0.039)	-0.009 (0.033)
Mother's household income	<-0.001 (<0.001)	<-0.001 (<0.001)	<-0.001 (<0.001)	<-0.001 (<0.001)
High school graduate	-0.148* (0.070)	-0.122* (0.062)	-0.145** (0.045)	-0.150*** (0.038)
Mother knows biological father of child <1 year	-0.056 (0.073)	-0.061 (0.065)	-0.173*** (0.046)	-0.082* (0.039)
Stably single from child's birth to when the child is 3		-1.042*** (0.061)		
Broke-up with bio dad by age 3				-1.013*** (0.035)
Frequency of attendance to religious services	-0.009 (0.031)	-0.033 (0.028)	0.040* (0.020)	0.027 (0.017)

Baseline psychological distress	-0.020** (0.007)	-0.020** (0.006)	-0.019*** (0.005)	-0.012** (0.004)
Intercept	-0.025 (0.239)	0.581** (0.220)	0.062 (0.145)	0.568*** (0.126)
$R^2$ /pseudo $R^2$	0.044	0.235	0.054	0.314

*Note.* Table presents unstandardized regression coefficients (SEs). City fixed effects for 8 cities where BSF programs occurred are included in all models to adjust for clustering by city.

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

Table 31. Moderation of associations between unwanted pregnancy and self-reported engagement in parenting behaviors by assignment to BSF program.

	Engagement in parenting			
	Single		Cohabiting	
	Model 1 (n=1,188)	Model 2 (n=1,188)	Model 1 (n=2,290)	Model 2 (n=2,290)
Unwanted pregnancy	-0.116 (0.099)	-0.110 (0.099)	-0.340*** (0.086)	-0.328*** (0.086)
Assigned to BSF	0.014 (0.065)	0.015 (0.065)	-0.014 (0.045)	-0.011 (0.045)
Assigned to BSF x unwanted pregnancy	0.030 (0.136)	0.026 (0.137)	0.277* (0.123)	0.274* (0.123)
Mother's age at child's birth	-0.001 (0.008)	-0.002 (0.008)	-0.002 (0.006)	-0.003 (0.006)
Maternal race/ethnicity (ref: White)				
Black	-0.171 (0.116)	-0.163 (0.116)	-0.124 (0.064)	-0.100 (0.065)
Hispanic	-0.275 (0.151)	-0.274 (0.151)	-0.352*** (0.071)	-0.364*** (0.071)
Other	0.048 (0.221)	0.056 (0.221)	-0.106 (0.132)	-0.095 (0.132)
Child female	-0.007 (0.058)	-0.002 (0.058)	0.007 (0.042)	0.011 (0.042)
Mother's household income	<-0.001 (<0.001)	<-0.001 (<0.001)	<-0.001 (<0.001)	<-0.001 (<0.001)
High school graduate	0.077 (0.064)	0.079 (0.064)	0.035 (0.048)	0.034 (0.048)
Mother knows biological father of child <1 year		-0.003 (0.068)	-0.069 (0.049)	-0.055 (0.049)
Stably single from child's birth to when the child is 3		-0.063 (0.064)		
Broke-up with bio dad by age 3				-0.149** (0.044)

Frequency of attendance to religious services	0.042 (0.029)	0.040 (0.029)	0.018 (0.021)	0.017 (0.021)
Baseline psychological distress	-0.015* (0.006)	-0.015* (0.006)	-0.005 (0.005)	-0.004 (0.005)
Intercept	0.220 (0.231)	0.270 (0.238)	0.160 (0.163)	0.232 (0.165)
$R^2$ /pseudo $R^2$	0.028	0.029	0.029	0.034

*Note.* Table presents unstandardized regression coefficients (SEs). City fixed effects for 8 cities where BSF programs occurred are included in all models to adjust for clustering by city. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

Table 32. Moderation of associations between unwanted pregnancy and spanking behaviors by assignment to BSF program.

	Spanking			
	Single		Cohabiting	
	Model 1 (n=1,187)	Model 2 (n=1,187)	Model 1 (n=2,286)	Model 2 (n=2,286)
Unwanted pregnancy	1.451 (0.315)	1.454 (0.316)	1.552* (0.286)	1.583* (0.293)
Assigned to BSF	1.109 (0.164)	1.109 (0.164)	1.060 (0.109)	1.062 (0.110)
Assigned to BSF x unwanted pregnancy	0.531* (0.164)	0.530* (0.164)	0.858 (0.227)	0.855 (0.227)
Mother's age at child's birth	0.978 (0.017)	0.978 (0.017)	0.980 (0.015)	0.978 (0.015)
Maternal race/ethnicity (ref: White)				
Black	0.909 (0.234)	0.910 (0.235)	0.768 (0.111)	0.799 (0.116)
Hispanic	0.804 (0.278)	0.804 (0.278)	0.898 (0.143)	0.882 (0.140)
Other	1.299 (0.636)	1.302 (0.638)	0.876 (0.264)	0.893 (0.270)
Child female	0.995 (0.130)	0.996 (0.131)	0.961 (0.091)	0.967 (0.092)
Mother's household income	1.000** (<0.001)	1.000** (<0.001)	1.000** (<0.001)	1.000** (<0.001)
High school graduate	1.417* (0.212)	1.417* (0.212)	1.340** (0.147)	1.338** (0.147)
Mother knows biological father of child <1 year	1.268 (0.191)	1.268 (0.191)	1.395** (0.150)	1.428** (0.154)
Stably single from child's birth to when the child is 3		0.986 (0.143)		
Broke-up with bio dad by age 3				0.786* (0.078)
Frequency of attendance to religious services	0.993 (0.065)	0.992 (0.065)	1.006 (0.048)	1.003 (0.048)

Baseline	1.003	1.003	1.023*	1.025*
psychological	(0.015)	(0.015)	(0.012)	(0.012)
distress				
Intercept	0.376	0.380	0.297	0.333**
	(0.191)	(0.199)	(0.116)	(0.132)
$R^2$ /pseudo $R^2$	0.033	0.033	0.032	0.035

*Note.* Table presents odds ratios (SEs). City fixed effects for 8 cities where BSF programs occurred are included in all models to adjust for clustering by city. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < 0.001$ .

## Appendix D

*Table 33.* Measurement details for FFCWS maternal mental health and parenting outcomes collected when the child was 1-year-old.

	Item Scoring	Measurement Items
Maternal depressive symptoms	Endorsement of 1 item; scored 1 = “yes” and 0 = “no”	(a) During the past 12 months, has there ever been a time when you felt sad, blue, or depressed for two or more weeks in a row?
Maternal parenting stress	A standardized average of endorsements to 4 indicators of parenting stress. Endorsements were scored on a 4-point scale and recoded such that 1 = “strongly disagree,” 2 = “somewhat disagree,” 3 = “somewhat agree,” and 4 = “strongly agree.”	(a) Being a parent is harder than I thought it would be (b) I feel trapped by my responsibilities as a parent (c) Taking care of my child(ren) is more work than pleasure (d) I often feel tired/worn out from raising a family
Mom engagement in 8 parenting activities	A standardized average of reported engagement in 8 parenting activities over a week (7 day) period	(a) How many days a week do you usually play games like “peek-a-boo” or “gotcha” with child (b) How many days a week do you usually sing songs or nursery rhymes with child (c) How many days a week do you usually read stories to child (d) How many days a week do you usually tell stories to child (e) How many days a week do you play inside with toys such as blocks or legos with child (f) How many days a week do you take child to visit relatives (h) How many days a week do you hug or show physical affection to child

		(i) How many days a week do you put child to bed
Co-parenting with biological father	A standardized average of endorsements to 6 indicators of co-parenting. Endorsements were scored on a 4-point scale and recoded such that 0 = "never" and "rarely," 1 = "sometimes," and 2 = "always"	<p>(a) When father is with child, he acts like the kind of parent you want for your child</p> <p>(b) You can trust father to take good care of child</p> <p>(c) You can count on father to watch child for a few hours</p> <p>(d) Father respects schedules/rules you make for child</p> <p>(e) Father supports you in the ways you want to raise child</p> <p>(f) You and father talk about problems that come up with child</p>
Spanked in past month	Endorsement of 1 item; scored 1 = "yes" and 0 = "no"	(a) In the past month, have you spanked child because he/she was misbehaving or acting up?

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*Table 34.* Measurement details for FFCWS maternal mental health and parenting outcomes collected when the child was 3-years-old.

	Item Scoring	Measurement Items
Maternal Depressive Symptoms	A standardized count of 7 self-reported symptoms	<p>a) For two consecutive weeks, did you lose interest in most things?</p> <p>(b) During those two weeks, did you feel more tired/low on energy than usual?</p> <p>(c) Did you gain/lose weight without trying, or stay the same?</p> <p>(d) Did you have trouble falling asleep during those 2 weeks?</p> <p>(e) Did you have a lot more trouble concentrating than usual?</p> <p>(f) During this period did you feel down on yourself?</p> <p>(g) Did you think a lot about death during those 2 weeks?</p>
Maternal Parenting Stress	A standardized average of endorsements to 4 indicators of parenting stress. Endorsements were scored on a 4-point scale and recoded such that 1 = “strongly disagree,” 2 = “somewhat disagree,” 3 = “somewhat agree,” and 4 = “strongly agree.”	<p>(a) Being a parent is harder than I thought it would be</p> <p>(b) I feel trapped by my responsibilities as a parent</p> <p>(c) Taking care of my child(ren) is more work than pleasure</p> <p>(d) I often feel tired/worn out from raising a family.</p>

Maternal engagement in 13 parenting activities

A standardized average of reported engagement in 13 parenting activities over a week (7 day) period.

- (a) How many days a week do you usually sing songs or nursery rhymes with child
- (b) How many days a week do you usually hug or show physical affection to child
- (c) How many days a week do you usually tell child that you love him/her
- (d) How many days a week do you usually let child help you with simple chores
- (e) How many days a week do you usually play imaginary games with him/her
- (f) How many days a week do you usually read stories to child
- (g) How many days a week do you usually tell stories to child
- (h) How many days a week do you usually play inside with toys with child
- (i) How many days a week do you usually tell child you appreciate something he/she did
- (j) How many days a week do you take him/her to visit relatives
- (k) How many days a week do you usually go to a restaurant/out to eat with him/her
- (l) How many days a week do you assist child with eating
- (m) How many days a week do you usually put child to bed

Co-parenting with biological father

A standardized average of endorsements to 6 indicators of co-parenting. Endorsements were

- (a) When father is with child, he acts like the kind of parent you want for your child
- (b) You can trust father to take good care of child

	scored on a 4-point scale and recoded such that 0 = "never" and "rarely," 1 = "sometimes," and 2 = "always."	<p>(c) Father respects the schedules and rules you make for child</p> <p>(d) Father supports you in the ways you want to raise child</p> <p>(e) You and father talk about problems that come up with child</p> <p>(f) You can count on father for help when you need someone to look after child for a few hours</p>
Observed warmth	Standardized average of 7 warmth items from the Home Observation for Measurement of the Environment (HOME) scale (Caldwell & Bradley, 1984) that are measured dichotomously; 1 = "presence of behavior" and 0 = "absence of behavior"	<p>(a) Parent spontaneously praised child at least twice</p> <p>(b) Parent's voice conveys positive feelings toward child</p> <p>(c) Parent caressed or kissed child at least once</p> <p>(d) Parent responded positively when you (interviewer) praised child</p> <p>(e) Parent spontaneously vocalized to child twice</p> <p>(f) Parent responded verbally to child's vocalizations</p> <p>(g) Parent told child the name of an object or person during visit</p>
Observed harsh parenting	Standardized average of 5 harsh parenting items from the Home Observation for Measurement of the Environment (HOME) scale (Caldwell & Bradley, 1984) that are measured dichotomously. All items were recoded such that 1 = "presence of behavior" and 0 =	<p>(a) Parent did not shout at child</p> <p>(b) Parent did not express annoyance with or hostility toward child</p> <p>(c) Parent did not slap child</p> <p>(d) Parent did not scold or criticize child during the visit</p> <p>(e) Parent did not interfere or restrict child more than 3 times</p>

	“absence of behavior” before average was taken.	
Observed home learning	Standardized average of 8 learning items from the Home Observation for Measurement of the Environment (HOME) scale (Caldwell & Bradley, 1984). Items were scored on a 4- point scale where 1 = “none,” 2 = “1-2,” 3 = “3-4,” and 4 = “4, 5 or more.”	(a) About how many, if any, push or pull toys does child have?  (b) About how many, if any, toys that let child work his/her muscles does child have?  (c) About how many, if any, toys that have pieces that fit together does child have?  (d) About how many, if any, toys that can be put together in different ways does child have?  (e) About how many, if any, cuddly, soft or role-playing toys does (child) have?  (f) About how many, if any, books do you have for (child)?  (g) About how many, if any, toys that let (him/her) make music does (child) have?  (h) About how many, if any, toys with wheels does (child) have?
Spanked in past month	Endorsement of 1 item; scored 1 = “yes” and 0 = “no”	(a) In the past month, have you spanked child because he/she was misbehaving?

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Table 35. Measurement details for FFCWS demographic and baseline variables.

	Item Scoring	Measurement Items
Mother considered abortion	Endorsement of one item; scored 1 = "yes," and 0 = "no"	(a) When you found out you were pregnant, did you think about having an abortion?
Mother's report of biological father's consideration of abortion	Endorsement of one item; scored 1 = "yes," and 0 = "no"	(a) Did [BABY'S FATHER] suggest that you have an abortion?
Both mother and biological father considered an abortion	Constructed variable	(a) Constructed variable indicating whether both parents considered having an abortion as reported by the mother
Mother considered abortion only	Constructed variable	(a) Constructed variable indicating if mother only considered an abortion (excluding mothers who considered who also reported that the child's biological father asked them to consider an abortion)
Mother's report that biological father only considered an abortion	Constructed variable	(a) Constructed variable indicating if mother only reported that the biological father asked her to consider an abortion (excluding mothers who reported having considered an abortion themselves)
Mother's age at child's birth	Continuous variable	(a) Self-reported age of mother at birth of her child
Maternal race/ethnicity	4 dummy coded variables from self-identified race/ethnicity at child's birth	(a) Black (b) Hispanic (c) other race/ethnicity (d) White (reference group)

Child is mother's first	Endorsement of one item; recoded such that 1 = "no other children," and 0 = "yes other children"	(a) Do you have other biological children?
Gender of child	2 dummy coded variables from mom-reported gender of her child at child's birth	(a) Female (b) Male (reference group)
Child low birth weight	Dichotomous variable; 1 = "yes," and 0 = "no"	(a) Constructed variable indicating whether the child was born with low birth weight
Ratio of mother's household income/poverty threshold	Continuous variable; ratios below 1.00 indicate that the household income is below the official poverty threshold, whereas a ratio of 1.00 or greater indicates at or above the threshold	(a) Constructed variable indicating the ratio of mother-reported household income to the appropriate federal poverty threshold at child's birth
Number of children in household	Continuous variable	(a) Constructed variable indicating the number of children under the age of 18 that reside in their primary residence
Maternal education	Four dummy variables from mom reported educational attainment at child's birth	(a) less than high school (b) high school graduate (c) some college (d) college graduate (reference group)
Becomes romantic with biological father when child is 1	Dichotomous variable; 1 = "yes," and 0 = "no"	(a) Constructed variable indicating whether the mother who indicated single at the child's birth became romantic with the child's biological father by the time her child was 1 year of age

Breaks up with child's biological father when child is 1	Dichotomous variable; 1= "yes," and 0 = "no"	Constructed variable indicating whether the mother who indicated cohabiting with the biological father at the child's birth broke-up him by the time her child was 1 year of age
Relationship with child's father when child is 3 for mothers who are single at baseline	Four dummy variables constructed from mom reported relationship status with child's biological father at baseline, 1- and the 3-year follow-up	(a) Stably not romantic 1 to 3 (b) Romantic when child is 1 and break-up by age 3 (c) Not romantic when child is 1 but become romantic by age 3 (d) Stably romantic 1 to 3 (reference group)
Broke-up with biological father by age 3 for mothers who are cohabiting at baseline	Constructed variable from mother reported relationship status with child's biological father at baseline, 1- and the 3-year follow-up	(a) Constructed variable indicating whether the mother broke-up with the child's biological father by the time child was 3-years-old
Mother appeared anxious and/or depressed at child's birth	Constructed variable combining two indicators of maternal anxiety and depression at baseline. Dichotomous variable; 1= "yes" and 0 = "no"	(a) Interviewers were asked to report on whether respondents appeared anxious during the baseline interview process (at child's birth) (b) Interviewers were asked to report on whether respondents appeared depressed or withdrawn during the baseline interview process (at child's birth)
Frequency of attendance to religious services	Mother's baseline self-reported religious attendance; recoded such that 1 = "never," 2 = "a few times a year," 3= "a few times a month," 4 = "about once a week, or 5 = "more than once a week"	(a) Self-reported frequency of attendance to religious services

Mother drank during pregnancy	Mother's baseline self-reported alcohol consumption during her pregnancy; recoded such that 0 = "never," 1 = "less than once a month," "several times per month," "several times per week, or "nearly every day"	(a) Constructed variable indicating whether the mother drank alcohol during pregnancy
Mother used drugs during pregnancy	Mother's baseline self-reported drug use during her pregnancy; recoded as such that 0 = "never," 1 = "less than once a month, "several times per month," "several times per week," or "nearly every day"	(a) Constructed variable indicating whether the mother did drugs during pregnancy
First visited the doctor for pregnancy at or after 4 <sup>th</sup> month of pregnancy	Recoded continuous variable such that 0 = visiting doctor before 4 <sup>th</sup> month of pregnancy and 1 = visiting the doctor at or after 4 <sup>th</sup> month of pregnancy	(a) Constructed variable indicating whether the mother waited until her second trimester to visit the doctor

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*Table 36.* Measurement details for BSF Evaluation maternal mental health and parenting outcomes collected when the child was 3-years-old.

	Item Scoring	Measurement Items
Maternal depressive symptoms	A standardized average of endorsements to 12 self-reported symptoms from the 12-item version of the Center for Epidemiologic Studies Depression Scale (CES-D). Endorsements were scored on a 4-point scale and recoded such that 1 = “rarely or none of the time,” 2 = “some of the time,” 3 = “most of the time,” and 4 = “most or all of the time.”	<p>(a) During the past week, I was bothered by things that usually don’t bother me</p> <p>(b) During the past week, I did not feel like eating; my appetite was poor</p> <p>(c) During the past week, I felt that I could not shake off the blues even with help from my family or friends</p> <p>(d) During the past week, I had trouble keeping my mind on what I was doing?</p> <p>(e) During the past week, I felt depressed</p> <p>(f) During the past week, everything I did felt like an effort</p> <p>(g) During the past week, I felt fearful</p> <p>(h) During the past week, my sleep was restless</p> <p>(i) During the past week, I talked less than usual</p> <p>(j) During the past week, I felt lonely</p> <p>(k) During the past week, I felt sad</p> <p>(l) During the past week, I could not get “going”</p>
Maternal parenting stress	A standardized average of endorsements to the 4-item Aggravation in Parenting Scale. Endorsements were scored on a 4-point scale and recoded	<p>(a) Felt your child is much harder to care for than most?</p> <p>(b) Felt your child does things that really bother you?</p> <p>(c) Felt you are giving up more of your life to meet your child’s needs than you ever</p>

	such that 1 = “none of the time,” 2 = “some of the time,” 3 = “most of the time,” and 4 = “all of the time”	expected? (d) Felt angry with your child?
Maternal engagement in 4 parenting activities	A standardized average of reported engagement in 4 parenting activities. Items were scored on a 6-point scale and recoded such that 1 = “not at all,” 2 = “rarely,” 3 = “a few times a month,” 4 = “a few times a week,” 5 = “about once a day,” and 6 = “more than once a day”	(a) How many times in the past month have you sung songs with child? (b) How many times in the past month have you read or looked at books with child? (c) How many times in the past month have you told stories to child? (d) How many times in the past month have you played with games or toys with child?
Co-parenting with child’s biological father	A standardized average of endorsements to 10 indicators of co-parenting. Endorsements were scored on a 5-point scale and recoded such that 1 = “strongly disagree,” 2 = “disagree,” 3 = “not sure,” 4 = “agree,” and 5 = “strongly agree”	(a) Good parent (b) Communicate well (c) Good judgment (d) Job easier (e) Good team (f) Handle children (g) Solve problems (h) Personal sacrifices (i) Like talking (j) Pays attention

Observed HOME warmth	Standardized average of 6 warmth items from the Home Observation for Measurement of the Environment (HOME) scale (Caldwell & Bradley, 1984) that are measured dichotomously (“presence of behavior”=1, “absence of behavior”=0)	(a) Mother converses with child at least twice (b) Mother answers child’s questions or request verbally (c) Mother usually responds verbally to child’s talking (d) Mother’s voice conveys positive feeling (e) Mother spontaneously praises child twice (f) Mother caresses, kisses or cuddles child at least once
Observed maternal responsiveness	Standardized average of 4 items of observed parenting measured by the Two-Bag assessment (a free play task); items were rated from 1= very low to 7 = very high	(a) Observed sensitivity (b) Observed cognitive stimulation (c) Observed positive regard (d) Observed detachment (reverse coded) (a) Observed negative regard
Observed harsh parenting	Standardized average of 2 items of observed parenting measured by the Two-Bag assessment (a free play task); items were rated from 1= very low to 7 = very high	(b) Observed intrusiveness
Spanked in past month	Endorsement of 1 item; 1 = “yes” and 0 = “no”	(a) In the past month, have you spanked child on the bottom with a bare hand?

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Table 37. Measurement details for BSF Project demographic and baseline variables.

	Item Scoring	Measurement Items
Unwanted pregnancy	Endorsement of one item; scored 1 = “definitely yes,” 2 = “probably yes,” 3 = “probably no,” and 4 = “definitely no.” Recoded to be dichotomous; 1 = “probably no and definitely no” and 0 = “definitely yes and probably no”	(a) Right before the pregnancy, did you want to have a baby with [NAME OF FATHER]?
Mistimed pregnancy	Endorsement of one item; scored 1 = “sooner,” 2 = “right time,” 3 = “later,” and 4 = “didn’t care.” Recoded to be dichotomous; 1 = “sooner” and 0 = “right time, later, and didn’t care”	(a) Would you say this pregnancy came sooner than you wanted, at about the right time, or later than you wanted?
Assigned to BSF program	Dichotomous variable; 1 = “assigned to BSF program” and 0 = “control”	Random assignment into receipt of a BSF program
Mother’s age at child’s birth	Continuous variable	(a) Constructed from subtracting self-reported child’s due date year and mother’s self-reported year of birth
Maternal race/ethnicity	4 dummy coded variables from self-identified race/ethnicity at child’s birth	(a) Black (b) Hispanic (c) other race/ethnicity (d) White (reference group)

Gender of child	2 dummy coded variables from mom-reported gender of her child at child's birth	(a) Female (b) Male (reference group)
Mother's household income	Self-reported household income category coded as 0 = "none," 3500 = "\$1- \$4,999," 7500 = "\$5,000 - \$9,999," 12500 = "\$10000 - \$14,999," 17500 = "\$15,000 - \$19,999," 22500 = "\$20,000 - 24,999," 27500 = "25,000 - \$34,999," and 35000 = "\$35000 or above"	(a) In the last 12 months, what were your total earnings from you jobs before taxes and deductions? Please do not include earnings from anyone else.
High school graduate	Dichotomous variable indicating whether mother graduated from high school or has earned her GED or high school equivalence; 1 = "yes" and 0 = "no"	(a) Do you have high school diploma, GED, or high school equivalence?
Stably single from child's birth to when the child is 3 for mothers who are single at baseline	Constructed variable from mother reported relationship status with child's biological father at baseline and the 3-year follow-up	(a) Constructed variable indicating whether the mother remained not in a romantic relationship with the child's biological father
Broke-up with biological father by age 3 for mothers who are cohabiting at baseline	Constructed variable from mother reported relationship status with child's biological father at baseline and the 3-year follow-up	(a) Constructed variable indicating whether the mother broke-up with the child's biological father by the time child was 3-years-old

Mother knows biological father of child less than 1 year	Mother self-reported time that she has known biological father; 1 = "months," 2 = "years," and 3 = "weeks." Recoded to be dichotomous; 1 = "months and weeks" and 0 = "years"	(a) How long did you know father before this pregnancy?
Religious service attendance	Mother self-reported religious attendance; recoded as such that 0= "never," 1 = "a few times a year," 2 = "a few times a month," and 3 = "once a week or more"	(a) In the past 12 months, how often have you attended a religious service?
Baseline psychological distress	A count of 6 self-reported symptoms measured by the Kessler Psychological Distress Scale. Endorsements were scored on a 4-point scale and recoded such that 1 = "rarely or none of the time," 2 = "some of the time," 3 = "most of the time," and 4 = "most or all of the time."	<p>(a) During the past 30 days, how often did you feel so sad that nothing could cheer you up?</p> <p>(b) During the past 30 days, how often did you feel nervous?</p> <p>(c) During the past 30 days, how often did you feel restless or fidgety?</p> <p>(d) During the past 30 days, how often did you feel hopeless?</p> <p>(e) During the past 30 days, how often did you feel that everything was an effort?</p> <p>(f) During the past 30 days, how often did you feel worthless?</p>

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Appendix E

Figure 1. Initial covariate balance for engagement in parenting for mothers who were single at baseline.

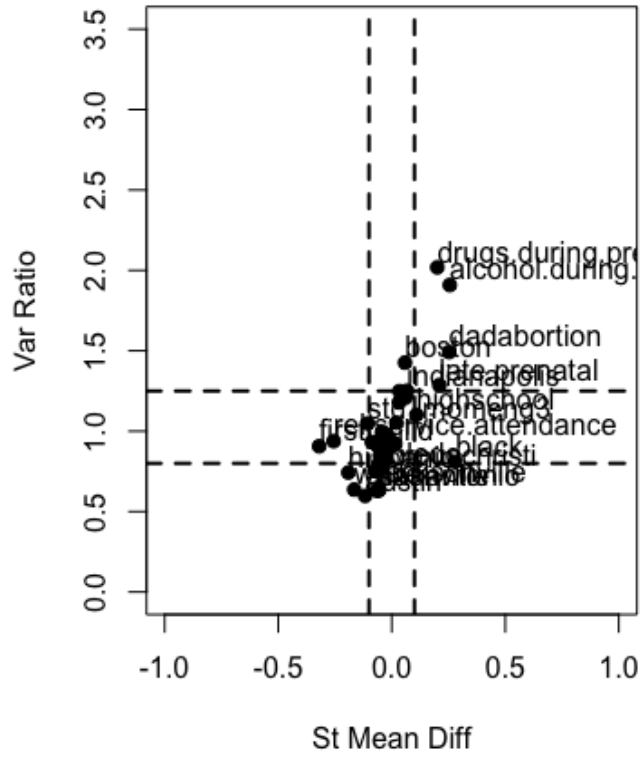






Figure 3. Initial covariate balance for depressive symptoms for mothers who were single at baseline.

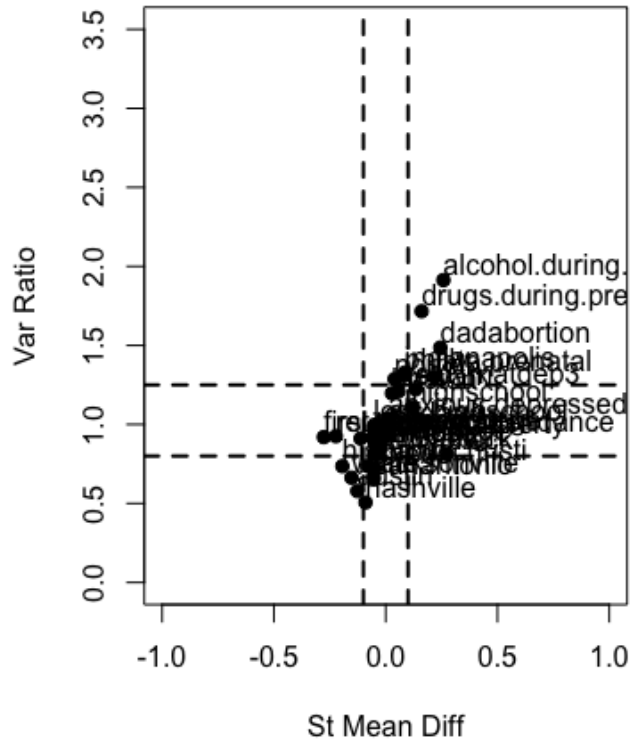




Figure 5. Initial covariate balance for parenting stress for mothers who were single at baseline.

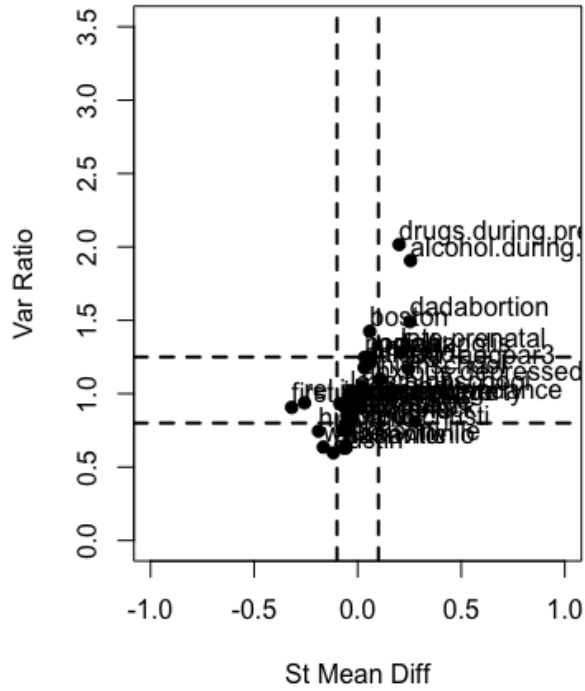


Figure 6. Final balance after conditioning on propensity score for parenting stress for mothers who were single at baseline.

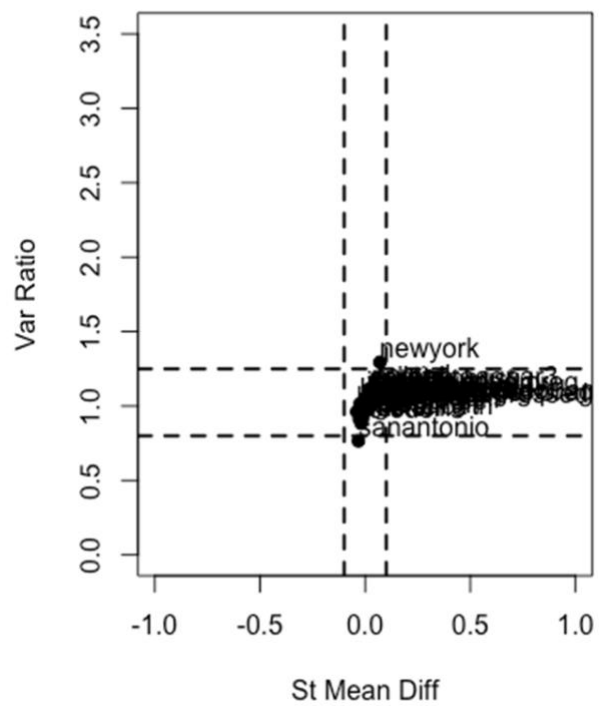




Figure 8. Final balance after conditioning on propensity score for spanking behaviors for mothers who were single at baseline.

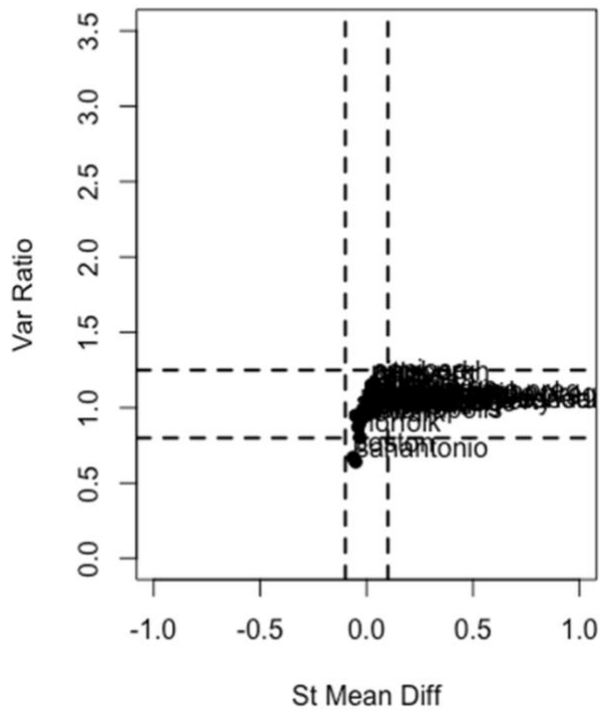


Figure 9. Initial covariate balance for co-parenting with the child's biological father for mothers who were single at baseline.

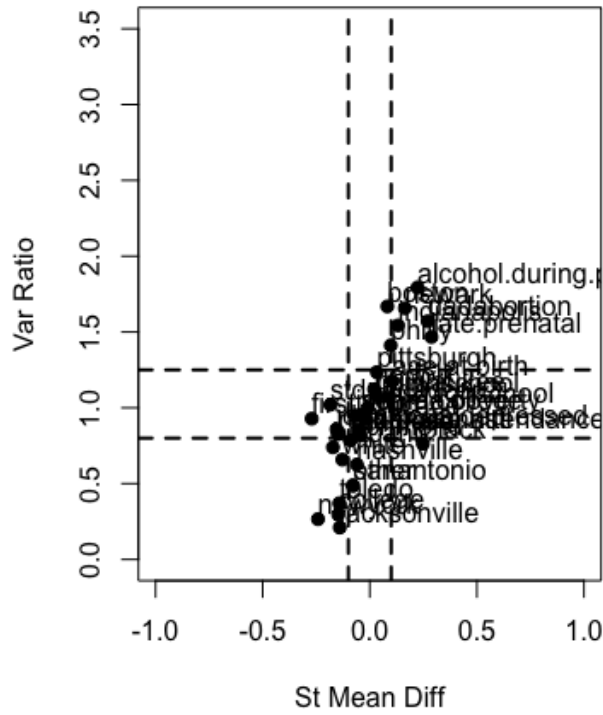






Figure 11. Initial covariate balance for engagement in parenting for mothers who were cohabiting with the child's biological father at baseline.

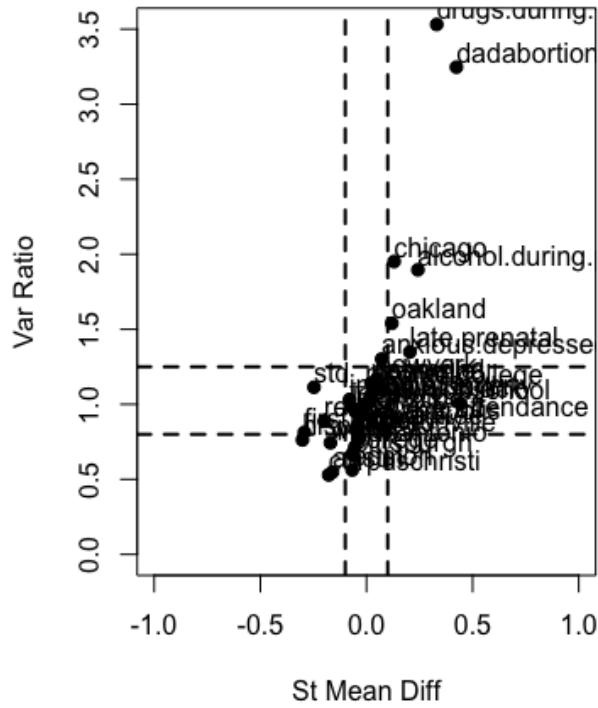


Figure 12. Final balance after conditioning on propensity score for engagement in parenting for mothers who were cohabiting with the child's biological father at baseline

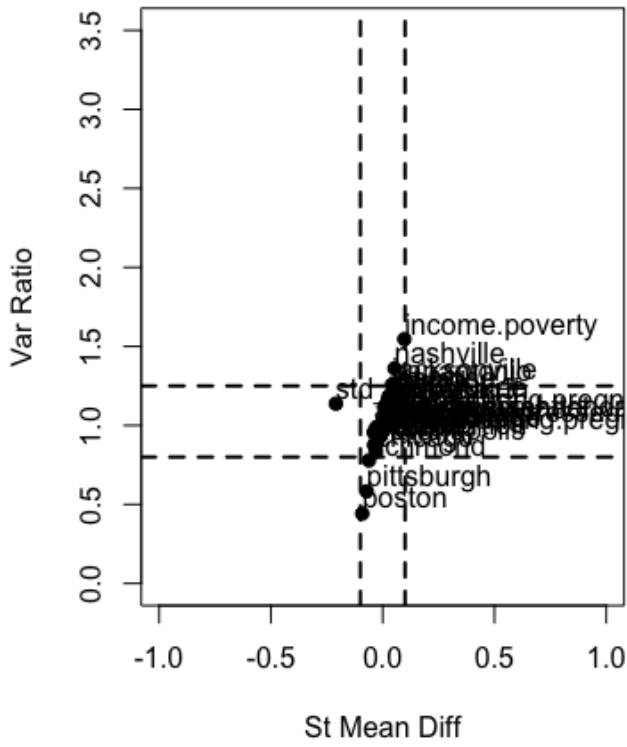


Figure 13. Initial covariate balance for depressive symptoms for mothers who were cohabiting with the child's biological father at baseline.

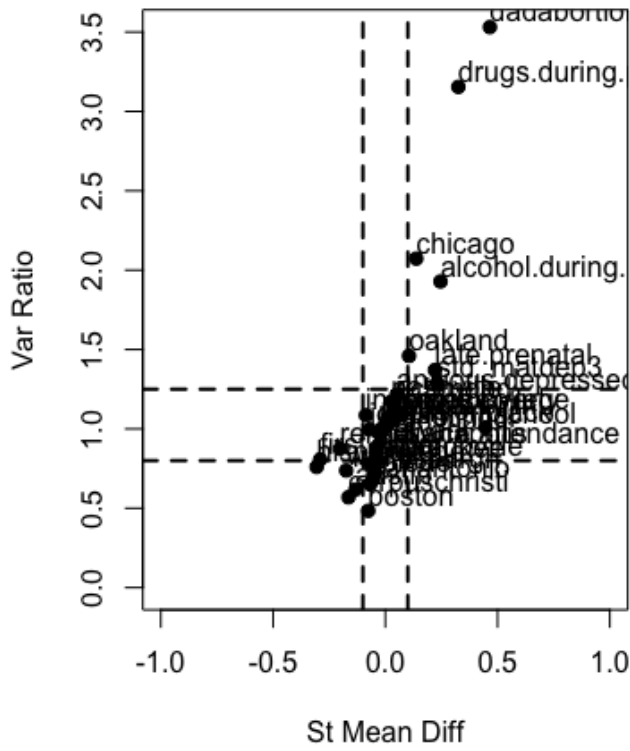


Figure 14. Final balance after conditioning on propensity score for depressive symptoms for mothers who were cohabiting with the child's biological father at baseline.

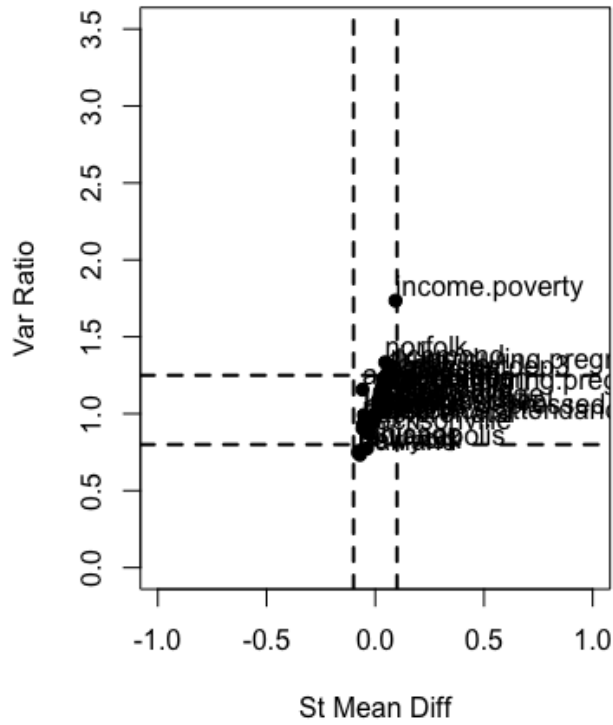


Figure 15. Initial covariate balance for parenting stress for mothers who were cohabiting with the child's biological father at baseline.

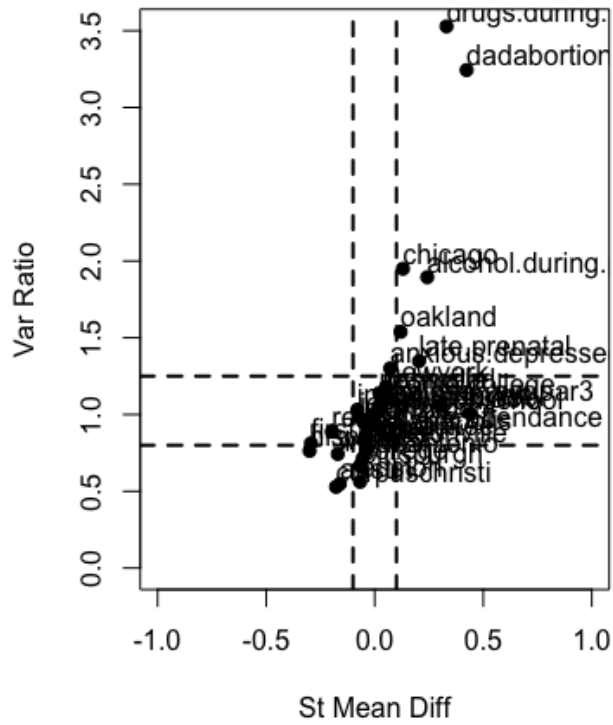


Figure 16. Final balance after conditioning on propensity score for parenting stress for mothers who were cohabiting with the child's biological father at baseline.

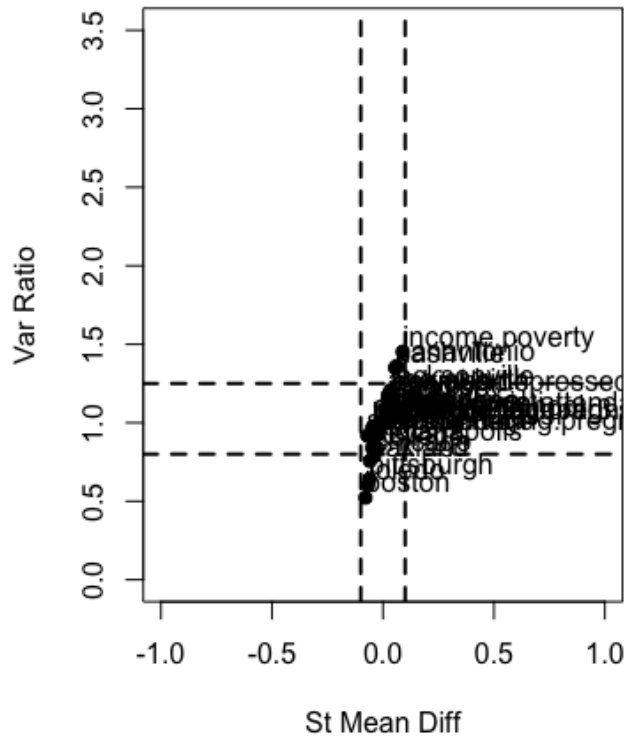


Figure 17. Initial covariate balance for spanking behaviors for mothers who were cohabiting with the child's biological father at baseline.

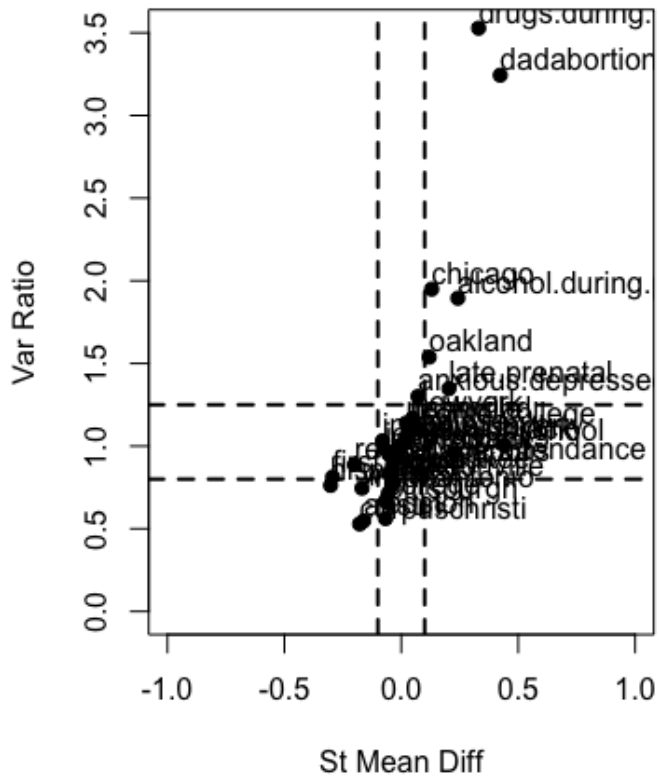


Figure 18. Final balance after conditioning on propensity score for spanking behaviors for mothers who were cohabiting with the child's biological father at baseline.

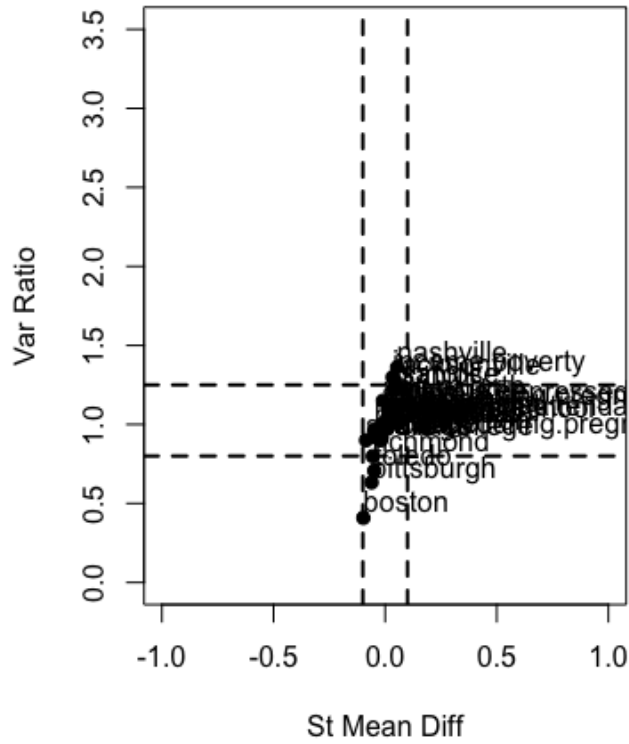




Figure 19. Initial covariate balance for co-parenting with the child’s biological father for mothers who were cohabiting with the child’s biological father at baseline.

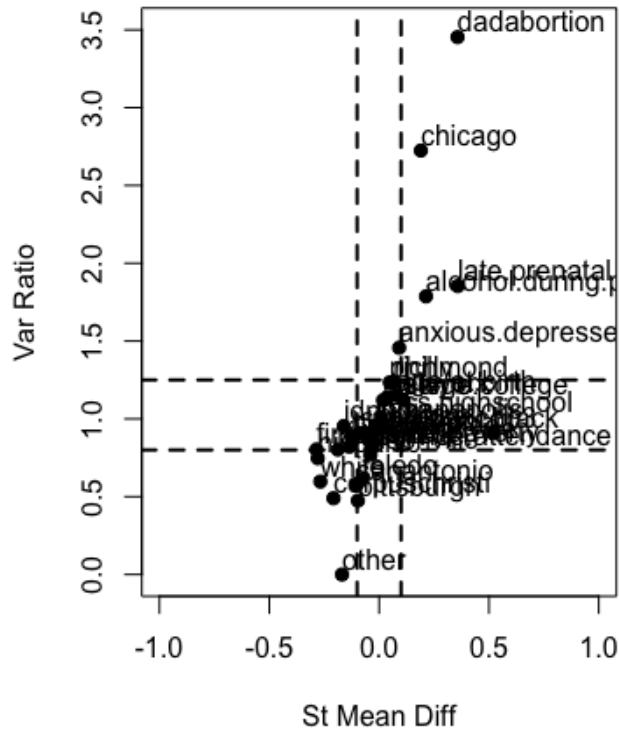
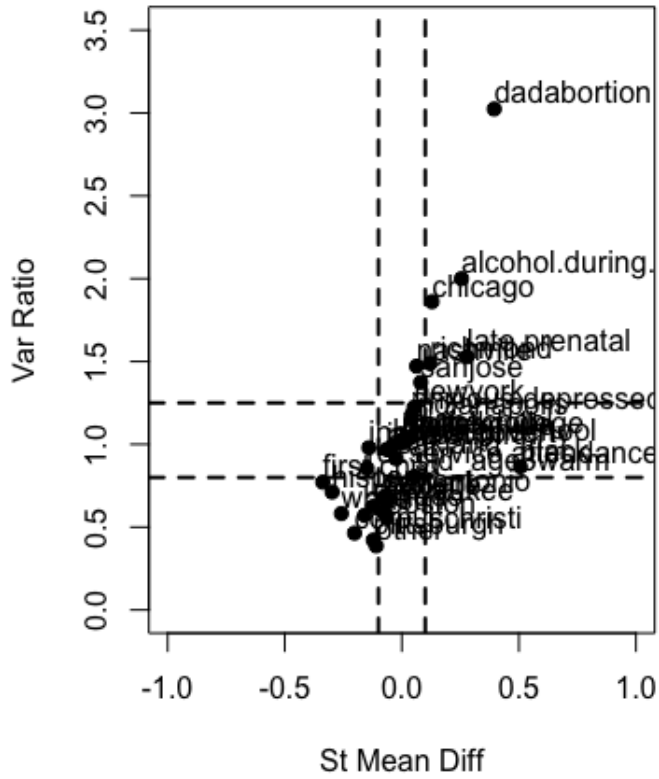




Figure 21. Initial covariate balance for observed warmth for mothers who were cohabiting with the child's biological father at baseline.





Appendix F

**Statistical Packages Utilized for Propensity Score Analysis in R**

Keller, B. (2016). 07 Functions.R.

Keller, B. (2016). 08 Functions.R.

Boot Package.

Optmatch Package.