ABSTRACT

Title of Document: LIVING ARRANGEMENTS AND THE OUTCOMES OF A TEEN OR YOUNG ADULT BIRTH.

Kate C. Riera, Doctor of Philosophy, 2011

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Adolescent childbearing remains an important indicator of our nation's social well-being and public health. Few nationally representative studies have examined the social support provided by the different family structures and living arrangements of adolescent mothers and the relationship that they might have to the health and well-being of the mother and child during the prenatal and postpartum periods.

This study utilized data from female respondents age 15-19 and 25-44 from Cycle 6 & the continuous 2006-08 National Survey of Family Growth (NSFG). This study contained two samples: 1) 4,477 women who became mothers as a young adult or adolescent and 2) a more focused subsample of 215 current adolescent mothers. Regression analyses examined the relationship between maternal age at first birth and prenatal, birth, and short-term postpartum outcomes for the mother and child, as well as the extent to which supportive living arrangements moderated these associations.

Results of analyses for young adult and adolescent mothers indicated that living with a cohabiting partner reduced the risk of breastfeeding cessation for middle adolescent mothers. Middle adolescent mothers had a 36% higher risk of rapid repeat

birth, but this was reduced by living with a spouse. Educational attainment was positively associated with maternal age, and this association was further magnified for married adolescent mothers. Results of analyses for current adolescent mothers indicated that an early adolescent age at first birth was not significantly associated with initiation of prenatal care, infant birth weight, sexual risk taking behavior, or duration of breastfeeding. Moderation analyses revealed that, although living with two parents was associated with earlier initiation of prenatal care, living arrangements did not moderate the relationship between maternal age and infant birth weight, sexual risk taking behavior, or duration of breastfeeding.

These findings indicate that although adolescent age at first birth may be associated with poorer outcomes, this relationship may be reduced by parental or partner supportive living arrangements. Future research should examine the influence of social support on additional outcomes. Implications for policy and programs are discussed.

LIVING ARRANGEMENTS AND THE OUTCOMES OF A TEEN OR YOUNG ADULT BIRTH.

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Chapter 1: Introduction

America has the highest rates of adolescent childbearing among industrialized nations, and, despite the recent and continuing decline, it is clear that much work still needs to be done (Darroch, 2001; Holcombe, Peterson, & Manlove, 2009; Martin et al., 2009). The consequences of adolescent childbearing are far reaching for the mother, her child, family, and the larger society. These consequences have been measured in terms of years of education lost for the mother, levels of poverty and government assistance and future childrearing burden.

Several larger societal trends may be affecting the outcomes of adolescent childbearing today. Primary among them is the marked decline in marriage and the marked increase in nonmarital cohabitation. A recent National Vital Statistics Report from the National Center for Health Statistics indicated that 87.4% of all teen births in 2008 were nonmarital, however for Black teens the percentage of nonmarital births was as high as 96% in 2006 (Hamilton, Martin, & Ventura, 2010; Martin et al., 2009). Currently almost 40% of all recent births occur outside of marriage; however, about 40% of those nonmarital births are to cohabiting couples (Ventura, 2009). Among teens, who tend to have lower rates of marriage and, consequently, higher rates of nonmarital births than older groups of women to begin with, there has been a steady rise in cohabitation. A recent study using the Early Childhood Longitudinal Study- Birth Cohort found that 44% of the nonmarital teen births were to cohabiting couples in comparison to 52% for women of all ages (Mincieli, Manlove, McGarrett, Moore, & Ryan, 2007). Using data from the National Early Head Start Research and Evaluation Project, another study found that at 14 months postpartum only 33.3% of teen parents were cohabiting, and that number

dropped to 26.3% and 18.2% at 24 and 36 months respectively (Eshbaugh, 2008). These drops in cohabiting unions over time did not result in an equal number of gains in marital unions, but rather yielded more mothers who were neither cohabiting nor married. Despite these marked societal changes, little is known about the social support of adolescent mothers and the relationship that support might have to the health and well-being of the mother during and after pregnancy as well as the child after birth.

Living Arrangements and Social Support

The majority of adolescent mothers live with their parent or parents at the time that they become pregnant. However, there are many possible living arrangements they may transition into either during pregnancy or shortly after the birth of their child (Furstenberg & Crawford, 1978). They may remain living with their parents or other adult guardian, marry and live with a male partner, cohabit with a male partner, or live alone.

The living arrangements of mothers after birth have been hypothesized to influence outcomes for both the mother and baby. Why would living arrangements influence outcomes? Undoubtedly different living arrangements offer them differing levels of resources and social support. Previous research has been mixed on the value of remaining in the home with the young mother's parents. Adolescent mothers who coreside with one or both of their parents may realize more economic gains and self-sufficiency in the form of higher levels of educational completion and employment (Eshbaugh, 2007; Furstenberg & Crawford, 1978; Gordon, 1999). This advantage is often due to the availability of the parents to help with child care. However, there is also evidence that teen mothers who coreside with parents have poorer parenting skills than

teen mothers who do not (Eshbaugh, 2007; Gordon, 1999). Adolescent mothers may benefit the most from this living arrangement in the first several years after birth; however, long-term coresidence may impede the developmental transition into independent living.

Young couples who marry and are able to sustain the marriage do well, but there are very high rates of divorce among this group, making it a risky arrangement (Ryan, Manlove, & Moore, 2004). Less is known about couples who are cohabiting or mothers who choose to live alone. Cohabitation may provide more resources, but this arrangement is also unstable. This is particularly important in light of changing demographics and policy trends, including the increase in cohabitation, as well as the implementation of the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (PRWORA) that specifically prohibits these latter two arrangements for unmarried minor mothers in order for them to receive welfare benefits. The number of adolescents in these different arrangements is unknown.

Objectives

This research examined the living arrangements of adolescent mothers in order not only to define the sources of support but also to identify consequences for the adolescent mother and child. This study used combined data from the National Survey of Family Growth Cycle 6 2002 and continuous 2006-08 data collection, of women who were either ages 15-19 or 25-44 at the time of interview and had at least one child. A wealth of research has documented the negative correlates of adolescent childbearing socially, academically, economically, and in terms of health and well-being for both the mother and child. Though adolescent pregnancy and childbearing are not new issues or

concerns, with dramatic changes in family formation over the last several decades, they are now situated in a new context, one that has yet to be fully explored. Therefore, although prenatal and postpartum health and well-being outcomes for mother and child are expected to be more negative for younger compared with older mothers, this may not necessarily be the case if the family supports the adolescent's pregnancy and birth. Thus, this research explored the extent to which social support provided by family structure and living arrangements moderates the relationship between young age at first birth and health and well-being outcomes for both mother and child. Specifically, health and well-being outcomes were examined from multiple periods including prenatally, at birth, and also in the short-term postpartum period for both the child and the mother.

Prenatal and birth variables of interest and health outcome variables at childbirth included the timing of the initiation of prenatal care as well as infant birth weight. Health and well-being variables for mother and child in the short-term postpartum included duration of breastfeeding, sexual risk-taking behavior, total educational attainment for the mother, and whether she had a rapid repeat birth within the first two years postpartum.

Chapter 2: Literature Review

Overview of Consequences of Teen Childbearing

Currently slightly more than 10% of all births in America are to women under the age of 20. The majority of these births are to older teens aged 18 and 19, but a significant proportion occurs to those aged 15-17 and a very small percentage occurs to those aged 10-14. From an international perspective, 2008 data show that the United States continues to have the highest teen birth rate of all industrialized nations (United Nations, 2009; Ventura & Hamilton, 2011). Specifically, countries such as Japan display teen birth rates that are more than eight times less than that of the US. Furthermore, over 20 developing countries also had lower teen birth rates than the US in 2004 (Holcombe, et al., 2009). The most recent data indicate that after recent upticks the teen birth rate in 2009 resumed its decline with 39.1 births for every 1,000 adolescent women, which translates into nearly 410,000 births to adolescents aged 15-19 (Ventura & Hamilton, 2011). Birth rates for the youngest adolescents (age 10-14) also declined with a rate of 0.5 births per 1,000, or 5,030 births in 2009. There are wide variations in these rates, though, by race/ethnicity. Latina teens have the highest teen birth rate, which, at 70.1 in 2008 was almost double the overall teen birthrate, whereas African American teens had a birthrate of 59.0 per 1,000 (Hamilton, et al., 2010).

A large body of research has been devoted to the consequences of teen pregnancy and childbearing (see Moore, Miller, Glei & Morrison 1995 for a review). In particular there are widely held concerns over the health and well-being of mother and child, as well as their social and economic status. Teen mothers have been consistently shown to

have a higher risk of poor health outcomes for their pregnancies such as delayed prenatal care, low weight gain, low birth weight babies, and pre-term birth. After birth, teen mothers show very low rates of breastfeeding, and their children are at higher risk for having academic and behavioral problems in school. Furthermore, intergenerational cycles of teen pregnancy have been shown such that the children of teen mothers are more likely to become adolescent parents themselves or engage in other deviant behavior, with a higher likelihood of incarceration. These findings not only create concern for the health and well-being of the adolescent mother and her child(ren), but have also been examined in light of the social costs that are associated with teen childbearing. This cost has been estimated at $9.1 million dollars per year and includes costs associated with medical care, child welfare, incarceration rates, and loss of tax revenue (Hoffman, 2006). Using 2000 PRAMS (Pregnancy Risk Assessment Monitoring System) data from 10 states, (Adams, Gavin, Ayadi, Santelli, & Raskind-Hood, 2009) calculated that a birth to a teen mother incurred public costs that were $1,500 more per birth than mothers who were just a little older at age 20-24.

Historical trends and recent changes in teen childbirth. Although rates of teen childbearing declined from 1991 onward through the early 2000's and then again currently, this issue still remains at the forefront of adolescent health and well-being concerns. National data show that the rates began to plateau in the early 2000's and then began to rise slightly between 2005-07. The teen birthrate rose to 41.9 in 2006, an increase of 3.5% from 2005, and then again increased by 1.4% in 2007 to 42.5 (Hamilton, Martin, & Ventura, 2009). It is currently on the decline once again.

Arguably, young women who bear children as adolescents face more challenges and difficulties than their counterparts even 20 years ago. Although societal disapproval of unwed or adolescent pregnancy may have abated, the educational and economic consequences for these young mothers have become more serious. Despite alternative programs or accommodations within their own schools, teen mothers are still more likely to drop out of high school compared to older mothers (Eshbaugh, 2008; Hofferth, Reid, & Mott, 2001; Roye & Balk, 1996). Without the requisite educational credentials, these mothers are unlikely to enroll in college and less able to support themselves and their family. As educational requirements climb, it is even more important today to have some college education (Hofferth et al., 2001). Even the country's leaders, including President Obama, declared the need for not only a high school degree but also at least one year of schooling beyond high school (Obama, 2009).

Prenatal and Birth Outcomes for Teen Mothers and their Children

Numerous studies have investigated health and well-being outcomes of teenage childbearing. These range from prenatal health through long-term developmental outcomes of the adult children of teenage mothers. Overall, teen mothers and their children have been found to be more at risk for negative outcomes at all of these stages when compared to older adult mothers and their children. This higher risk for negative outcomes has been theorized to be associated with pre-existing disadvantages such as lower socioeconomic status (Markovitz, Cook, Flick, & Leet, 2005). When examining this issue, Chen, Wen, Fleming, Demissie, Rhoads and Walker (2007) reported that in their study of 3.8 million women under the age of 25 who gave birth to their first child between 1995 and 2000, the risk of adverse birth outcomes for adolescent mothers in the

sample was independent of and not fully explained by such known confounders as disadvantaged social environment, inadequate prenatal care, and biological immaturity. Adolescents themselves, although physically able to reproduce, are still developing and growing and may have difficulty compensating for the additional nutritional and health needs during a pregnancy. Furthermore, pregnant adolescents have been shown to engage in more health-risk behaviors, possibly due to the limited ability to foresee future consequences and feelings of invincibility that are common during adolescence (Kaiser & Hays, 2005). Psychosocial stressors may also play a role as pregnant or parenting adolescents may experience role ambiguity, competing developmental tasks, and negotiating multiple transitions at once (Devereux, Weigel, Ballard-Reisch, Leigh, & Cahoon, 2009).

Prenatal health. Health-risk behaviors during pregnancy may lead to low birth weight, pre-term birth, or even infant mortality. Research by Kaiser and Hays (2005) of 145 first-time pregnant adolescents suggests that health-risk behaviors such as tobacco, alcohol, and drug use are generally underreported in administrative data such as birth certificate data. Furthermore, sexual risk-taking was found to be a significant health-risk behavior, as more than 75% of the pregnant adolescents had not used a condom at last sexual intercourse.

A key factor in prenatal health is timely entry into prenatal care. Many adolescents delay seeking prenatal care until the second or even third trimester, thereby decreasing their access to preventive care and important information on nutrition and health during pregnancy. Enrollment in care late in pregnancy is associated with an adolescent's increased risk in delivering a low birth weight infant (Haeri, Guichard, &

Saddlemire, 2009). Younger adolescents are the most likely to enroll in prenatal care later in their pregnancy. When examining the determinants of late prenatal care initiation among African American women in Washington, DC, Johnson et al. (2003) found that first time teen mothers in the sample were significantly at risk for late initiation of prenatal care. Only 59% of teens in the sample initiated prenatal care before halfway through their pregnancy. In a study of risk factors for late entry into prenatal care among 533 adolescents, Wiemann, Berenson, Garcia del-Pino and McCombs (1997) found that 47% entered prenatal care in the second or third trimester. Late entry was associated with younger age of the mother, the pregnancy being unwanted, and not having contact with the baby's father. Adolescents may also delay entry into care due to perceived financial obstacles, fear of disclosing the pregnancy, or not recognizing they are pregnant in a timely manner (Lee & Grubbs, 1995).

Birth outcomes. National data have shown that teens aged 15-19 years old have higher rates of low birth weight and infant mortality than all other older maternal age groups. In 2006 the rates of low birth weight infants born to teens was 10.0 per 1,000 births (for ages 15-19), compared to a rate of 8.3 for all maternal ages (Martin et al., 2009). The infant mortality rate in 2004 for teen mothers was 9.75, compared to a rate of 6.78 for all maternal ages (Matthews & MacDorman, 2007). Examining infant birth and death certificates in a diverse sample of over 600,000 California mothers age 11-29, Gilbert, Jandial, Field, Bigelow and Danielsen (2004) found that teen mothers across all ethnic groups demonstrated significantly higher risks of neonatal and infant mortality, pre-term birth, and low birth weight compared to the adult mothers in the sample.

Early Postpartum Outcomes for Teen Mothers and their Children

Breastfeeding. The American Academy of Pediatrics recommends that mothers breastfeed their infants exclusively for the first six months, and continue with nursing throughout the first year (American Academy of Pediatrics, 2005). Despite the health advantages associated with breastfeeding, adolescents have the lowest rates of breastfeeding (Feldman-Winter & Skaikh, 2007). According to the Centers for Disease Control and Prevention (CDC) data from the National Immunization Survey, the breastfeeding initiation rate in adolescents in 2006 was 55%, versus 69% for mother ages 20-29 years old, and 78% for mothers over 30 years old (Centers for Disease Control and Prevention [CDC], n.d.).

Although the numerous benefits of breast milk for infants are generally well-known, it is worth discussing further the potential benefits for the teen mother who breastfeeds. Some of the health benefits of breastfeeding for mothers include decreased postpartum bleeding, quicker return to pre-pregnancy weight, increased spacing between pregnancies, and decreased risks of breast and ovarian cancer (American Academy of Pediatrics, 2005). Successfully initiating breastfeeding may also positively contribute to a mother's feelings of confidence and self-esteem (Nicoletti, 2006). This may be particularly powerful for a teen mother, as social stigma towards such young mothers may undermine their maternal confidence. In order to successfully breastfeed, however, teen mothers need support on multiple levels, including instruction and encouragement from relevant health professionals as well as continuing support at home from a parent or partner (Feldman-Winter & Skaikh, 2007). A qualitative study of breastfeeding adolescent mothers in England highlighted the importance of support from the

adolescent's mother or partner in initiating and/or continuing breastfeeding (Dykes, Moran, Burt, & Edwards, 2003). Adolescents in the study identified needing five different types of support: emotional support, esteem support, instrumental support, informational support, and network support.

Sexual risk taking. Sexual risk taking behaviors during adolescence include those behaviors that increase the risk of contracting a sexually transmitted infection (STI). These behaviors may include early initiation of sexual intercourse, multiple sexual partners, and inconsistent or no use of a barrier method of contraception such as a condom. Consequently these same behaviors that put teens at risk for an STI, simultaneously put them at risk for a first or repeat teen pregnancy (Johnston-Briggs, Liu, Carter-Pokras, & Barnet, 2008). A pattern of sexual risk taking behavior that may have led up to the teen pregnancy often does not stop after the birth. Even during the pregnancy teens have been found to continue engaging in sexual risk taking behaviors such as not using a condom to prevent transmission of STI's to both mother and baby (Kaiser & Hays, 2005). With one third or more of teen mothers becoming pregnant again as a teen it is clear that sexual risk taking continues after the teen birth. Van Horne, Wiemann, Berenson, Horwitz, and Volk (2009) cite inconsistent or no use of condoms as directly related to the high rates of STI infections among pregnant and parenting adolescents.

Educational attainment. Educational attainment for women with a first birth as an adolescent is lower, on average, than for women who delay childbearing until they are adults (Hofferth et al., 2001). Young women who begin childbearing during their middle or high school years face considerable challenges, including competing work demands,

family responsibilities, and school policies in continuing and completing their high school education or continuing on for education at the post-secondary level (SmithBattle, 2007). Stephens, Wolf, & Battens (2003) note that, despite protections such as Title IX of the Education Amendments of 1972 which prohibit federally supported programs from excluding or discriminating against students based on gender, many pregnant and parenting students do not know what their rights and protections are and often constitute an "invisible" population that may be overlooked in supportive programs and services. Teen mothers must negotiate pregnancy, childbirth, and postpartum recovery time with their academic schedules while not falling behind their peers who are not having children. Child care may be the largest obstacle that they face, including issues of affordability, availability, flexibility, quality, and accessibility. Although programs that provide subsidized on-site child care and transportation to enable teen mothers to finish their high school education exist, these programs are not available to all teen mothers (Sadler, et al., 2007).

Repeat adolescent birth. Challenges faced by teen mothers are often compounded when combined with an additional birth as a teen (Raneri & Wiemann, 2007). Adolescents who are teen mothers are at risk for a repeat birth as a teenager, with more than 30% having a repeat birth or pregnancy within two years of their first birth as a teen (Omar, Fowler, & McClanahan, 2008). Though secondary pregnancy intervention programs targeting teen mothers have shown success in decreasing the rate of repeat teen birth, studies have also shown that in some communities the repeat teen birth rate is as high as 50% or more (Corcoran & Pillai, 2007). Teens who are married or younger at their first birth are more likely to have a repeat teen birth, whereas teen mothers who

continue their education or live at home with their parents are less likely to have a repeat teen birth (Manlove, Mariner, & Papillo, 2000). Adolescent mothers with two or more teen births are less likely to continue or complete their education and more likely to be in poverty (Coard, Nitz, & Felice, 2000).

Living Arrangements and Social Support

The outcomes of teen childbearing may vary by context. Different family living arrangements may provide differing levels of social support and resources for the mother and her child. Living arrangements of teen mothers are changing and becoming more diverse as fewer teen mothers marry, more are cohabiting, and most are living in a multigenerational residence. Concurrently attitudes towards and acceptance of premarital sex, cohabitation, and nonmarital childbirth are changing as well.

Decline in marriage. The marital context of teen births has changed dramatically in the last several decades. Although teen childbearing is not a new phenomenon, the family context for such births has changed greatly. The majority of children born to teen mothers are born outside of a marital relationship. General trends over time have shifted from teens marrying before a pregnancy, to teens marrying during a pregnancy, to teens becoming pregnant and not marrying (Ryan, et al., 2004). Although teen birthrates were actually higher in the 1960's and 70's than they are now, the majority of those teen parents were married by the birth of the child (Eshbaugh, 2008). Currently 87.4% of all teen births were nonmarital in 2008, in comparison to just over 40 years ago (1960) when this rate was 15% (Hamilton, et al., 2010; Holcombe, et al., 2009). Overall there has been a societal trend towards a later age at first marriage with median age for men at first

marriage in 2008 at 27.4 years and median age at first marriage for women at 25.6 (United States Census Bureau, 2009).

Teens who do marry are more likely to be older teens, with only half as many 15-17 year olds being married when they gave birth in comparison to 18-19 year olds (Ryan, et al., 2004). Teen mothers are less likely to marry by the age of 35, and are less likely to ever marry than their counterparts who delayed childbearing until adulthood (Holcombe, et al., 2009). Those who do marry are more likely to experience marital dissolution within the first five years compared to women who were not teen mothers (Ryan, et al., 2004).

Rise in cohabitation. There has been an increase in births to cohabitating couples across all ages, including teen parents. It is estimated that nearly half (44%) of nonmarital teen births are to cohabiting couples (Mincieli, et al., 2007). Although this may lend economic and social support to the teen mother temporarily, these relationships are more likely to be transient and unstable, with few resulting in marriage (Martin, Martin, & Martin, 2001; Mincieli, et al., 2007; Ryan, et al., 2004). In a study of young women's marriage and cohabitation following a premarital conception, Manning (1993) found that their likelihood of marriage by the time of birth was the same for teens who were single and teens who were cohabiting at the time of conception; however, for women over age 20 those who cohabited at conception were overwhelmingly more likely to marry before birth than those who were single at conception.

Attitudes and acceptance of premarital sex, cohabitation, and nonmarital childbirth. With a decline in early marriage and an increase in cohabitation rates across all ages, the societal stigma towards cohabitation has lessened considerably (Martin et al.,

2001). Today's adolescents have many examples of cohabitation from media to their very own homes, where divorced parents may be more likely to cohabit before marrying again. Popular sentiment among adolescents and many young adults is that cohabitation provides a much needed test of compatibility and relationship success before committing to a marriage (Martin et al., 2001). Among adolescents, sexual activity before marriage has also become more acceptable. A CDC publication using data from the 2002 NSFG reported that two-thirds of adolescents surveyed agreed that it is okay for unmarried 18 year olds to have sex if they have strong affection for each other (Abma, Martinez, Mosher, & Dawson, 2004).

Although most adolescents do not desire to have a child as a teen, the acceptability of nonmarital childbirth overall and as a teen has been growing. The number of unmarried mothers has risen dramatically and doubled in recent decades from 18.4% of all births in 1980 to 38.5% of all births in 2006 (Hamilton, et al., 2009). This change has shifted the age distribution of unmarried births. In 1980 teens accounted for 40% of all nonmarital births, although that proportion decreased by almost half in 2006 to 22%. Women ages 20-24, now account for 38% of all nonmarital births, and women aged 20-29 account for the majority, or 60%, of all nonmarital births. Despite the rises in acceptance of cohabitation and nonmarital childbearing, many teens still desire and expect that they will marry the biological father of their child. Though less than 8% of unwed teen mothers marry the father of their child within the first year of giving birth, over half are "certain" or believe the chances of marrying are "good" (Ryan, et al., 2004).

Positive or even ambivalent attitudes of adolescents towards pregnancy are predictive of those adolescents becoming pregnant as teens. A study of adolescent Black

women in Baltimore showed that though a very small percentage (8.5%) indicated a desire to become pregnant, a much larger proportion (47.3%) demonstrated ambivalence towards becoming pregnant. In this population the outcome of adolescent childbearing was associated with either a positive or ambivalent attitude, but not a negative one (Zabin, Astone, & Emerson, 1993). Using data from the National Longitudinal Study of Adolescent Health, Jaccard, Dodge, & Dittus (2003) examined maternal-adolescent relationships and communication about pregnancy and found that mothers were most successful in reducing positive or ambivalent attitudes of their teen towards pregnancy when they established a strong bond with their child and clearly discussed the negative consequences of an unintended pregnancy.

Social Support of Family Living Arrangements and Health and Well-being Outcomes

The majority of research in the past several decades on living arrangements has been aimed at the coresidence of teen mothers and their child(ren) with a parent or parents. This arrangement is most often with the mother of the teen. Much less research has been done on other living arrangements of teen mothers, specifically those involving a married or cohabiting partner. Although at one time the majority of teen parents were married, this is not true anymore; now only a small percentage marry as teens. A larger percentage cohabits before and/or after the birth of their baby. Though this is a growing segment of the teen parent population, very little is known about this type of living arrangement and its benefit or cost for teen mothers and their child(ren). From what is known, in many ways the outcomes of cohabitation and marriage for teens look very similar. The least studied, and also comprising the smallest contingent of teen mothers,

are those who live alone with their children without the in-house support of a parent, partner, or other relative.

Coresidence. Coresidence with the adolescent's mother or father is the most common family living arrangement for unwed adolescent mothers. This family living arrangement is not limited to unwed or unpartnered adolescent mothers, however, as an additional small percentage of adolescent mothers and their partners (either married or cohabiting) may also choose to live in a parent-headed household. The majority of teen mothers live with only their own mother, the baby's grandmother, as they frequently have not grown up with both of their biological parents. A qualitative study on social support for teen mothers found that one of the most important sources of social support for the teens was their mother (Logsdon, Gagne, Hughes, Patterson, & Rakestraw, 2004) . One teen described how her mother moved them to a one bedroom apartment and slept on the floor so that they would have enough money for the baby. The teens' fathers were either absent completely, or living in other households.

Younger unmarried teen mothers are the most likely to coreside with parents; in contrast, older teen mothers and married teen mothers are the most likely to live in a household apart from their parents (Gordon, 1999). One of the major positive correlates of three-generational coresidence for teenage mothers is greater long-term economic self-sufficiency and well-being, though they experience more short-term dependence. Adolescent mothers who live with their mother are more likely to continue their education, thereby helping to ensure better employment prospects and to reduce their reliance on welfare benefits in the future. Contributing to these positive outcomes is the

availability of social and economic support as well as help with child care (Roye & Balk, 1996).

Beyond educational completion, reducing future teen fertility may have the most impact on teen mothers' long-term economic self-sufficiency and future economic prospects. Several studies support an association between multigenerational coresidence and positive fertility behaviors such as more effective contraceptive use and fewer additional children, particularly as a teen (Presser, 1980; Sandfort & Hill, 1996). Mothers may play an important role in encouraging positive health behaviors in their daughters. Lee and Grubbs (1995) found that one factor associated with beginning prenatal care in a timely fashion is that the mother of the teen recognized the pregnancy first and encouraged prenatal care.

Though many positive associations exist between teen mothers' coresidence and their social and economic well-being outcomes, outcomes may not be as favorable when it comes to parenting practices. Across several studies, parenting competence has been found to be lower for coresident mothers as measured by their warmth towards their children, disciplinary styles, levels of engagement, parenting confidence, and parenting attitudes (Chase-Lansdale, Brooks-Gunn, & Zamsky, 1994; East & Felice, 1996; Field, Widmayer, Adler, & De Cubas, 1990). Furthermore, teen mothers tend to gain the most benefits from this living arrangement in the first few years after birth, yet over the long-term this arrangement may result in more conflict in the mother and teen daughter relationship (Roye & Balk, 1996). Considerably less research has been done specifically examining child well-being outcomes in multigenerational co-residential households.

What is known about cohabitation. Cohabitation, particularly with the biological father, is associated with improved short-term economic status for teen mothers (Roye & Balk, 1996). This may be because young men who can provide economically are the most likely to choose or be able to cohabit with their partner. Although teen mothers who coreside with a mother are generally found to have higher levels of educational attainment, the opposite has been found for teen mothers who cohabit. Mothers who were living with a partner had a higher likelihood of dropping out of school and overall lower educational attainment than mothers who were not married or cohabiting, thus reducing long-term economic prospects and self-sufficiency (Eshbaugh, 2008; Roye & Balk, 1996).

Teen marriage and outcomes for mother. Teen marriage for most young women is a catch-22 situation economically. Those who are currently married and able to maintain their marriages over time will have an economic advantage over their unmarried counterparts (Roye & Balk, 1996). However, those women whose marriages dissolve will find themselves in a poorer economic situation than their unmarried counterparts. High rates of marital instability and dissolution for these young couples can result in an economically precarious situation for the young mother. She may fare worse economically after a divorce due to lower levels of educational attainment than her unmarried counterparts, specifically those who live with a parent or parents. Similar to the findings on educational outcomes for teen mothers who cohabit, those who are married are also less likely to finish their high school education and have lower educational attainment overall (Eshbaugh, 2008; Roye & Balk, 1996). Using a sample of 641 teen mothers from the National Early Head Start Research and Evaluation Project,

Eshbaugh examined highest grade level completed at 14 months postpartum. Compared to single and cohabiting mothers in the study, married mothers had lower levels of educational attainment. The author suggests possible explanations such as the higher likelihood of subsequent fertility in a marital relationship as well as other preexisting characteristics of women who may choose to focus on establishing a marriage, family, and household rather than pursuing further education.

Teen mothers who live alone. Very little is known about the number, characteristics, and outcomes of teen mothers who live alone. Though it is hypothesized that their educational attainment would be lower due to lack of social support and difficulty securing adequate child care, research has not tested this yet.

Conclusions and Gaps in the Research

The aim of this study was to examine the association of social support of teen mothers on the outcomes for teen mothers and their children. Therefore, this study examined selected consequences for teen mothers and their children during the prenatal period as well as at birth and in the short-term postpartum. Finally, this study examined the extent to which social support moderated the relationship between maternal age and outcomes for both mothers and their children.

An evident gap in the literature is the study of the diverse developmental stages of adolescence in relation to living arrangements and childbirth outcomes. Previous studies examined childbearing adolescents either as one group (ages 15-19) compared to adult women or women in their 20's only, or less frequently as two groups roughly ages 11-15 and 16-19. Wide physical, cognitive, social, and emotional variation exists among adolescent age groups that is not reflected or taken into account in the majority of

previous studies (Phipps, Sowers, & Demonner, 2002). This variation is often due to sample size, as adolescent births in general and early adolescent births in particular are relatively rare phenomena and may not appear in small surveys (Gilbert, et al., 2004). Important factors may vary during adolescence. Parental supervision and involvement are likely to be highest at younger ages, whereas independence and risky behaviors such as smoking and drinking increase with age. Of course cognitive and emotional development, including logical thinking and the ability to foresee the future consequences of actions, also increase with age.

This study analyzed teen mothers in stratified age groups of early adolescence (10-14 years), middle adolescence (15-17 years), and late adolescence (18-19 years), for the large sample of young adult and teen mothers. The smaller sample of current teen mothers was stratified into two age groups of early adolescence (13-16) or late adolescence (17-19) at the time of first birth. These divisions lie along recommended developmental and educational lines (DeHart, Sroufe, & Cooper, 2004; Kaiser & Hays, 2005).Teens who are age 18 & 19 are more likely to have completed high school by the time of birth than those age 17 years or younger, and young women age 14 and under most likely have not even entered high school by the time of birth. This analysis used a nationally representative sample of women to describe the associations between maternal age, the social support of living arrangements, and maternal and child health and well-being outcomes.

Theoretical Framework

A theoretical framework incorporating the Health Belief Model, Rational Choice Theory, and the Family Stress Model was utilized to guide this study and generate

hypotheses about the relationships among the variables of interest. The guiding theories and model are described and then applied to an understanding of adolescents' risk for poor birth, prenatal, and postpartum outcomes as well as the role that family social support might play in moderating that relationship.

Health Belief Model. The Health Belief Model has been widely used in the study of sexually related health and risk behaviors such as contraception use and STI/HIV prevention as well as preventive behaviors during pregnancy such as folic acid intake and prenatal care. The Health Belief Model is used to explain and predict both long- and short-term health behaviors. The Health Belief Model was one of the first theories of health behavior developed by a group of U.S. Public Health Service social psychologists to explain underutilization of free and convenient public health screening mechanisms (U.S. Department of Health and Human Services, 2005). Although the theory has been revised and expanded, it remains well recognized and utilized in the field of public health and health behavior. There remains a focus on the perceptions of the individual as integral in understanding the decisions that they make regarding preventive or risk behavior.

The three essential components of the Health Belief Model include a person's belief that a negative health condition can be avoided, a positive expectation that by taking a recommended action he/she will avoid a negative health condition, and the belief that he/she can successfully take such a recommended health action (Rosenstock, 1974). Furthermore, the model takes into account the perceived benefits of preventive action in relation to the perceived costs or barriers, as well the possible interactions of certain factors such as gender and age that may influence the individual's perceptions. This is

particularly relevant to an understanding of adolescent health behavior in light of the influence of established adolescent cognitive developmental factors such as feelings of invincibility (lack of susceptibility) and a limited ability to foresee the future consequences of actions (lack of perceived future threat or consequences).

Therefore, for adolescent mothers cognitive factors associated with developmental age may influence whether or not the mother engages in preventive or recommended health behaviors such as prenatal care, good nutrition, breastfeeding, and safe sexual behavior. It would be expected that adolescent mothers would be less likely to engage in preventive or recommended health behaviors than young adult mothers, thus leading to more negative health and well-being outcomes. Additionally, among adolescent mothers, it would be expected that the youngest adolescents would be the least likely to engage in preventive or recommended health behaviors. These behaviors may be moderated, however by the support of an adult such as a parent or parents who may monitor the adolescent's health behaviors and/or encourage preventive and recommended health behaviors for the adolescent mothers.

Rational Choice Theory. Rational Choice Theory is an economically based theory that takes into account the social context of the individual, including the constraints that he or she may be under, and the influence of self-interest in the decision-making process (Bianchi & Casper, 2005; Hechter & Kanazawa, 1997). Rational Choice Theory has been utilized in the literature on adolescent pregnancy and childbearing to explain how, under certain conditions such as poverty and perceived limited future opportunities, pregnancy and childbirth during adolescence may be viewed as the best option and thus constitute a rational choice on the part of the individual (Haveman,

Wolfe, Wilson, & Peterson, 1997). Similarly, Burton (1990) argues that teenage childbearing may represent a strategic choice for adolescents in certain developmental, social, and economic contexts. In addition, Rational Choice Theory has been found to be instrumental in studying several areas of family demography related to childbearing and relationships such as entry into marriage, divorce, and fertility (Bianchi & Casper; Hechter & Kanazawa).

Using a Rational Choice Theory framework sheds light on the decision making of adolescent mothers, who may be seeking out the best resources and living arrangements in which to raise their children under the constraints that they are facing. Economically, the father of the baby may be unable or unwilling to support the young mother and her child and thus she may seek out the social support and resources available through coresidence with a parent or parents. Additionally, whereas cohabiting and marital relationships among adolescents have proven to be unstable, the relationship between a mother and daughter is seen as more long-lasting and permanent. Research has shown that even within families, resources are allocated differently depending on who is in control of the money. For example, when women control the finances in a household a greater portion is allocated towards the needs of children, in this case the adolescent mother and her child (Bennett, 1990). Therefore, for adolescent mothers there may be a clear economic incentive to coreside with their own mothers after the birth of her baby in order to maximize her social support and available resources. These increased levels of social support and resources would be expected to ameliorate potentially negative outcomes for the adolescent mother and her child. Thus Rational Choice Theory

provides a possible explanation for varying levels of investment and resource allocation under different family living arrangements for adolescent mothers.

Family Stress Model. This study also was guided by the Family Stress Model in understanding and conceptualizing the relationship between maternal age, social support, and health and well-being outcomes for both mother and child. Family Stress Model offers a framework for examining family related events that occur and understanding the factors that may be associated with positive or negative outcomes. The foundation of Family Stress Theory consists of the ABC-X model where A is the event or stressor, B is the family/individual resources and strengths, C is the perception of the event, and X is the outcome or potential crisis (Ingoldsby, Smith, & Miller, 2004). There are several factors that may affect how A, the presumably neutral event, is experienced in a family or by individuals, such as whether or not the event is expected, whether it is a normative or non-normative event, the severity of the event or stressor, and the suddenness of onset, among other factors (Ingoldsby, et al.). This study uses maternal age at first birth to represent A, with childbearing being the event or stressor of interest.

Previous research indicates that, compared to older or young adult mothers, the majority of teen pregnancies are unplanned and therefore unexpected and non-normative events. Adolescent age groups may have different experiences of the event of pregnancy. Among adolescents, those in the late adolescent age group (18-19) will be the most likely to experience pregnancy as a normative event as they may have already completed their high school education and be cohabitating or married with the child's father. In contrast, those in the early adolescent age group (10-14) are the most likely to experience a

pregnancy as a non-normative and stressful event that is unplanned and interferes with educational completion.

An important variable in understanding the family and individual resources and strengths (B) in dealing with the event of adolescent pregnancy is the living arrangements of the mother and her child. Levels of resources and support may vary with the different living arrangements of adolescent and young adult mothers ranging from coresidence with one or two parents, cohabiting with a partner, living with a spouse, to living independently. The perception of the event (C) may also vary with maternal age such that although mothers in early adolescence may be perceived as the most at risk by their families, they may also consequently be the ones to receive the highest levels of resource and support, as well as the most likely to be still coresiding with one or both parents. Finally, the outcome of this model which is X, or the risk of the crisis, is measured by the multiple health and well-being outcomes for both the mother and child prenatally, at birth, and in the short term postpartum period. Certain outcomes such as initiation of prenatal care, duration of breastfeeding, child living with the mother, and educational attainment represent adaptive and positive health and well-being outcomes. This study is interested in exploring the role of living arrangements and social support in enhancing the likelihood of these positive outcomes even in the face of a stressful family event such as an unexpected adolescent birth. Conversely, outcomes such as low birth weight, sexual risk taking behavior and rapid repeat birth may be viewed as more likely outcomes for younger adolescent mothers than young adult mothers; however this study investigates the relationship between living arrangements and social support in moderating these effects for young adolescent mothers. This model helps to explain and guide the

development of testable hypotheses that certain family contexts lead to more resources for adolescent mothers and thus better outcomes for both themselves and their children.

Research Questions and Hypotheses

The following section details the research questions and hypotheses for each of the study samples, beginning with the larger sample of young adult and adolescent mothers. Next, the research questions and hypotheses for the smaller current adolescent sample are presented. A summary of the research questions and corresponding hypotheses for both of the study samples can be found at the end of the chapter in Table 1.

Young adult and adolescent mothers. I first examined the following research questions in this study for the larger sample of teen (10 to 19 years at time of birth) and young adult mothers (20 to 24 years at time of birth): 1) What is the relationship between maternal age at first birth and duration of breastfeeding? Is this relationship moderated by partner social support? 2) What is the relationship between maternal age at first birth and total educational attainment? Is this relationship moderated by partner social support? 3) What is the relationship between maternal age and rapid repeat birth within the first two years after birth? Is this relationship moderated by partner social support? (See Figure 1 for conceptual model)

Current adolescent mothers. I then examined the following research questions in this study for the sample of current teen mothers (13 to 19 years at time of birth): 4) What were the sources of social support for adolescent mothers at the time of birth? Is there variation among adolescent age groups? 5) What are the prenatal, birth, and short term postpartum health outcomes for current adolescent mothers and children? This

analysis included examining the initiation of prenatal care, infant birth weight, sexual risk taking behavior, and the duration of breastfeeding. 6) Additionally, what is the association between an adolescent's source of social support and these prenatal, birth, and short-term postpartum outcomes for adolescent mothers and their children? Do the outcomes depend on the source of their social support? (See Figure 2 for conceptual model). Below, the study hypotheses are outlined according to the research question that they address.

RQ1: What is the relationship between maternal age and duration of breastfeeding? Is this relationship moderated by partner social support?

H1a: It is hypothesized that women who first gave birth as a young adult will breastfeed significantly longer during the infant's first year than women who first gave birth as a late adolescent.

H1b: It is hypothesized that young adolescent mothers will breastfeed for a shorter duration during the infant's first year than late adolescent mothers.

H1c: It is hypothesized that partner social support will significantly moderate this association for young adolescent mothers such that those residing with a partner or spouse will have a longer duration of breastfeeding.

RQ2: What is the relationship between maternal age and rapid repeat birth? Is this relationship moderated by partner social support?

H2a: It is hypothesized that women who first gave birth as a young adult will be less likely to have a rapid repeat birth than women who first gave birth as a late adolescent.

H2b: It is hypothesized that young adolescent mothers will be more likely to have a rapid repeat birth than late adolescent mothers.

H2c: It is hypothesized that partner social support will significantly interact with maternal age such that young adolescent mothers residing with a partner or spouse will be the most likely to have a rapid repeat birth.

RQ3: What is the relationship between maternal age and total educational attainment? Is this relationship moderated by partner social support?

H3a: It is hypothesized that women who first gave birth as a young adult will have higher educational attainment than women who first gave birth as a late adolescent.

H3b: It is hypothesized that young adolescent mothers will have lower educational attainment than late adolescent mothers.

H3c: It is hypothesized that partner social support will significantly interact with maternal age such that young adolescent mothers residing with a partner or spouse will have the lowest educational attainment, whereas partnered young adults will have the highest educational attainment.

RQ4: What were the sources of social support of a current sample of adolescent mothers at the time of birth? Is there variation among adolescent age groups?

H4a: It is hypothesized that the largest proportion of early adolescent mothers will be living with at least one parent at the time of birth, whereas the smallest proportion will be living apart from a parent or partner.

H4b: It is hypothesized that the largest proportion of late adolescent mothers will be living with a partner, whereas the smallest proportion will be living apart from a parent or partner.

RQ5: What are the prenatal, birth, and short term postpartum health outcomes for current adolescent mothers and children?

H5a: It is hypothesized that early adolescents will initiate prenatal care later compared to late adolescents.

H5b: It is hypothesized that early adolescents will have babies born with lower birth weight than late adolescents.

H5c: It is hypothesized that early adolescents will be more likely to engage in high risk sexual behavior than late adolescents.

H5d: It is hypothesized that early adolescents will have a shorter duration of breastfeeding over the first year than late adolescents.

RQ6: Additionally, what is the association between an adolescent's social support at the time of first birth and the prenatal, birth, and short-term postpartum outcomes for adolescent mothers and their children?

H6a: It is hypothesized that social support will significantly moderate the relationship between early adolescent age and outcomes for adolescent mothers and their children such that early adolescent mothers living with a parent will initiate prenatal care earlier.

H6b: It is hypothesized that early adolescent mothers living with a parent will have higher infant birth weight.

H6c: It is hypothesized that early adolescent mothers living with a partner will have lower sexual risk taking behavior.

H6d: It is hypothesized that early adolescent mothers living with a partner will have higher duration of breastfeeding.

Figure 1: Conceptual Model

Young Adult and Adolescent Mothers: Ages 25-44 at time of survey

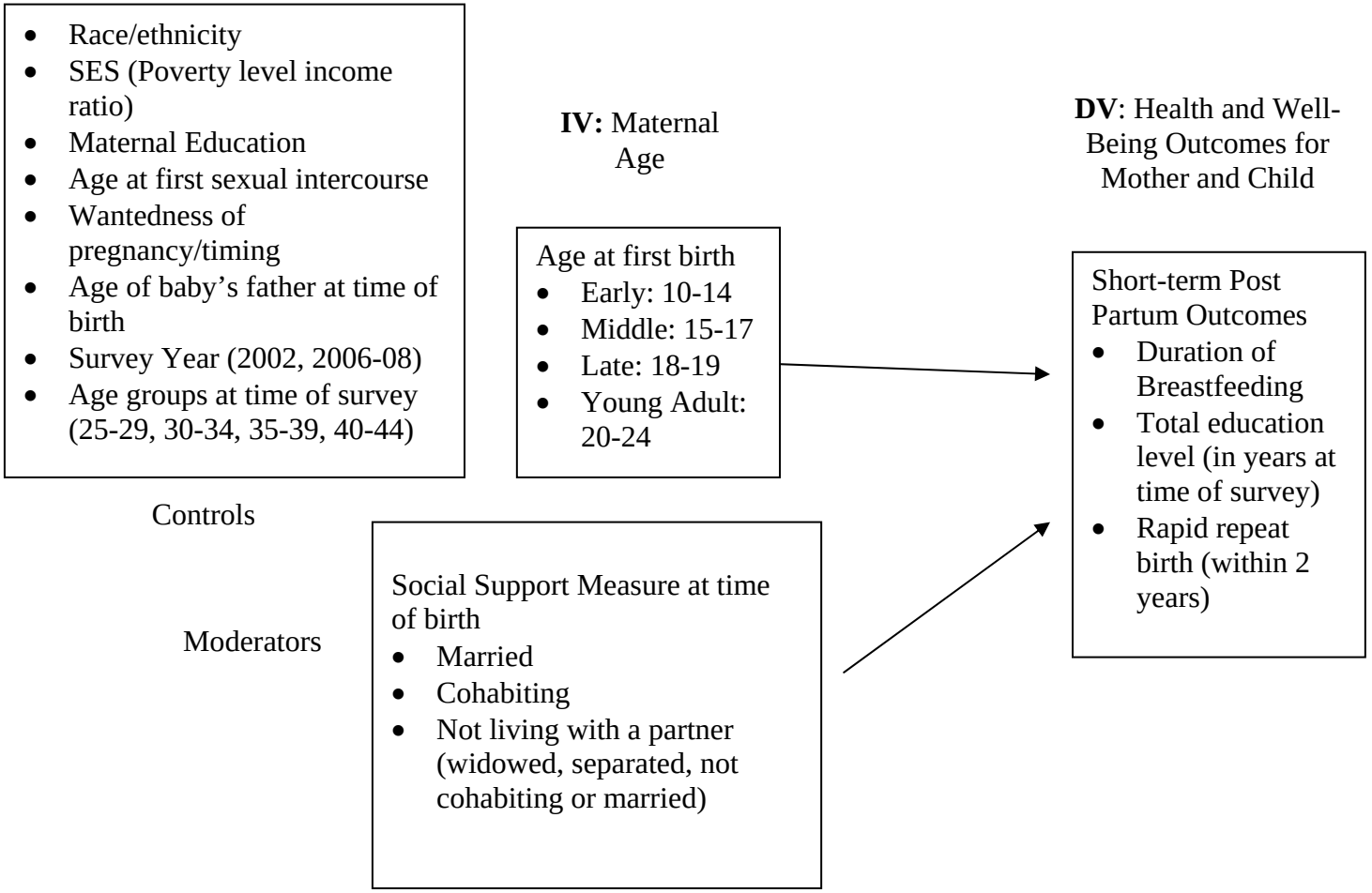

Figure 2: Conceptual Model

Current Teen Sample: Ages 15-19 at time of survey

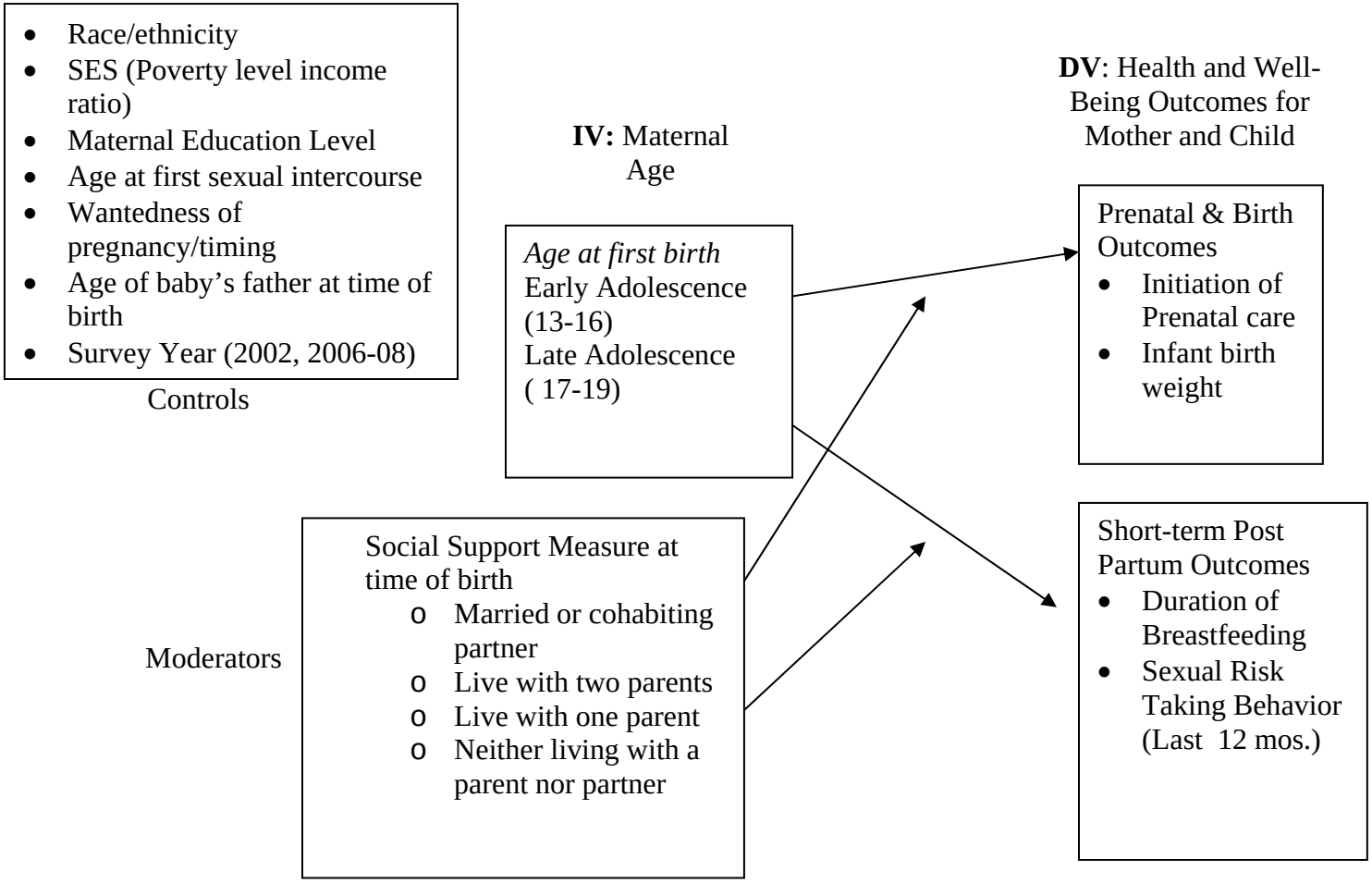

Table 1

Summary of Research Questions and Hypotheses

Research Question	*Hypotheses*
Questions 1-3 address the larger young adult and adolescent mother sample	
1. What is the relationship between maternal age and duration of breastfeeding? Is this relationship moderated by partner social support?	1a) Women who first gave birth as a young adult will breastfeed significantly longer during the infant's first year as compared to women who first gave birth as a late adolescent. 1b) Young adolescent mothers will breastfeed for a shorter duration during the infant's first year as compared to late adolescent mothers. 1c) Partner social support will significantly moderate this association for young adolescent mothers such that those residing with a partner or spouse will have longer duration of breastfeeding.
2. What is the relationship between maternal age and rapid repeat birth? Is this relationship moderated by partner social support?	2a) Women who first gave birth as a young adult will be less likley than late adolescent mothers to have a rapid repeat birth. 2b) Young adolescent first-time mothers will be more likely to experience a rapid repeat birth than late adolescent mothers. 2c) Partner social support will significantly interact with maternal age such that young adolescent mothers residing with a partner or spouse will be the most likely to have a rapid repeat birth.
3. What is the relationship between maternal age and total educational attainment? Is this relationship moderated by partner social support?	3a) Women who first gave birth as a young adult will have higher educational attainment as compared to women who first gave birth as a late adolescent. 3b) Young adolescent mothers will have lower educational attainment as compared to late adolescent mothers. 3c) Partner social support will significantly interact with maternal age such that young adolescent mothers residing with a partner or spouse will have the lowest educational attainment, whereas partnered young adults will have the highest educational attainment.
Questions 4-6 address the smaller current adolescent mother sample	
4. What were the sources of social support of a current sample of adolescent mothers at the time of birth? Is there variation among adolescent age groups?	4a) The largest proportion of early adolescent mothers will be living with at least one parent at the time of birth, whereas the smallest proportion will be living apart from a parent or partner. 4b) The largest proportion of late adolescent mothers will be living with a partner, whereas the smallest proportion will be living apart from a parent or partner.

5. What are the prenatal, birth, and short term postpartum health outcomes for current adolescent mothers and children?	5a) Early adolescents will initiate prenatal care later compared to late adolescent. 5b) Early adolescents will have babies born with lower birth weight than late adolescents. 5c) Early adolescents will be more likely to engage in high risk sexual behavior than late adolescents. 5d) Early adolescents will have lower rates of breastfeeding over the first year than late adolescents.
6. Additionally, what is the association between an adolescent's social support at the time of first birth and the prenatal, birth, and short-term postpartum outcomes for adolescent mothers and their children?	6) Social support will significantly moderate the relationship between early adolescent age and outcomes for adolescent mothers and their children such that:. a) early adolescent mothers living with a parent will initiate prenatal care earlier. 6b) Early adolescent mothers living with a parent will have higher infant birth weight. 6c) Early adolescent mothers living with a partner will have lower sexual risk taking behavior. 6d) Early adolescent mothers living with a partner will have longer duration of breastfeeding.

Chapter 3: Methods

Data

The following describes the source of the study data, the National Survey of Family Growth (NSFG) Cycles 6 and the continuous 2006-08 NSFG. The NSFG is a public use dataset available through the National Center for Health Statistics. The NSFG uses a multi-stage probability design and is well-suited for the study of fertility, marriage and cohabitation, contraception, and related issues (Lepkowski, et al., 2006). The survey sample represents the household population of the United States, 15-44 years of age. Interviews were conducted face to face in respondents' homes including computer–assisted personal interviews (CAPI) administered by the interviewers and audio computer-assisted self-interviews (ACASI) dealing with more sensitive material that respondents completed on their own. Survey respondents were screened for eligibility, and then one respondent per household was picked. Respondents received a $40 incentive for the interview, which averaged 85 minutes for females and 60 minutes for males. The data are available in three files: a female respondent file, a pregnancy file, and a male respondent file. The female respondent data file and the pregnancy data file can be combined, as was done in this study, to yield more complete information on pregnancy and important demographic, social, and health variables. This study focused on the data collected from female respondents, that included data collected on each pregnancy and birth, fertility, prenatal care, marriage and cohabitation history, and a variety of demographic and economic characteristics.

Cycle 6 Data. Interviews for Cycle 6 of the NSFG were conducted from January 2002 through March 2003 with 7,643 women and 4,928 men 15-44 years of age. Men were interviewed for the first time in Cycle 6. In cycle 6, teenagers and Black and Hispanic adults were oversampled. The response rate was 79 percent overall, 80 percent for females and 78 percent for males. Respondents were selected from 121 Primary Sampling Units (PSU's), that were located in every state and included all of the largest metropolitan areas in the United States.

2006-08 Continuous Data. In 2006 the NSFG began to interview continuously, rather than being administered in cycles as it was previously (Lepkowski, Mosher, Davis, Groves, & Van Hoewyk, 2010). The most recent release of data from the new continuous NSFG is from interviews conducted from July 2006 to December 2008. Interviews were conducted with 7,356 women and 6,139 men aged 15-44 at the time of the survey. These data were publicly released in May of 2010. Black and Hispanic respondents, as well as those aged 15-24 were oversampled. Sampling weights are thus provided and strongly recommended for analytic use. The overall response rate for the 2006-08 NSFG was 75%, 76% for females and 73% for males.

Advantages of the NSFG. There are several advantages to using data from the NSFG in this study. The NSFG provides current nationally representative data on areas of fertility and relationships that are often challenging to obtain. The survey collects a wide variety of information on fertility, sexual behavior, union formation, and demographic and socioeconomic variables that permit a range of analyses including subgroups of the population such as adolescent mothers. Many of the topics in the NSFG include retrospective histories or accounts and, therefore, several aspects of the

questionnaire are designed to maximize consistency in the data. The first of these is a life-history calendar provided to female respondents that serves as a visual aid for recording and remembering the chronology of life events. The second are the use of summary screens before key sections that also aid in reminding the respondent of events and dates reported earlier in order to maximize consistency. Missing data where the respondent gave answers such as "don't know" or "refused" were dealt with through multiple regression imputation methods so that recoded variables available in the dataset are consistent and high quality.

Other Sources of Data. Other sources of data on living arrangements and outcomes of early childbirth were considered for this study. The Pregnancy Risk Assessment Monitoring System (PRAMS) was examined because of its wealth of information on maternal and child health pregnancy outcomes (CDC, 2009). PRAMS data are collected by state, with each state using a standard core set of questions, choosing from a recommended set of additional questions, and also utilizing state specific questions. Thus, core standard questions and those recommended questions that states have chosen to utilize may be aggregated across several states or nationally to yield a larger or nationally representative dataset. Although questions regarding living arrangements were recommended by the CDC, they were not part of the core set of PRAMS questions, and for the 2004-2008 surveys not one state elected to include the recommended questions concerning living arrangements of the mother. When considering sources of data with living arrangements information, particularly for teens and their children living with the teen's mother, one of the major challenges to studying these trends on a national level, has been the difficulty in obtaining an accurate

measurement of the number of subfamilies that exist. For many years, coding measures of surveys such as the Current Population Survey (CPS), Decennial Census, and even administrative data collected for the ADFS/TANF program lacked the ability to consistently and accurately capture such teenage mother/child subfamilies within a grandparent headed household (Gordon, 1999). Though many of these datasets, such as the CPS, have improved in this regard, the data lack the pregnancy-related information and outcomes available in the NSFG.

Sample

This study examined a sample of women from the NSFG Cycles 6 and continuous 2006-08 data. Two samples of women respondents, including their pregnancy based information, were utilized in this study. The first larger sample consisted of all women in the dataset aged 25-44 at the time of interview who gave birth to their first child as a teen or young adult (ages 10-24). This sample of teen and young adult mothers was used for descriptive analyses as well as examines the outcomes of an early birth for teen mothers than young adult mothers. This sample then examined the effects of social support defined as partner support on health and well-being outcomes for both mother and child. The second, more focused, subsample consisted of women who were currently adolescent mothers (ages 15-19) at the time of interview. These analyses allowed for the inclusion of parental support in addition to partner support in assessing the effects of social support on health and wellbeing outcomes for adolescent mothers and their children. I conducted descriptive analyses as well as examined the association between living arrangements and outcomes prenatally, at birth, and in the short-term postpartum period. The two samples are described in greater detail below.

Teen and young adult mothers. The larger sample of teen and young adult mothers was drawn from cycle 6 and the continuous 2006-08 data of the NSFG based on whether the woman was between the ages of 25-44 at the time of the survey and first gave birth to a child as a teen or young adult ages 10-24. This study sample was comprised of 4,477 women. Information regarding the postpartum outcomes was drawn from data on the mother's first live birth. This sample was examined for maternal age at first birth among mothers who first gave birth as an early (ages 10-14), middle (ages 15-17), and late (18-19) adolescent or young adult (ages 20-24). Mothers who gave birth in late adolescence served as the reference group. Appropriate sample weights were used in all analyses.

Current teen mothers. The smaller sample of current teen mothers was also drawn from cycle 6 and the continuous 2006-08 data of the NSFG based on whether the mother was an adolescent with at least one child at the time of her interview. This sample was comprised of 215 women who were age 15-19 at the time of their interview and had already given birth to their first child. Information regarding the prenatal, birth, and short-term postpartum outcomes was drawn from data on the mother's first live birth. This sample was examined for variability in outcomes among adolescent mothers for early (ages 13-16) versus late (ages 17-19) adolescent mothers, with late adolescent mothers serving as the reference group. Appropriate sample weights were used in all analyses.

Measures

This section defines the variables used in this study and the way that they were operationalized. Whenever possible, the NSFG strongly encourages researchers to utilize their recoded variables, as missing data for these have already been handled in a

standardized and documented manner. Recodes were available for many of the main variables of interest in this study, and were utilized whenever possible. Below I detailed the variables obtained from the NSFG and the way in which they were used in this study. A summary of all of the study variables and definitions can be found at the end of this section in Table 2.

Independent Variables. The main independent variable for this study is the mother's age at the time of birth.

Maternal age: Maternal age at first birth was a recoded variable from the NSFG, computed from the mother's information regarding her own birth date and the date of her first birth. Maternal age was measured in this study as a nominal variable stratified into four age groups of early adolescent (10-14), middle adolescent (15-17) late adolescent (18-19), and young adult (20-24) at the time of first birth for the larger sample of women who became mothers for the first time during adolescence or young adulthood. Maternal age was stratified into two age groups of early adolescent (13-16) and late adolescent (17-19) at the time of first birth for the smaller sample of women who were currently first time teen mothers at the time of the survey.

Moderating variables. The moderating variables for this study were measures of the social support available for the mother after the birth in terms of her living arrangements. For the larger teen and young adult mother sample social support focused on living with a partner or spouse and was coded as living with a married spouse, cohabiting partner, or living with neither a spouse nor cohabiting partner. This information was drawn from respondent's reported informal marital status at the time of birth. Additional information regarding parental social support was also available for the

smaller current teen sample, thus the moderating variables for that sample consist of living with one parent, two parents, a spouse or cohabiting partner, or living with neither a parent nor a partner. This information was drawn from respondent's reported marital status at first birth as well as reported number of parents in their household at the time of the survey. Due to the very small proportion of married teen mothers in this sample partner support was collapsed to contain both married and cohabiting mothers.

Creation of the social support/living arrangements variable was more complex for the current teen mother sample and was based on the following logic. First mothers were selected as married if they reported their informal marital status at the time of birth was married. Second, mothers were selected as cohabiting if they reported their informal marital status at the time of birth was cohabiting. Third, mothers were selected as living with two parents if they met the following conditions: they did not report marriage or cohabitation, they reported living with any combination of two parents at the time of the survey, and/or they reported living in an intact family until the age of 18 and they gave birth before the age of 18 or living with two parents at the age of 14 and they gave birth before the age of 15. Fourth, mothers were selected as living with one parent if they did not report marriage or cohabitation, and they reported living with one parent at the time of survey. Finally, mothers were selected as living with neither a parent nor a partner if they did not report any of the previous conditions (marriage, cohabitation, living with one or two parents). All living arrangements social support variables were dummy coded, with mother living apart from a partner or living apart from a parent and partner serving as the reference category.

Married: Mothers were coded a 1 if they reported being married at the time of their first birth.

Cohabiting: Mothers were coded a 1 if they reported living with a cohabiting partner at the time of their first birth.

Neither Married nor Cohabiting: Mothers were coded a 1 if they reported not having a spouse or cohabiting partner at the time of birth (never married, widowed, separated, or not cohabiting).

For the smaller current teen sample social support includes both partner support and parental support as follows:

Partner: Partner social support was based on the mother's information regarding her informal marital status at the time of birth. Partner social support was coded as 1 for mothers who reported a spouse or cohabiting partner at the time of their first birth.

One Parent: Mothers were coded 1 if they did not report living with a spouse or cohabiting partner but did report living with one parent.

Two Parents: Mothers were coded as 1 if they did not report living with a spouse or cohabiting partner but did report living with two parents who were any combination of biological, step-parent, or adoptive parent(s).

Neither Parent nor Partner: Mothers were coded as 1 if they did not report living with a spouse or cohabiting partner at the time of birth or living with any parent.

Dependent variables. The dependent variables in this study included health and well-being outcomes for both mother and child during the prenatal period, at birth, and short-term postpartum. Due to the temporal nature of the information for many of the variables examined (i.e. only collected for the last 12 months or within the last five

years), the two study samples examined several different outcomes and one that was the same. These are detailed below.

Young Adult and Adolescent Mother Sample

Breastfeeding Duration: This information was drawn from respondents' report regarding how long they breastfed their infant. This was a recoded variable from the NSFG computed using information from the mother on whether and how many weeks she breastfed her first child. This variable was coded in the NSFG as "0" if respondent breastfed for less than one week, "001-993" for the number of weeks respondent breastfed, "994" if respondent was currently breastfeeding at the time of survey, "995" if respondent never breastfed the infant, and blank if the question was inapplicable. As is described further in the section regarding final sample size, there were several reasons that duration of breastfeeding might have been left blank for a respondent. These included: if the pregnancy was a multiple birth, if the infant was less than two months old or had not lived with the respondent for two months, if the child was given up for adoption or died shortly after birth, and finally if the child was currently over the age of 19.

Duration of breastfeeding was measured in this study continuously in weeks during the first year. I recoded the breastfeeding duration variable from the NSFG in order to prepare it for a proportional hazards regression analysis of breastfeeding duration over the first year, or 52 weeks. Values for the number of weeks breastfeeding were recoded and ranged from "0-53", with 0-52 indicating the week during which the respondent quit breastfeeding during the first year, whereas 53 indicates that the respondent was still breastfeeding past the end of the first year of the infant's life.

Respondents who did not breastfeed at all were recoded to “0”, whereas those who had breastfed for less than one week were recoded to “.5” weeks. Finally, those who were currently breastfeeding at the time of the survey were recoded to the computed current number of weeks of their baby’s age. I also created an additional censoring variable for the proportional hazards analysis. The censoring variable indicated those who had quit breastfeeding during the observation period by coding them “1”, whereas those who were currently breastfeeding at the time of survey or had breastfed for 52 weeks or longer were coded as “0”.

Rapid repeat birth: This variable was computed by the author using two raw variables from the NSFG. These were the century month birth dates for the respondent’s first and second live births, if one was reported. I computed the difference in the number of months between the date of birth for the respondent’s first baby and the date of birth for the second live birth. This variable was constructed for a proportional hazards regression analysis of rapid repeat birth over the first two years. Thus, this variable was measured continuously as the number of months during the first two years, or 24 months, until the respondent experienced any repeat birth. Values ranged from 7-25; with 7-24 indicating the number of months between the first and second live births, whereas 25 indicated that the respondent did not experience a second birth within the first two years postpartum. If 24 months had not yet elapsed since the birth then the number of months postpartum at the time of survey was used. A very small number (< 1%) of outliers, less than seven months between births, were marked as missing. A censoring variable was also created, that indicated whether or not the respondent had experienced a second birth within the first 24 months. This was coded a “1” for those experiencing a birth within the first 24

months, and a “0” for those who had not experienced a second birth within the first 24 months or who were currently less than 24 months postpartum.

Educational level: This information was drawn from the NSFG’s recoded variable of the highest level of education that the respondent reported at the time of the interview. Educational level was measured continuously in this study and ranged from 9-19 years of total education.

Current Adolescent Mother Sample

Initiation of prenatal care: This information was drawn from the respondent’s answer to the question “*How many weeks pregnant were you at the time of your first prenatal care visit?”* This was a recoded variable from the NSFG that was applicable if the respondent reported a live birth within the last five years and the baby was not placed for adoption. In the NSFG, this variable was coded “0-44” for the number of weeks at first reported prenatal care, “95” for respondent’s who reported no prenatal care, and blank for respondents who were inapplicable. In this study, this variable was measured continuously in number of weeks and ranged from 2-39 weeks. Respondents who reported receiving no prenatal care were recoded to the number of gestational weeks at birth as their first instance of prenatal care.

Infant birth weight: This variable was computed by the author using two raw variables from the NSFG for the reported birth weight of the respondent’s first live birth in pounds and ounces. The reported birth weight in pounds was converted to ounces and then added to the reported ounces, thus yielding a birth weight in total ounces. This study measured infant birth weight continuously in total ounces. The range of infant birth weight was 26-165 total ounces, or 1 pound and 10 ounces to 10 pounds and 5 ounces.

Sexual risk taking behavior: An index of sexual risk taking behavior was created for current teen mothers based on information from three NSFG variables including the recoded number of sexual partners in the last 12 months, the raw variable for any contraceptive use in the last 12 months, and the recoded variable for whether any contraception was used at last sex in the last 12 months. The range for this sample of partners in the last year was zero to six. The raw variable for any contraceptive use in the last 2 months was coded in the NSFG as 1= yes, 2= no. The recoded variable for any contraceptive use at last sex was coded in the NSFG as 1= used a method, 2= did not use a method, 95= never used a method in last 12 months, and inapplicable if respondent did not have an opposite-sex partner in the last 12 months.

I constructed the index by first recoding and then summing these three variables. The number of sexual partners in the last 12 months was recoded such that "0" = zero partners, "1" = one to three partners, and "2"= four to six partners. Any contraceptive use in the last year was recoded as "0" = yes or did not have sex in the last 12 months, and "1" = no. Contraceptive use at last sex in the last 12 months was recoded to "0" = used a method or did not have sex in the last 12 months, and "1"= did not use a method at last sex. The index was measured on a possible ordinal scale from 0-4; however none of the adolescents in the sample scored higher than a 3.

Breastfeeding Duration: This information was drawn from respondent's report regarding how long they breastfed their infant. This variable was treated in an identical manner to the breastfeeding duration variable for the young adult and adolescent mother sample, as detailed above. Duration of breastfeeding was measured in this study continuously in weeks during the first year. Values ranged from 0-53, with 0-52 indicating the week

during which the respondent quit breastfeeding during the first year, whereas 53 indicated that the respondent was still breastfeeding past the end of the first year of the infant's life.

Control variables. Control variables in this study included demographic measures, family background factors, and socioeconomic measures. These variables included race/ethnicity, ratio of income to poverty level, educational level of respondent's mother, respondent's age at first sexual intercourse, wantedness of the pregnancy/timing, age of the baby's father at time of birth, survey year, and current adult age group at the time of survey. All control variables were used in all analytical models for both study samples, unless indicated otherwise.

Maternal educational level: This information was drawn from an NSFG recode of the respondent's report of the highest educational level completed by her mother. This variable was coded in the NSFG as 1= less than high school, 2= high school degree or GED, 3= some college, 4= bachelor's degree or higher, and 95= no mother figure. I first recoded the variable for no mother figure, and then recoded the categories into dummy variables. If respondent reported not having a mother or mother figure then mother's educational level was coded as high school/GED, as this was the average category. Responses were dummy coded into the following categories: less than high school, high school graduate or GED, some college, or Bachelor's degree or higher, with all categories coded as 1 = yes, 0 = no. Less than high school served as the reference category.

Poverty level income: This variable was a recoded variable in the NSFG indicating the poverty level income of the respondent and ranging from 0-500% of the poverty level. Poverty level income is measured in this study as a continuous variable and was recoded

to indicate the ratio of the poverty level that corresponds to respondent's income, ranging from 0-5.

Race/ethnicity: This information was drawn from the recoded NSFG variable of the Hispanic origin and racial background description given by the respondent. This variable was coded in the NSFG as 1=Hispanic, 2=non-Hispanic White, 3= non-Hispanic-Black, and 4= non-Hispanic Other. I recoded this variable to account for the small sample size of "other", as well as to recode the race/ethnicity categories into dummy variables. Due to the very small sample size of the Other category, it was combined with the White category in this study. Race/Ethnicity categories were dummy coded as Black, Hispanic, and White/Other, with all variables coded as 1= yes and 0= no. White/other served as the reference category.

Age at first sexual intercourse: This was a recoded NSFG variable of the respondent's reported age at first sexual intercourse since menarche. Age at first intercourse was measured in this study as a continuous variable of age in years at first intercourse since menarche. Values ranged from 11-19 for the current teen sample and 7-24 for the larger young adult and teen sample.

Wantedness of pregnancy/timing: Wantedness of pregnancy was drawn from information reported by the respondent regarding the desirability of the timing of the pregnancy and the wantedness of the pregnancy. This was a recoded variable from the NSFG that was coded 1 = later, overdue, 2 = right time, 3 = too soon, mistimed, 4 = didn't care, indifferent, 5 = unwanted, 6 = don't know, unsure. I recoded this variable into four possible categories, and then dummy coded those categories. Responses were recoded into the following categories for the larger young adult and teen sample: on time or later

than desired, too soon, indifferent/unsure, or unwanted. These categories were then each dummy coded as 1 = yes and 0 = no, with on time or later than desired serving as the reference category. For the smaller current teen sample there were no respondents who reported being indifferent or unsure of the wantedness/timing of the pregnancy, thus only the three categories of on time or later than desired, too soon, or unwanted were used for this sample.

Age of Baby's Father: This information was drawn from raw NSFG variable of the respondent's reported age of the baby's father at the time of birth. This variable was measured in this study continuously in years of age at the time of birth. Values ranged from 14-36 for the current teen sample and 11-66 for the larger young adult and teen sample.

Survey Year, 2006-08: This is a dichotomous variable that I constructed to indicate the survey year of the respondent. This variable was coded as "1" for respondents from the 2006-08 survey and as "0" for respondents from the 2002 survey year.

Current Age Group: This is a group of dummy variables that I constructed to indicate the respondent's current age group at the time of survey only for the larger sample of women age 25-44. Current age group categories were based on the respondent's adult age at the time of the survey and stratified into age groups; late twenties(25-29), early thirties (30-34), late thirties (35-39), and early forties (40-44). Women who were in their late twenties at the time of the survey served as the reference category. This variable was only created for the larger sample of women who first gave birth as an adolescent or young adult but were ages 25-44 at the time of the survey.

Table 2

Definitions of Analyzed Variables

Variable	Definition
Independent Variables	
Maternal Age (Young Adult & Adolescent Sample)	Respondent's age at the time of their first live birth. Age range was 10-24 and coded into four categories: early adolescent (10-14), middle adolescent (15-17), late adolescent (18-19), and young adult (20-24).
Maternal Age (Current Adolescent Sample)	Respondent's age at the time of their first live birth. Age range was 13-19 and coded into two groups: early adolescent (13-16) and late adolescent (17-19).
Dependent Variables	
Duration of Breastfeeding	The number of weeks that respondent reported breastfeeding their infant over the first year of life.
Educational Attainment	The highest level of educational attainment reported by the respondent, measured in continuous years.
Rapid Repeat Birth	The number of months until respondent had a second live birth during the first 24 months postpartum, which is defined here as a rapid repeat birth.
Initiation of Prenatal Care	The gestational week during which respondent reported initiating prenatal care. If no reported prenatal care, then the gestational week during which respondent delivered her baby.
Infant Birth weight	The total number of ounces the infant weighed at birth.
Sexual Risk Taking Behavior	An index of sexual risk taking behavior over the last 12 months taking into account the number of sexual partners, use of contraception, and use of contraception at last sex.
Moderator Variables	
Partner Social Support	Living with a partner at the time of first live birth, coded into three categories: living with a married spouse, living with a cohabiting partner, and living with neither a spouse nor cohabiting partner.
Partner and Parent Social Support	Living with a parent or partner at the time of first live birth, coded into four categories: living with one parent, living with two parents, living with a married or cohabiting partner, and living with neither a parent nor a partner.

Background Variables

Race/Ethnicity	Reported race/ethnicity of the respondent, coded into three categories: Hispanic, Black, and White/Other.
Poverty Level Income	Ratio of respondent's reported income to the poverty level.
Maternal Education	The highest level of the respondent's mother's educational level, coded into four categories: less than high school, high school degree/GED, some college, and college degree or higher.
Age at First Sexual Intercourse	Respondent's reported age at first sexual experience since menarche.
Wantedness of Pregnancy	Respondent's reported wantedness of the pregnancy and/or timing of the pregnancy, coded into four categories: on time or later than desired, too soon, indifferent/unsure, or unwanted.
Age of Baby's Father	Age of husband/partner/father of the respondent's baby at the time of birth.
Survey Year	Whether respondent was part of the 2002 or 2006-08 NSFG.
Current Age	Dummy variables for respondent's current age at the time of survey, coded into four categories: late twenties (25-29), early thirties (30-34), late thirties (35-39), and early forties (40-44). For young adult/adolescent sample.

Data Preparation Procedures

Dataset Construction. All data for this study came from two cycles of the National Survey of Family Growth, cycle 6 2002 and the most recent release of the new ongoing NSFG data collection from 2006-08. Data for these cycles comes in three forms: male respondent data, female respondent data, and pregnancy level data. This study utilized data from both the female and pregnancy data files. Although there is some overlap between these two files, the female file is respondent based, whereas the pregnancy file is pregnancy based with a case for each pregnancy reported by respondents.

For this study it was necessary to construct two datasets, one for the young adult and adolescent mother sample as well as one for the current adolescent mother sample. In order to do this, for each sample I first combined the female and pregnancy data files for each cycle and then merged these combined files across the two cycles. Thus for the young adult and adolescent mother sample I selected women who were currently age 25-44 and had first given birth to a baby as an adolescent or young adult (age 24 or younger). I then combined the respondent information with the pertinent information from the pregnancy file regarding her first live birth by using the young woman's respondent ID to merge the two. I did this for both the 2002 and 2006-08 data. Finally, I merged the two female/pregnancy files from 2002 and 2006-08 together to form one full dataset containing the study variables for the young woman and her first born child across the two survey cycles. Similarly, for the creation of the current adolescent mother dataset I selected for respondents who were currently age 15-19 and had already given birth to their first child. I then followed all of the same procedures in merging the female and

pregnancy data for each cycle and then combining the merged female/pregnancy data across the two cycles.

Variable Preparation. All study variables including independent, dependent, moderating, and control variables were assessed in preparation for the analysis. I first examined the distributions of the variables for potential outliers and for normality. Additionally, I then examined the range of variables and dealt with missing data as described below. I then recoded all dummy variables for maternal age at first birth, parent and partner social support/living arrangements, race/ethnicity, maternal educational level, wantedness of pregnant/timing, survey year, and current age control measures. Next, I constructed the interaction variables for maternal age and social support/living arrangements. I computed the event history analysis variables for the number of weeks breastfeeding and number of months until second birth, as well as their accompanying censoring variables. Next, I computed the total birth weight in ounces for infant birth weight and constructed the index for sexual risk taking behavior. Finally, I checked the distribution and coding consistency of each of the newly created variables.

Missing Data. Missing data was assessed and dealt with appropriately for all study variables. Three methods were used to handle or recover missing data in this study; these were imputation of the mean, triangulation from other sources, or deletion of the cases from analysis when necessary. Due to the high quality of data from the NSFG, missing items were minimal or able to be triangulated from other variables. A very small number of cases were missing data on the following variables: age of the baby's father at birth, initiation of prenatal care, and age at first intercourse since menarche. For both the age of the baby's father and the age at first intercourse I imputed the mean for missing

cases. For the variable of initiation of prenatal care missing data was mainly due to the mother's report of not receiving prenatal care during this pregnancy. For these few cases I utilized the gestational week at delivery as her first week of prenatal care.

One other variable caused concern in terms of missing data; this was for the duration of breastfeeding. Information on number of weeks that the mother breastfed her first child may have been missing from the NSFG for three possible reasons: the mother was breastfeeding the child at the time of survey, the child was younger than two months or older than 19 years, and/or the child had not lived in the same household as the mother for longer than two months. If the mother met any of these conditions, then information regarding her duration of breastfeeding for that child was not recorded. This variable was the largest one affected by missing data in both the samples. For the current teen mother sample though, whose children were the youngest, this was a very small amount (5.5%). However, for the larger sample of women aged 25-44 at the time of the survey who first gave birth as an adolescent or young adult, their children were more likely to be older than 19 at the time of survey and thus this information was not recorded for them. Consequently about 25% of that sample had missing data on this variable. For mothers in both samples who were currently breastfeeding I computed the different between the date of the survey and the baby's birth date in order to arrive at the number of weeks they had been breastfeeding since birth. After recovering as much data as possible on this variable a decision was made to keep the full study population for all analyses except duration of breastfeeding. For the breastfeeding analyses only, the sample size is reduced for both of the study samples. This is described further below in final sample size. Finally, the means

and frequencies were examined and compared for each of the full samples and the breastfeeding samples and no differences were found.

Final Sample Size. There were two final samples sizes for each of the study populations. This was due to restricted data on the duration of breastfeeding variable. Data for this variable were only recorded for mothers whose child was currently older than two months but less than 19 years old and had also lived with the mother for at least two months. For all other analyses besides duration of breastfeeding the full sample size was used. After deletion for a very small number of cases with missing data (less than 1%), the final full sample size was 4,477 for the adolescent and young adult mothers. No cases were deleted due to missing data for the current adolescent mothers, and the final full sample size was 215. The sample size for the duration of breastfeeding analyses only was 3,357 for the adolescent and young adult mothers and 202 for the current adolescent mothers. A larger proportion of the breastfeeding data was not recorded for the sample of adolescent and young adults due to their current age at the time of survey which was 25-44. Giving birth at ages 10-24 made it more likely for older respondents' first child to be currently over the age of 19 and thus restricted from the duration of breastfeeding data. A much smaller proportion of breastfeeding data was missing from the current adolescent sample.

Selectivity Factors. Certain factors may exist which contribute to the selection of a young woman into a teen or young adult birth and may also affect the outcomes. It is difficult to disentangle the preexisting factors that may also be affecting later outcomes for adolescent mothers and their children, such as poverty, family background, and community resources. Teen mothers may be different from woman who delay

childbearing until a later age due to these preexisting factors (Hoffman & Maynard, 2008). This study utilized control variables of the known potential selection factors which were available in the data to address the issue of the selectivity of a young woman into a teen or young adult birth. These control variables — including maternal level of education, ratio of income to the poverty level, and the respondent's racial/ethnic group — were included in all analyses in order to adjust and control for potential selectivity.

Weighting and Complex Survey Design. All dataset construction, variable preparation, and statistical analyses were performed using SAS version 9.1. SAS was chosen for its ability to conduct valid statistical analysis accounting for the complex survey design of the NSFG. The NSFG provides three weighting variables for use in analyses; these are the stratum variable, the cluster/panel variable, and the final post-stratified case weight variable. By using SURVEY REG for regression analyses and SURVEY LOGISTIC for logistic analyses in the study SAS can use all three weighting variables to yield results with correct variance estimations. For descriptive, t-test, and proportional hazards regression analyses only the final post-stratified weighting variable was used.

Multivariate analyses consisted of ordinal logistic regression when the dependent variable of interest was ordinal, multiple regression when the dependent variables of interest were continuous, and proportional hazards event history analysis regression when the dependent variables of interest were time-based. Additionally, all models included analyses of an interaction for moderator effects. Control variables were used in all models. Detailed analytic plans for testing each research question and its associated hypotheses are described in the following section.

Data Analysis

This section presents the plan of analysis used in this study. The analytic strategies for testing each hypothesis are summarized in Table 3, and then described in detail below. A secondary data analysis was conducted using existing quantitative survey data. Use of secondary data is well supported in family and maternal and child health research, with benefits such as reduced cost, increased statistical power, and quality of data (Alexander, Petersen, Wingate, & Kirby, 2005; Hofferth, 2005). Descriptive statistics including frequencies, means, and standard deviations were used to summarize the demographic data of each sample as well as the independent, dependent, and

Table 3

Summary of Hypotheses and Analytic Strategies

Questions 1-3 address the larger young adult and adolescent mother sample

Hypothesis	*Analytic Strategy*
1a) Women who first gave birth as a young adult will breastfeed significantly longer during the infant's first year than women who first gave birth as a late adolescent. 1b) Young adolescent mothers will breastfeed for a shorter duration during the infant's first year than late adolescent mothers. 1c) Partner social support will significantly moderate this association for young adolescent mothers such that those residing with a partner or spouse will have longer duration of breastfeeding.	1a-c) Proportional hazards event history regression analysis predicting risk of breastfeeding cessation using maternal age, partner support, and background and control variables. Entered interaction terms for social support and maternal age to test for moderation of partner social support on the relationship between maternal age and duration of breastfeeding.
2a) Women who first gave birth as a young adult will be less likely than late adolescent mothers to have a rapid repeat birth. 2b) Young adolescent first-time mothers will be more likely to experience a rapid repeat birth than late adolescent mothers. 2c) Partner social support will significantly interact with maternal age such that young adolescent mothers residing with a partner or spouse will be the most likely to have a rapid repeat birth.	2a-c) Proportional hazards event history regression analysis predicting risk of rapid repeat birth using maternal age, partner support, and background and control variables. Entered interaction terms for social support and maternal age to test for moderation of social support on the relationship between maternal age and likelihood of rapid repeat birth.
3a) Women who first gave birth as a young adult will have higher educational attainment than women who first gave birth as a late adolescent. 3b) Young adolescent mothers will have lower educational attainment than late adolescent mothers. 3c) Partner social support will significantly interact with maternal age such that young adolescent mothers residing with a partner or spouse will have the lowest educational attainment, whereas partnered young adults will have the highest educational attainment.	3a-c) Logistic regression predicting educational attainment from maternal age, social support, and background and control variables. Entered interaction terms for social support and maternal age to test for moderation of partner social support on the relationship between maternal age and educational attainment.

Questions 4-6 address the smaller current adolescent mother sample

4a) The largest proportion of early adolescent mothers will be living with at least one parent at the time of birth, whereas the smallest proportion will be living apart from a parent or partner. 4b) The largest proportion of late adolescent mothers will be living with a partner, whereas the smallest proportion will be living apart from a parent or partner.	4a-b) Descriptive statistics including means and frequencies of living arrangements by maternal age, as well as t-tests for differences in means.
5a) Early adolescents will initiate prenatal care later compared to late adolescent. 5b) Early adolescents will have babies born with lower birth weight than late adolescents. 5c) Early adolescents will be more likely to engage in high risk sexual behavior than late adolescents. 5d) Early adolescents will have a shorter duration of breastfeeding over the first year than late adolescents.	5a-d) Multivariate regressions, logistic regression, and proportional hazards regression predicting prenatal, birth, and short-term postpartum outcomes.
6) Social support will significantly moderate the relationship between early adolescent age and outcomes for adolescent mothers and their children such that: a) Early adolescent mothers living with a parent will initiate prenatal care earlier. 6b) Early adolescent mothers living with a parent will have higher infant birth weight. 6c) Early adolescent mothers living with a partner will have lower sexual risk taking behavior. 6d) Early adolescent mothers living with a partner will have longer duration of breastfeeding.	6a-d) Entered interaction terms for social support and maternal age into regression models for initiation of prenatal care, infant birth weight, sexual risk taking behavior, and duration of breastfeeding.

moderating variables. T-tests examining the differences in means for all study variables among maternal age groups were also computed.

In this study I examined two samples of women drawn from the two most recent cycles of the NSFG. In the following, I will restate the research questions and hypotheses and then explain the plan of analysis used to test each of the hypotheses for the two samples. First, I will present the plan of analysis used to test the hypotheses for the research questions regarding the larger sample of teen and young adult mothers.

Research Question and Hypotheses for Duration of Breastfeeding

RQ1: What is the relationship between maternal age and duration of breastfeeding? Is this relationship moderated by partner social support?

H1a) Women who first gave birth as a young adult will breastfeed significantly longer during the infant's first year than women who first gave birth as a late adolescent.

H1b) Young adolescent mothers will breastfeed for a shorter duration during the infant's first year than late adolescent mothers.

H1c) Partner social support will significantly moderate this association for young adolescent mothers such that those residing with a partner or spouse will have longer duration of breastfeeding.

Proportional hazards event history regression analysis was used to test Hypotheses 1a-1b and analyze the duration of breastfeeding during the infant's first year (12 months) of life while controlling for other factors. A life table analysis was also conducted. Maternal age at first birth was measured in three groups; early adolescence (ages 10-14), mid-adolescence (15-17), and young adulthood (20-24), with those in late adolescence (18-19) serving as the reference category. Variables were entered

sequentially in four steps into the proportional hazards model in order to test for effects of the main variables and moderation for both early and middle adolescents as well as young adults. In the first step, the number of weeks of breastfeeding during the first year was regressed on maternal age dummy variables, including all control and background variables. Second, in order to assess Hypothesis 1c, interaction terms for the social support variables and maternal age were added separately in order to test for significance of the moderation of social support on maternal age groups of early adolescents, middle adolescents, and young adults, as recommended by Baron & Kenny (1986).

Research Question and Hypotheses for Rapid Repeat Birth

R2: What is the relationship between maternal age and rapid repeat birth? Is this relationship moderated by partner social support?

H2a) Women who first gave birth as a young adult will be less likely than late adolescent mothers to have a rapid repeat birth.

H2b) Young adolescent first-time mothers will be more likely to experience a rapid repeat birth than late adolescent mothers.

H2c) Partner social support will significantly interact with maternal age such that young adolescent mothers residing with a partner or spouse will be the most likely to have a rapid repeat birth.

To test Hypotheses 2a-2b, I used a proportional hazards event history regression analysis to analyze the risk of rapid repeat birth (within 24 months of first birth), controlling for all background and control variables included in the study. A life table analysis was also conducted. In the literature on adolescent repeat birth, 24 months has been indicated as the definition of a "closely spaced" or "rapid repeat" pregnancy or

birth, which is why I examined this risk within the first 24 months after birth (Kalmuss & Namerow, 1994; Manlove, et al., 2000; Raneri & Wiemann, 2007). Maternal age at first birth was measured in four groups; early adolescence (ages 10-14), mid-adolescence (15-17), late adolescence (18-19), and young adult (age 20-24). Women who first gave birth in late adolescence (18-19) served as the reference category. The ability of proportional hazards event history regression analysis to analyze data of subjects for whom the observation period is not yet over allows for the inclusion of women who may have been age 24 at the time of birth and had not yet had two full years elapse before the time of the survey (Allison, 1984). Variables were entered sequentially in steps into the proportional hazards model in order to test for effects of the main variables as well as moderation for early and middle adolescent mothers and young adult mothers. In the first step, the number of months during the first two years until a second birth was regressed on maternal age dummy variables, while including all control variables. Second, to test Hypothesis 2c, interaction terms for the social support variables for early and middle adolescent and young adult mothers were added in three separate regression models order to test for significance of the moderation of social support on maternal age, as recommended by Baron & Kenny (1986).

For this analysis, proportional hazards event history regression analysis provided a clear advantage over logistic regression in examining the risk of a rapid repeat birth as only the statistical procedure of proportional hazards event history analysis was able to take into account the censoring of mothers who did not experience a rapid repeat birth as well as the concept of the event occurring over a period of time (within 2 years after birth) (Allison, 1984). Additionally, this analytic model best addresses concerns of

temporal order when examining events that are time sensitive and that all subjects may not experience during the observation period. Although all women in this sample experienced a first birth, not all women had experienced a second birth by the end of the observation period. This analytic method has been successfully used in other studies examining repeat adolescent pregnancies (see Gillmore, Lewis, Lohr, Spencer, & White, 1997).

Research Question and Hypotheses for Educational Attainment

RQ3: What is the relationship between maternal age and total educational attainment? Is this relationship moderated by partner social support?

H3a) Women who first gave birth as a young adult will have higher educational attainment than women who first gave birth as a late adolescent.

H3b) Young adolescent mothers will have lower educational attainment than late adolescent mothers.

H3c) Partner social support will significantly interact with maternal age such that young adolescent mothers residing with a partner or spouse will have the lowest educational attainment, whereas partnered young adults will have the highest educational attainment.

To test Hypotheses 3a-3b, I used logistic regression to examine the effect of young maternal age on educational attainment. Maternal age at first birth was measured in four groups; early adolescence (ages 10-14), mid-adolescence (15-17), late adolescence (18-19), and young adult (age 20-24). Women who first gave birth in late adolescence (18-19) served as the reference category. Educational attainment was measured continuously as total years of educational attainment in yeas at the time of the survey. First years of educational attainment was regressed on maternal age groups, while

including all background and control variables, in order to test for main effects. Next, to test Hypothesis 3c, I added interaction terms for the social support variables for early and middle adolescents and young adults in separate regression models to examine the extent to which partner social support moderated the relationship between maternal age categories and educational attainment. This analytic approach was based on a similar method used by Hofferth et al. (2001) to examine maternal age and educational attainment with data from the National Longitudinal Study of Youth and the Panel Study of Income Dynamics.

Research Questions and Hypotheses for the Sample of Current Teen Mothers

For the second sample of mothers who were teens at the time of survey I will now describe the analyses used to examine the prenatal, birth and short-term postpartum outcomes for the mother. First, I will restate each research question and its associated hypotheses, and then I will explain the plan of analysis used to test each hypothesis. The prenatal/birth and short-term postpartum outcomes examined for this sample include initiation of prenatal care, infant birth weight, sexual risk-taking behavior, and duration of breastfeeding.

RQ4: What were the sources of social support of a current sample of adolescent mothers at the time of birth? Is there variation among adolescent age groups?

H4a) The largest proportion of early adolescent mothers will be living with at least one parent at the time of birth, whereas the smallest proportion will be living apart from a parent or partner.

H4b) The largest proportion of late adolescent mothers will be living with a partner, whereas the smallest proportion will be living apart from a parent or partner.

The analysis of current teen mothers used descriptive analysis as well as multiple and logistic regression and event history analysis to explore the associations among maternal adolescent age groups, social support and maternal and child health and well-being outcomes. First, to test Hypotheses 4a-4b, frequencies and descriptive statistics were used to delineate the sources of social support for each of the adolescent age groups. Additionally, t-tests were computed to compare mean differences in living arrangements between early and late adolescent mothers.

RQ5: What are the prenatal, birth, and short term postpartum health outcomes for current adolescent mothers and children?

H5a) Early adolescents will initiate prenatal care later compared to late adolescent.

H5b) Early adolescents will have babies born with lower birth weight than late adolescents.

H5c) Early adolescents will be more likely to engage in high risk sexual behavior than late adolescents.

H5d) Early adolescents will have a shorter duration of breastfeeding over the first year than late adolescents.

RQ6: Additionally, what is the association between an adolescent's social support and the prenatal, birth, and short-term postpartum outcomes for adolescent mothers and their children?

H6a: It is hypothesized that social support will significantly moderate the relationship between adolescent age group and outcomes for adolescent mothers and their children such that: a) early adolescent mothers living with a parent will initiate prenatal care earlier.

H6b: It is hypothesized that early adolescent mothers living with a parent will have higher infant birth weight.

H6c: It is hypothesized that early adolescent mothers living with a partner will have lower sexual risk taking behavior.

H6d: It is hypothesized that early adolescent mothers living with a partner will have longer duration of breastfeeding.

To test Hypotheses 5a-d, separate regression models were run for each of the prenatal, birth, and short-term postpartum outcomes of interest. Specifically, the multivariate analyses for this sample consisted of multiple regression when the dependent variables of interest were continuous (initiation of prenatal care and infant birth weight), logistic regression when the dependent variables of interest were ordinal and categorical (sexual risk taking behavior) and event history analysis was used to examine the duration of breastfeeding during the infant's first year of life.

For the regression models each of the dependent variables that being tested were regressed on the independent variable of maternal age. Maternal age at first birth was divided into two age groups (13-16 and 17-19), with later adolescents (17-19) serving as the reference category. All control variables were entered into each regression model. Finally, to test Hypotheses 6a-d for this sample, I conducted analyses of an interaction to test for moderator effects according to the model outlined by Baron & Kenny (1986). Interaction terms for partner and parent social support and early adolescent maternal age group (13-16) were added to each regression model to test for the significance of the interaction.

Initiation of Prenatal Care. Initiation of prenatal care was analyzed using multiple regression to test Hypothesis 5a. First the number of weeks at initiation of prenatal care was regressed on maternal age while including all background and control variables. Next to test Hypothesis 6a for the moderation of social support, interaction variables for living arrangements and maternal age were added to the regression model.

Infant Birth Weight. Infant birth weight was analyzed using multiple regression to test Hypothesis 5b. First the infant's birth weight in total ounces was regressed on maternal age while including all background and control variables. Next, to test Hypothesis 6b for the moderation of social support, interaction variables for living arrangements and maternal age were added to the regression model.

Sexual Risk Taking Behavior. To analyze sexual risk taking behavior and test Hypothesis 5c an ordinal logistic regression was conducted. First the sexual risk taking behavior score was regressed on maternal age while including all background and control variables. Next, to test Hypothesis 6c for the moderation of social support, interaction variables for living arrangements and maternal age were added to the regression model. An index of sexual risk taking behavior was constructed for this analysis using three pieces of information regarding the respondent's sexual behavior during the last 12 months. These were the number of sexual partners reported for the past 12 months (0 = 0, 1-3 = 1, or 4 or more = 2), whether the respondent used any birth control method (including abstinence) during the last 12 months (yes = 0, no = 1, and whether the respondent used any birth control method (including abstinence) at the last sex in the last 12 months (yes = 0, no = 1) for a possible total range of 0-4. The inclusion of these variables in creating a sexual risk taking behavior index is well supported by Kotchik,

Shaffer, Forehand, and Miller's (2001) extensive review on adolescent sexual risk behavior and is also modeled after a similar index used by East and Khoo (2005) when examining the relationship between family factors and sibling relationships with adolescent sexual risk behaviors. Additionally, the NSFG utilizes recommended methodological tools in measuring sexual risk taking behavior including audio computer assisted self-interviewing (CASI) and a calendar in order to aid in recall and enhance accuracy (Kotchik, et al.).

Duration of Breastfeeding. I used a proportional hazards event history regression analysis to test Hypothesis 5d and analyze the duration of breastfeeding by risk of breastfeeding cessation during the infant's first year (12 months) of life while controlling for other factors. A life table analysis was also conducted. Maternal age at first birth was measured in two groups; early adolescence (ages 13-16) and late adolescence (17-19), with those in late adolescence serving as the reference category. Variables were entered sequentially into the proportional hazards model in order to test for effects of the main variables and moderation. In the first step, the number of weeks of breastfeeding during the first year was regressed on maternal age dummy variables, including all control variables. Second, an interaction term for social support variables and early adolescent age at first birth was added in order to test Hypothesis 6d for significance of the moderation of social support on maternal age, as recommended by Baron & Kenny (1986).

Human Subjects

This research solely utilizes secondary data obtained from the National Center for

Health Statistics. This data has been carefully collected and screened and does not contain any identifying information. First, NCHS has removed any directly identifying information such as names or addresses from the public use files. NCHS has also made any necessary modifications to the data files to prevent disclosure of the identities of any of the survey respondents, while maintaining the analytical value of the data. Modifications to the data include the suppression or collapsing of certain variables that could be used to identify very small groups. Finally, the values of some variables for some respondents were altered to further prevent the identification of individual respondents. This was done in such a way as to not alter national estimates or causal models. Approval from the Institutional Review Board of the University of Maryland was obtained to conduct this research, and the present study was deemed exempt on the grounds that the investigator was examining publicly available existing data that was recorded in such a manner that subjects could not be identified (see Appendix A).

Chapter 4: Results- Adolescent and Young Adult Mothers

This chapter presents the results of the descriptive and multivariate analyses that answer the first three research questions and subsequent hypotheses associated with the larger sample of adolescent and young adult mothers described in Chapter 3. Together the first three research questions aimed to examine the relationship between early maternal age and prenatal, birth, and postpartum outcomes and health behaviors and the degree to which the social support and living arrangements at the time of birth influence those outcomes and behaviors for a sample of young adult and adolescent mothers. For this sample of adolescent and young adult mothers, Models 1 through 3 tested maternal age as a predictor of duration of breastfeeding, educational attainment, and hazard of rapid repeat birth and then examined the influence of partner support at the time of birth on these outcomes.

Descriptive Analysis

Adolescent and Young Adult Mothers. The larger sample of mothers who first gave birth as an adolescent (10-19) or young adult (20-24) consisted of 4,477 women who were ages 25-44 at the time of survey. Table 4 summarizes the characteristics of the mothers in this sample, including the demographic, background, partner support, current age group, and outcome measures. Of these women, 1.39% first gave birth as an early adolescent, 16.59% as a middle adolescent, 24.32% as a late adolescent, and the remaining majority first gave birth as a young adult. Twenty-one percent of the sample identified as Hispanic and 18% as Black or African American, whereas the majority

Table 4. Adolescent and Young Adult Mothers: Means and Standard Deviations of the Study Variables by Age

		Total Sample		Early Adolescent		Mid-Adolescent		Late Adolescent		Young Adult	
Variables	Range	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Demographic Measures											
Hispanic	0-1	0.21	0.40	0.30	0.40	0.24	0.40	0.22	0.40	0.19	0.41 ^
Black	0-1	0.18	0.38	0.44	0.43 ****	0.25	0.40 ^	0.21	0.48	0.14	0.36 ****
White/other	0-1	0.60	0.48	0.24	0.37 ****	0.49	0.46 **	0.55	0.40	0.65	0.49 ****
Poverty level	.06-5	2.04	1.35	1.47	1.00 *	1.74	1.23	1.83	1.31	2.23	1.38 ****
Background Measures											
Educational Level of R's mother											
Less than high school	0-1	0.37	0.48	0.45	0.43	0.39	0.46	0.41	0.48	0.34	0.49 ****
High school degree/GED	0-1	0.36	0.48	0.35	0.42	0.41	0.46 ^	0.37	0.47	0.34	0.49
Some college	0-1	0.18	0.38	0.17	0.32	0.13	0.32	0.15	0.35	0.21	0.42 ****
College degree or higher	0-1	0.09	0.29	0.02	0.12	0.07	0.23	0.07	0.24	0.11	0.33 ****
R's age at first sex	7-24	16.53	2.33	12.88	0.89 ****	14.75	1.24 ****	16.00	1.57	17.36	2.50 ****
Wantedness of pregnancy/timing											
On-time or later than desired	0-1	0.44	0.50	0.20	0.35 *	0.21	0.38 ****	0.34	0.46	0.56	0.52 ****
Too soon	0-1	0.43	0.49	0.48	0.44	0.58	0.46 **	0.52	0.49	0.34	0.49 ****
Indifferent/unsure	0-1	0.01	0.12	0.03	0.14	0.02	0.12	0.01	0.11	0.01	0.12
Unwanted	0-1	0.11	0.32	0.29	0.40 ***	0.19	0.37 ***	0.13	0.33	0.08	0.28 ****
Age of baby's father at birth	11-66	23.36	4.65	20.37	5.05 **	20.49	4.42 ****	21.98	4.23	24.84	4.24 ****
Survey year 2006-08	0-1	0.49	0.50	0.36	0.41 ^	0.47	0.46	0.48	0.48	0.50	0.51
Current Age Group											
Age 25-29	0-1	0.24	0.42	0.24	0.37	0.26	0.41	0.26	0.42	0.22	0.43 *
Age 30-34	0-1	0.23	0.42	0.40	0.42 ***	0.25	0.40 ^	0.21	0.40	0.22	0.43
Age 35-39	0-1	0.25	0.43	0.14	0.30	0.26	0.41 *	0.23	0.40	0.26	0.45 *
Age 40-44	0-1	0.27	0.44	0.20	0.35	0.21	0.38 ***	0.29	0.44	0.28	0.47
Living Arrangements											
Married	0-1	0.47	0.49	0.09	0.25 ****	0.24	0.40 ****	0.34	0.46	0.60	0.50 ****
Cohabiting	0-1	0.19	0.39	0.05	0.20 ***	0.18	0.36 *	0.23	0.40	0.18	0.40 **
No Partner	0-1	0.33	0.47	0.84	0.31 ****	0.57	0.46 ****	0.42	0.48	0.21	0.42 ****

Table 4. Adolescent and Young Adult Mothers: Means and Standard Deviations of the Study Variables by Age continued

		Total Sample		Early Adolescent		Mid-Adolescent		Late Adolescent		Young Adult		
Variables	Range	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
Outcome Measures												
Weeks breastfeeding[a]	0-53	13.14	17.63	9.99	17.07	9.99	16.08	10.47	15.15	14.71	18.69	****
Educational Level	9-19	12.38	2.25	10.71	1.91 ****	11.24	1.99 ****	11.87	1.85	12.96	2.31	****
Months until second birth	7-25	23.34	3.63	23.84	3.03	22.72	3.86 **	23.23	3.79	23.56	3.47	*
N (weighted frequency)		4,477		83(1.39)		851(16.59)		1152 (24.32)		2391(57.71)		

[a]Breastfeeding variable has an N of 3357

T-test for difference in means as compared to Late Adolescent group is significant at ^ p<.10,* p<.05, ** p<.01, *** p<.001, **** p<.0001

Note: All values are weighted to provide national estimates among women ages 25-44, for 2002 and between 2006-08.

identified as White or Other. Respondents, on average, reported a total income that was 2.04 times the poverty level.

The educational level of the respondent's mother was less than high school for 37% of the sample, high school degree/GED for 36%, some college for 18%, and the remainder attained a college degree or higher. The respondent's mean age at first sexual intercourse since menarche was 16.53 years. Forty-four percent of respondents indicated that the timing of the pregnancy resulting in their first birth was on time or later than desired. For 43% of the mothers the timing was too soon. Only 1% of the mothers indicated that they were unsure or indifferent about the timing of the pregnancy, and 11% indicated that the pregnancy was unwanted. The average age of the baby's father at time of birth, as reported by the respondent, was 23.36 years. Forty-nine percent of the sample came from the 2006-08 wave of NSFG data collection. Respondents were split roughly equally among the current age groups with 24% currently age 25-29, 23% currently age 30-34, 25% currently age 35-39, and the remainder currently age 40-44.

In terms of living arrangements, overall 47% reported living with a spouse at the time of their first birth, 19% with a cohabiting partner, and the remainder reported not living with any partner at the time of birth. On average, mothers breastfed their infants 13.14 weeks during the first year. The average total educational level among the sample was 12.38 years, or slightly more than a high school degree. The average number of months until a second birth during the first two years postpartum was 23.34 months.

Significant differences existed between the early, middle, late adolescent, and young adult mothers on a number of variables (see Table 4). Compared to mothers who first gave birth in late adolescence, those who were in early adolescence at the time of

first birth had a significantly higher proportion who were Black and a lower proportion who were White/Other, reported income closer to the poverty line, younger age at their first sexual intercourse, lower proportion of on time pregnancy timing, higher proportion of unwanted pregnancy timing, younger age of the baby's father, had a higher proportion in the current age 30-34 age group, and reported a lower total educational level. At the trend level, they had a lower proportion from the 2006-08 survey year of data collection. Early adolescent mothers also showed differences in their living arrangements as a significantly lower proportion reported living with either a spouse (9%) or cohabiting partner (5%) than the late adolescent mothers.

Compared to mothers who first gave birth in late adolescence, those who were in middle adolescence at the time of first birth had a significantly lower proportion who were White/Other, younger age at their first sexual intercourse, lower proportion of pregnancy timing being on time, higher proportion of pregnancy timing being too soon or unwanted, a higher proportion were from the 35-39 current age group and a lower proportion from the 40-44 current age group. Middle adolescent mothers had a lower mean educational level and a lower mean number of months until second birth over the first two years. At the trend level, they had a higher proportion of Black or African American mothers, higher proportion of respondents' mothers with a high school degree, and a higher proportion of mothers in the 30-34 year old current age group. Middle adolescent mothers also showed differences in their living arrangements as a significantly lower proportion reported living with either a married spouse (24%) or cohabiting partner (18%) than late adolescent mothers.

Compared to mothers who first gave birth in late adolescence, those who were young adults at the time of first birth had a significantly higher proportion who were White/Other and lower proportion who were Black or African American, reported a higher income to poverty level ratio, lower proportion of respondent's mothers had less than a high school degree and a higher proportion had some college or a college degree or higher. Young adult mothers also reported older age at their first sexual intercourse, a higher proportion of mothers indicated the pregnancy timing was on time and a lower proportion indicated that pregnancy timing was too soon or unwanted, older age of the baby's father, a lower proportion were from the 25-29 or 35-39 current age groups. Young adult mothers had a higher mean number of weeks of breastfeeding during the first year, higher mean educational level, and a higher mean number of months until second birth over the first two years. At the trend level, they had a lower proportion of Hispanic mothers. Young adult mothers also showed differences in their living arrangements as a significantly higher proportion reported living with a spouse (60%) whereas a lower proportion lived with a cohabiting partner (18%) than late adolescent mothers.

Predicting Duration of Breastfeeding from Maternal Age and Partner Social Support (Question 1)

Does maternal age predict duration of breastfeeding, and if so are young adult mothers more likely to breastfeed longer over the first year compared to late adolescent mothers? Furthermore, does partner social support at birth affect the relationship between maternal age and duration of breastfeeding? First I will present the results of the life table analysis for breastfeeding duration by maternal age groups.

Life table analysis. Overall, for the entire sample, half of the mothers were still breastfeeding by the end of the first month (see Table 5). At the 24 week mark one quarter of the mothers were still breastfeeding. By the end of the first year only 9.9% of mothers in the full sample were still breastfeeding their infants.

Table 5. Probability of Breastfeeding by Weeks During First Year and Mother's Age at Birth

	Maternal Age at Birth				
Weeks	**Total**	**Early Adolescent**	**Middle Adolescent**	**Late Adolescent**	**Young Adult**
0	1.000	1.000	1.000	1.000	1.000
4	0.502	0.232	0.333	0.420	0.568
8	0.427	0.232	0.299	0.363	0.477
12	0.377	0.223	0.274	0.320	0.419
16	0.320	0.223	0.261	0.256	0.355
20	0.277	0.197	0.220	0.230	0.305
24	0.253	0.197	0.203	0.208	0.279
28	0.188	0.188	0.158	0.131	0.214
32	0.169	0.160	0.144	0.121	0.190
36	0.142	0.156	0.102	0.098	0.164
40	0.120	0.156	0.096	0.090	0.135
44	0.109	0.156	0.096	0.071	0.123
48	0.109	0.156	0.096	0.071	0.123
52	0.099	0.156	0.088	0.069	0.110
N	3357	42	500	796	2019

Note: All results were weighted using SAS statistical software.

The survival rates for breastfeeding duration differed by age group. Young adult mothers had higher percentages still breastfeeding at nearly every time point over the first year than all of the adolescent mother age groups. Only early adolescent mothers had higher percentages of mothers still breastfeeding at 44, 48, and 52 weeks, however this was most likely due to the reduced sample size of early adolescents in the breastfeeding duration analysis. Among adolescent age groups, for the first six months age is positively related to breastfeeding duration with late adolescent mothers showing the highest rates and early adolescents showing the lowest rates. For the second half of the year however,

an inverse relationship appears such that early adolescents have the highest percentages at all time points from 6 months onward, whereas late adolescents have the lowest percentages. This may again be due to the small sample size of the early adolescents, however this negative relationship also holds in relation to the middle and late adolescent groups. In summary, although early adolescents initially drop off at a faster rate, those who do continue breastfeeding after the first six months continue to do so at higher rates through the duration of the first year than the older adolescent age groups.

Although the life table analysis shows trends for duration of breastfeeding by maternal age, this analysis does not control for the multiple demographic and background factors and does not examine the effect of partner social support. Therefore I will now present the results of the proportional hazards event history regression analysis as they relate to the study hypotheses.

Proportional Hazards Regression Analysis. The first hypothesis (1a) was not supported as young adult age was not a significant predictor of risk of breastfeeding cessation in either model; however, young adult mothers were less likely to quit breastfeeding during the first year than late adolescent mothers (see Table 6). Results also indicate that young adolescent mothers had a lower risk of breastfeeding cessation compared to those in late adolescence; however, these findings were not significant nor in the direction predicted. Therefore, the second hypothesis (1b) was also not supported. Model 1 included maternal age, demographic, background, current age, and partner social support. Model 2 then tested for the moderation of partner social support for early, middle adolescent, and young adult mothers.

Table 6. Factors Predicting Duration of Breastfeeding over First Year

	Model 1				Model 2			
	β	*SE* β	OR		β	*SE* β	OR	
Maternal Age at Birth								
Early Adolescent	-0.30	0.20	0.74		-0.17	0.21	0.85	
Middle Adolescent	-0.07	0.07	0.93		0.06	0.09	1.06	
Late Adolescent	omitted				omitted			
Young Adult	-0.06	0.05	0.94		-0.12	0.08	0.89	
Demographic Measures								
Black	0.16	0.05	1.18	**	0.16	0.05	1.18	**
Hispanic	-0.36	0.06	0.70	****	-0.34	0.06	0.71	****
White/Other	omitted				omitted			
Poverty level	-0.01	0.02	0.99		-0.01	0.02	0.99	
Background Measures								
Educational Level of R's mother								
Less than High School	omitted				omitted			
High School Degree/GED	0.00	0.05	1.00		0.00	0.05	1.00	
Some College	-0.15	0.06	0.86	*	-0.15	0.06	0.86	*
College Degree or Higher	-0.37	0.07	0.69	****	-0.37	0.07	0.69	****
R's age at first sex	-0.04	0.01	0.96	****	-0.05	0.01	0.96	****
Wantedness of pregnancy/timing								
On-time or Later than desired	omitted							
Timing too Soon	0.08	0.04	1.08	^	0.08	0.04	1.09	^
Indifferent/Unsure	0.00	0.15	1.01		0.02	0.15	1.02	
Pregnancy Unwanted	0.15	0.06	1.16	*	0.16	0.06	1.17	*
Age of baby's father at birth	-0.01	0.00	0.99	**	-0.01	0.00	0.99	**
Survey year 2006-08 (1=2006)	-0.11	0.04	0.90	**	-0.11	0.04	0.90	**
Current Age Measures								
Age 25-29	omitted				omitted			
Age 30-34	0.12	0.05	1.13	**	0.14	0.05	1.15	**
Age 35-39	0.13	0.05	1.14	*	0.14	0.05	1.15	**
Age 40-44	0.15	0.08	1.16	^	0.15	0.08	1.16	^
Living Arrangements Measures								
Married	-0.19	0.05	0.83	***	-0.25	0.09	0.78	**
Cohabiting partner	0.00	0.05	1.01		0.09	0.09	1.09	
Neither married nor cohabiting	omitted				omitted			
Interaction Measures								
Early adolescent living with a spouse					-2.69	1.88	0.07	
Early adolescent cohabiting with a partner					0.08	0.99	1.08	
Mid-adolescent living with a spouse					-0.25	0.17	0.78	
Mid-adolescent cohabiting with a partner					-0.40	0.15	0.67	**
Young adult living with a spouse					0.17	0.11	1.18	
Young adult cohabiting with a partner					-0.01	0.12	0.99	

N= 3357

^ p < .10, 2-tailed test, * p<.05, 2-tailed test, ** p<.01, 2-tailed test, ***p<.001, 2-tailed test, ****p<.0001, 2-tailed test

Note: All results were weighted using SAS statistical software.

Of the demographic predictors, both Black and Hispanic race/ethnicity were significant predictors in model 1. Mothers with a Black or African American racial/ethnic identification had an 18% higher risk of breastfeeding cessation than mothers of White or other racial/ethnic identification ($p<.01$). Mothers of Hispanic racial/ethnic identification had a 30% lower risk of breastfeeding cessation than mothers of White or other racial/ethnic identification ($p<.0001$). The ratio of income to poverty level was not a significant predictor in this model.

Of the family and background factors, the educational level of the respondent's mother, the respondent's age at first sexual intercourse, wantedness of the pregnancy, age of the baby's father and survey year were all significant predictors of the duration of breastfeeding. Respondents whose mothers had some college education had a 14% lower risk of breastfeeding cessation ($p<.05$). Respondents whose mothers had a college degree or higher had a 31% lower risk of breastfeeding cessation ($p<.0001$). For each one year increase in the respondent's age at first sexual intercourse the risk of breastfeeding cessation was 4% lower ($p<.0001$). At the trend level, respondents who indicated their pregnancy timing was too soon had an 8% higher risk of breastfeeding cessation ($p<.10$). Respondents who indicated that their pregnancy was unwanted had a 16% higher risk of breastfeeding cessation ($p<.0001$). For each one year increase in the age of the baby's father, the risk of breastfeeding cessation was lower by 1% ($p<.01$). Mothers whose data were collected during the 2006-08 survey had a 10% lower risk of breastfeeding cessation, than mothers from the 2002 survey year ($p<.01$).

In terms of current age measures, each of the age groups 30-34, 35-39, and 40-44 had a significantly higher probability of quitting breastfeeding over the first year than

those in the current 25-29 year old age group. Mothers in the current 30-34 year old age group had a 13% higher risk of breastfeeding cessation ($p<.01$), and those in the current 35-39 year old age group had a 14% higher risk of breastfeeding cessation ($p<.05$). At the trend level, those in the 40-44 year old age group had a 16% higher risk of breastfeeding cessation than women currently age 25-29 ($p<.10$).

Of the partner social support measures, living with a married spouse at the time of birth was a significant predictor of breastfeeding duration over the first year. Mothers who lived with a married spouse had a 17% lower risk of breastfeeding cessation than mothers who did not live with a married or cohabiting partner ($p<.001$). Living with a cohabiting partner was not a significant predictor of breast-feeding cessation in this model.

Moderation Analysis. In model 2, the interaction terms for maternal age and partner social support were entered for early adolescence, middle adolescence, and young adult age to test the third hypothesis (1c). Although the interactions for early adolescent mothers were not statistically significant, results suggested that early adolescent mothers living with a spouse were much less likely to quit breastfeeding during the first year. Model 2 did show evidence in support of the third hypothesis for cohabiting mothers who first gave birth in middle adolescence. Mothers living with a cohabiting partner in middle adolescence had a 33% lower risk of breastfeeding cessation ($p<.01$). Although not significant, married middle adolescent mothers had a 22% lower risk of breastfeeding cessation over the first year.

In order to fully understand and interpret the effects of the interaction it is necessary to compute the combined coefficient and resulting odds ratio for the effect of

middle adolescent age and cohabitation. This is consistent with the recommendation of Allison (1999) for interpreting an interaction with dummy variables. For middle adolescent mothers, there is a beneficial effect of cohabitation; young mothers who cohabit in middle adolescence are less likely to cease breastfeeding as early as those without a spouse or partner. Taking into account the interaction, the effect of cohabitation for middle adolescent mothers is an 18% lower risk of breastfeeding cessation (not shown in table).

All other demographic, family, background, current age and partner social support factors from Model 1 stayed relatively stable in both significance level and effect for Model 2 after the addition of the interactions for maternal age and partner social support. The factors that were associated with a higher risk of breastfeeding cessation included Black race/ethnicity ($p<.01$), too soon timing of pregnancy ($p<.10$), pregnancy unwanted ($p<.05$), and current age groups of 30-34 ($p<.01$), 35-39 ($p<.05$), and 40-44 ($p<.10$). The factors that were associated with a lower risk of breastfeeding cessation included Hispanic race/ethnicity($p<.0001$), respondent's mother attaining some college ($p<.05$), respondent's mother attaining a college degree or higher ($p<.0001$), the respondent's age at first intercourse ($p<.0001$), the age of the baby's father ($p<.01$), respondent's survey year ($p<.01$), and living with a married spouse at the time of birth ($p<.01$). Ratio of income to poverty level and living with a cohabiting partner were not significant predictors in these models.

In summary, as discussed above, the interaction for middle adolescent age and living with a cohabiting partner was a significant predictor in model 2. The first hypothesis (1a), regarding young adult maternal age did not prove to be a significant

predictor of the risk of breastfeeding cessation over the first year, and was therefore not supported. The second hypothesis (1b) regarding the negative effects of early adolescent age on breastfeeding duration was not supported. Although the interactions for early adolescence and partner social support were not significant, the interactions for middle adolescence and both levels of partner social support were either significant predictors or in the predicted direction. Therefore the third hypothesis (1c) was supported by these findings. This question examined an outcome over the first year after birth; however, could maternal age and partner social support at the time of birth have an effect on outcomes over a longer time period, such as the risk of rapid repeat birth over the first two years? This question is examined below.

Predicting Rapid Repeat Birth from Maternal Age and Partner Social Support (Question 2)

Life table analysis. I first conducted a life table analysis to examine the rates of not experiencing a repeat birth within the first 24 months postpartum. Overall among the mothers in the sample, 98.5% had not given birth to a second baby by 12 months postpartum (see Table 7). By 18 months postpartum 89.6% of the sample had not yet experienced a repeat birth. By the end of the observation period 79.8% of the sample had not yet had a second birth. Rates varied when examined by maternal age groups. At 24 months postpartum 87.7% of early adolescents, 72.6% of middle adolescents, 79.8% of late adolescents, and 81.7% of young adults had not experienced a second birth. In order to further explore these differences according to maternal age and also examine the effects of partner social support, I will now present the results of the proportional hazard event history regression analysis for rapid repeat birth.

Proportional hazards regression analysis. Does maternal age at first birth predict risk of rapid repeat birth over the first two years postpartum, and if so are young adolescent mothers more likely than late adolescent mothers to be at risk for a rapid repeat birth? Furthermore, does the partner social support at the time of birth have an effect on this relationship? Maternal age was a significant predictor for early and middle adolescent age (see Table 8). Although young adult age was not a significant predictor, they were at lower risk for rapid repeat birth than late adolescents. This was

Table 7. Probability of Not Experiencing a Repeat Birth by Months Postpartum and Mother's age at Birth

	Maternal Age at Birth				
Months	**Total**	**Early Adolescent**	**Middle Adolescent**	**Late Adolescent**	**Young Adult**
0	1.000	1.000	1.000	1.000	1.000
3	1.000	1.000	1.000	1.000	1.000
6	1.000	1.000	1.000	1.000	1.000
9	0.999	1.000	1.000	0.998	0.999
12	0.985	0.956	0.980	0.977	0.990
15	0.944	0.944	0.925	0.927	0.957
18	0.896	0.925	0.850	0.885	0.913
21	0.836	0.909	0.772	0.832	0.855
24	0.798	0.877	0.726	0.798	0.817
N	4477	83	851	1152	2391

Note: All results were weighted using SAS statistical software.

consistent with the direction of the first hypothesis; however, the association was not statistically significant. The second hypothesis was partially supported as middle adolescent mothers had a 36% higher risk of rapid repeat birth than late adolescent mothers ($p<.01$), whereas early adolescent mothers had a 47% lower risk of rapid repeat birth than late adolescent mothers ($p<.10$). Thus, middle adolescent mothers were more

likely to experience a rapid repeat birth than late adolescent mothers; however, the youngest adolescents in the sample were much less likely to have a rapid repeat birth.

Of the demographic predictors in model 1, only the ratio of income to poverty level was a significant predictor. For each 1 point increase in the ratio of income to the poverty level the risk of rapid repeat birth was 23% lower ($p<.0001$). This effect was consistent in the significance level and coefficient throughout all four models.

Table 8. Factors Predicting Rapid Repeat Birth within Two Years Postpartum

	Model 1			Model 2		
	β	*SE* β	OR	β	*SE* β	OR
Maternal Age at Birth						
Early Adolescent	-0.64	0.36	0.53 ^	-0.63	0.42	0.53
Middle Adolescent	0.31	0.1	1.36 **	0.44	0.15	1.56 **
Late Adolescent	omitted			omitted		
Young Adult	-0.01	0.09	0.99	-0.03	0.16	0.97
Demographic Measures						
Black	-0.09	0.09	0.91	-0.10	0.09	0.91
Hispanic	0.03	0.08	0.989	0.00	0.09	1.00
White/Other	omitted			omitted		
Poverty level	-0.24	0.02	0.77 ****	-0.25	0.03	0.78 ****
Background Measures						
Educational Level of R's mother						
Less than High School	omitted			omitted		
High School Degree/GED	-0.15	0.08	0.86 ^	-0.16	0.08	0.85 ^
Some College	0.18	0.09	1.20 ^	0.16	0.10	1.18 ^
College Degree or Higher	0.03	0.12	1.03	0.01	0.12	1.01
R's age at first sex	-0.03	0.02	0.969 ^	-0.04	0.02	0.97 *
Wantedness of pregnancy/timing						
On-time or Later than desired	omitted			omitted		
Timing too Soon	-0.07	0.07	0.93	-0.05	0.07	0.97
Indifferent/Unsure	-0.21	0.29	0.81	-0.23	0.29	0.80
Pregnancy Unwanted	0.09	0.11	1.10	0.12	0.11	1.13
Age of baby's father at birth	-0.02	0.01	0.98 *	-0.02	0.01	0.98 *
Survey year 2006-08 (1=2006, 0=20	-0.05	0.06	0.96	-0.04	0.06	0.96
Current Age Measures						
Age 25-29	omitted			omitted		
Age 30-34	-0.07	0.09	0.93	-0.08	0.09	0.93
Age 35-39	-0.02	0.09	0.98	-0.02	0.09	0.98
Age 40-44	0.06	0.09	1.06	0.06	0.09	1.06
Living Arrangements Measures						
Married	0.45	0.09	1.56 ****	0.49	0.16	1.63 **
Cohabiting partner	0.21	0.10	1.24 *	0.34	0.17	1.41 *
Neither married nor cohabiting	omitted			omitted		
Interaction Measures						
Early adolescent living with a spouse				-0.31	1.16	0.73
Early adolescent cohabiting with a partner				0.80	1.22	2.23
Mid-adolescent living with a spouse				-0.49	0.23	0.61 *
Mid-adolescent cohabiting with a partner				-0.02	0.24	0.99
Young adult living with a spouse				0.09	0.19	1.10
Young adult cohabiting with a partner				-0.21	0.23	0.81

N= 4477

^ p < .10, 2-tailed test, * p<.05, 2-tailed test, ** p<.01, 2-tailed test, ***p<.001, 2-tailed test, ****p<.0001, 2-tailed test

Note: All results were weighted using SAS statistical software.

The background and family factors that were significant predictors of rapid repeat birth included the educational level of the respondent's mother at first birth, the respondent's age at first sex, and the age of the baby's father at birth. Respondents whose mothers had a high school degree/GED had a 14% lower risk of rapid repeat birth ($p<.10$), compared to not having a high school degree. Respondents whose mothers had attained some college had a 20% higher risk of rapid repeat birth ($p<.10$), compared to not having a high school degree. For each one year increase in the age at first sexual intercourse the young woman had a 3% lower risk of rapid repeat birth ($p<.10$). For each one year increase in the age of the baby's father at birth, the young woman had a 2% lower risk of rapid repeat birth ($p<.05$). The sizes and significance levels of these four predictors were consistent in both models. None of the remaining family, background, or current age factors was a significant predictor across the two models.

Of the partner social support variables, living with a married spouse and living with a cohabiting partner were significant predictors in Model 1. Mothers living with a married spouse at the time of birth had a 56% higher risk of rapid repeat birth than mothers not living with any partner at the time of birth ($p<.0001$). Mothers living with a cohabiting partner at the time of birth had a 24% higher risk of rapid repeat birth than mothers not living with a partner ($p<.05$). Both factors remained significant in Model 2.In both models, mothers living with a married or cohabiting partner had higher risk of rapid repeat birth than mothers not living with a partner at the time of birth.

Moderation analysis. In terms of the moderation model, Model 2 tested the interactions of early adolescent, middle adolescent, and young adult age and partner social support on rapid repeat birth. In this model, neither of the interactions for an early

adolescent living with a married spouse or an early adolescent living with a cohabiting partner was a significant predictor of rapid repeat birth. Middle adolescents living with a married spouse were less likely to have a rapid repeat birth. These mothers had a 39% lower risk of rapid repeat birth ($p<.05$). When interpreting the effect of marriage for middle adolescents, however, the positive effect of marriage on increasing the chance of a rapid repeat birth is offset by the negative impact of young age and the resulting effect is a 5%lower risk of rapid repeat birth (not shown in table). Middle adolescents living with a cohabiting partner were only slightly less likely to have a rapid repeat birth and this coefficient was not statistically significant. Although neither of the interactions for young adult age and living with a partner was statistically significant, mothers who cohabited had a lower risk and mothers who were married had a higher risk of rapid repeat birth.

Overall, the findings from the proportional hazards regression models examining maternal age and partner social support as predictors of rapid repeat birth demonstrated partial support for the second hypothesis (2b) for middle adolescent mothers. The first (2a) and third (2c) hypotheses, however, were not supported.

Is there a relationship between maternal age and social support at first birth and longer term outcomes such as overall educational attainment? If so, does the interaction of maternal age and social support moderate this relationship? This will be presented below in Question 3.

Predicting Educational Attainment from Maternal Age and Partner Social Support (Question 3)

Multiple regression analysis. Does maternal age at first birth predict total educational attainment, and if so are young adult mothers more likely to have higher levels of educational attainment? Furthermore, does partner social support at birth affect the relationship between maternal age and educational attainment? There is strong support for both the first and second hypotheses that maternal age is a good predictor of total educational attainment. Specifically, young adult mothers had higher educational attainment than late adolescent mothers, whereas early and middle adolescent mothers had lower educational attainment (see Table 9). Although not significant, early adolescent mothers had .38 fewer years in educational attainment than late adolescent mothers. Mothers who gave birth in middle adolescence also had .38 fewer years of educational attainment than mothers who gave birth in late adolescence ($p<.01$), whereas young adult mothers had .54 more years educational attainment than the late adolescent mothers ($p<.0001$). Hypotheses 3a and 3b are supported.

Of the demographic predictors, Hispanic race/ethnicity and the ratio of income to the poverty line were significant predictors of educational attainment. Hispanic mothers had .91 fewer years of educational attainment than mothers of White or other race/ethnicity ($p<.0001$). For every one unit increase in the ratio of income to the poverty line mothers gained an additional .43 years of education ($p<.0001$). Thus as mother's reported income increased so did their educational attainment. These predictors stayed consistent throughout both models.

Table 9. Factors Predicting Educational Attainment

	Model 1		Model 2	
	β	*SE* β	β	*SE* β
Maternal Age at Birth				
Early Adolescent	-0.38	0.30	-0.23	0.34
Middle Adolescent	-0.38	0.13 **	-0.15	0.18
Late Adolescent	omitted		omitted	
Young Adult	0.54	0.11 ****	0.40	0.18 *
Demographic Measures				
Black	0.18	0.11	0.16	0.11
Hispanic	-0.91	0.13 ****	-0.89	0.12 ****
White/Other	omitted		omitted	
Poverty level	0.43	0.03 ****	0.43	0.03 ****
Background Measures				
Educational Level of R's mother				
Less than High School	omitted		omitted	
High School Degree/GED	0.51	0.10 ****	0.50	0.10 ****
Some College	1.21	0.16 ****	1.20	0.16 ****
College Degree or Higher	1.44	0.17 ****	1.43	0.17 ****
R's age at first sex	0.18	0.02 ****	0.17	0.02 ****
Wantedness of pregnancy				
On-time or Later than desired	omitted		omitted	
Timing too Soon	0.14	0.11	0.16	0.11
Indifferent/Unsure	-0.30	0.24	-0.30	0.24
Pregnancy Unwanted	-0.01	0.17	0.01	0.17
Age of baby's father at birth	0	0.01	0.00	0.01
Survey year 2006-08 (1=2006, 0=2002)	0.17	0.09 ^	0.16	0.09 ^
Current Age Measures				
Age 25-29	omitted		omitted	
Age 30-34	0.05	0.09	0.07	0.09
Age 35-39	0.10	0.12	0.11	0.12
Age 40-44	-0.14	0.11	-0.13	0.11
Living Arrangements Measures				
Married	0.00	0.11	-0.02	0.16
Cohabiting partner	-0.25	0.13 ^	-0.15	0.24
Neither married nor cohabiting	omitted		omitted	
Interaction Measures				
Early adolescent living with a spouse			-1.52	0.46 **
Early adolescent cohabiting with a partner			-0.19	0.59
Mid-adolescent living with a spouse			-0.67	0.30 *
Mid-adolescent cohabiting with a partner			-0.37	0.35
Young adult living with a spouse			0.26	0.24
Young adult cohabiting with a partner			0.04	0.34

N= 4477

^ p < .10, 2-tailed test, * p<.05, 2-tailed test, ** p<.01, 2-tailed test, ***p<.001, 2-tailed test, ****p<.0001, 2-tailed test

Note: Weighted analysis was performed with SAS statistical software using PROC SURVEYREG to account for the complex survey design of the NSFG.

Of the family and background factors, the educational level of the respondent's mother, the respondent's age at first sexual intercourse, and the respondent's survey year were all significant predictors of educational attainment. As respondent's mother's educational attainment increased, so did the respondent's educational attainment. Respondents whose mother completed high school/GED, some college, or a college degree or higher had .51 (p<.0001), 1.21 (p<.0001), and 1.44 (p<.0001) more years of schooling, respectively, than those who had less than a high school degree. For each one year increase in age at first sexual intercourse, a young woman completed .18 more years of schooling (p<.0001). Respondents from the 2006-08 data collection had an additional .17 years of educational attainment than those from the 2002 survey year (p<.10). These factors all stayed consistently significant throughout both models. The remaining family and background factors, including all current age dummy variables, were not significant predictors in this model.

Of the partner social support factors, living with a cohabiting partner was a significant predictor of educational attainment at the trend level in model 1. Mothers who lived with a cohabiting partner at the time of their first birth completed .25 fewer years of education compared to mothers who did not live with any partner at the time of birth (p<.10). Living with a married spouse at the time of birth was not a significant predictor of educational attainment in this model.

Moderation analysis. For model 2, I entered interaction terms of maternal age and partner social support into the model in order to test Hypothesis 3c. Interactions for early adolescent, middle adolescent, and young adult age and partner living arrangements were entered into Model 2. First looking at the interactions of early adolescent age and

partner social support, living with a married spouse as an early adolescent was a significant predictor of educational attainment. Early adolescent mothers living with a married spouse at the time of birth had 1.52 fewer years of educational attainment than mothers who were not living with a partner ($p<.01$). Adding the interaction to the coefficient for early adolescence, it is even more disadvantageous to later educational attainment for early adolescents to be married (sum of coefficients= -1.75). Living with a cohabiting partner as an adolescent was not a significant predictor in this second model; even so, the coefficient was also negative.

Living with a married spouse at the time of birth in middle adolescence was also a significant predictor. Mothers who first gave birth in middle adolescence and were living with a married spouse had .67 fewer years of educational attainment than middle adolescents not living with a partner ($p<.05$). Adding the interaction to the coefficient for middle adolescence, it is also more disadvantageous to later educational attainment for middle adolescents to be married (sum of coefficients = -.82). Living with a cohabiting partner in middle adolescence, although not significant, was also associated with lower educational attainment in this model.

Living with a married spouse as a young adult at the time of birth was not a significant predictor of educational attainment. However, married young adult mothers had higher educational attainment than those who were not living with a partner. Living with a cohabiting partner as a young adult mother, although not significant, was also associated with higher educational attainment in this model.

Overall in looking at the interactions of maternal age and partner social support in Model 2, there is strong evidence for Hypothesis 3c. Being married was associated with

slightly lower educational attainment, and for early and middle adolescent mothers this negative effect was greatly amplified. Although not significant, the opposite was true for married young adult mothers, for whom marriage was actually beneficial for educational attainment. Although the interactions for cohabitation and maternal age were not significant across the models, the same pattern of effect holds true. Cohabitation was associated with slightly lower educational attainment for early and middle adolescents but with slightly higher educational attainment for young adult mothers. Across both models and adolescent age groups, it was marriage that had the strongest association with the mother's educational attainment.

Summary of Results of Questions 1 through 3 for the Sample of Adolescent and Young Adult Mothers

The findings from Questions 1 through 3 show that, overall, although there is some relationship between maternal age and postpartum outcomes, for this sample of mothers partner social support and the interaction of maternal age and partner social support were often stronger predictors of these outcomes. The societal context of a nonmarital birth has changed greatly over the past few decades, during which these mothers were first giving birth. Would partner support remain important for more recent adolescent mothers? Additionally, I was not able to take into account parental social support at birth, which may also influence the relationship between maternal age and health and well-being outcomes for adolescent mothers and their children. Therefore, I wanted to examine a sample of recent mothers who were currently adolescent mothers at the time of the survey. In this sample, although smaller, I was able to explore outcomes more proximal to the time of the birth, as well as include a greater variety of information

on living arrangements and social support. For this sample, late adolescent mothers continued to be the reference group for consistency and comparability. They were compared to early adolescent mothers in accordance with the distribution of the sample. With a smaller sample size, there were too few of the earliest adolescent mothers for analysis (age 10-14), so, for this sample, early adolescence at the time of first birth is (13-16) was compared to late adolescence (17-19). Does the relationship between maternal age and outcomes and the social support of living arrangements look different for a sample of current adolescent mothers? In addition, what is the effect on these relationships of the addition of parental social support? These questions will be examined in the following chapter of results for the current adolescent mother sample.

Chapter 5: Results- Current Adolescent Mothers

This chapter presents the findings from the analysis of the sample of current adolescent mothers that address research questions 4 through 6 and the associated hypotheses. First, this chapter will present the descriptive findings for current adolescent mothers in the sample, including all demographic, background, and dependent variables. Furthermore, significant mean differences between early and late adolescent mothers for all of the study variables will be presented. Next, this chapter will present the findings regarding the current sources of social support for adolescent mothers. Finally, this chapter will present findings from the logistic, proportional hazards, and multiple regression analyses examining the associations between maternal age and health and well-being outcomes. For the adolescent mother sample, Models 4 through 7 tested maternal age as a predictor of initiation of prenatal care, birth weight, post-partum sexual risk taking behavior, and duration of breastfeeding, respectively, as well as examined the influence of the living arrangements of the mother at the time of birth on these outcomes.

Descriptive Analysis

Current Adolescent Mothers. The smaller more focused sample for this study consisted of 215 adolescent mothers who were ages 15-19 at the time of survey and reported having at least one child. Table 10 summarizes the characteristics of the mothers included in this sample, including the demographic, background, living arrangements, and outcome measures. Of these young women, 41.81% reported being in early adolescence (ages 13-16) when their first child was born. Whereas it would be expected that the number of adolescent mothers who gave birth during early adolescence would be

Table 10. Current Adolescent Mothers: Means and Standard Deviations of the Study Variables by Age

		Total Sample		Early Adolescent (13-16 at first birth)		Late Adolescent (17-19 at first birth)	
Variables	Range	Mean	SD	Mean	SD	Mean	SD
Demographic Measures							
Hispanic	0-1	0.33	0.47	0.32	0.46	0.34	0.48
Black	0-1	0.20	0.40	0.22	0.42	0.17	0.38
White/other	0-1	0.45	0.49	0.44	0.49	0.47	50.00
Poverty level	.08-5	1.29	1.20	1.34	1.28	1.35	1.14
Background Measures							
Educational Level of R's mother							
Less than high school	0-1	0.39	0.49	0.47	0.49 ^	0.32	0.48
High school degree/GED	0-1	0.35	0.48	0.32	0.46	0.38	0.49
Some college	0-1	0.20	0.40	0.30	0.40	0.19	0.40
College degree or higher	0-1	0.06	0.25	0.01	0.08 **	0.11	0.31
R's age at first sex	11-19	14.77	1.42	14.02	1.18 ****	15.32	1.34
Wantedness of pregnancy							
On time or later than desired	0-1	0.11	0.32	0.09	0.28	0.12	0.34
Too soon	0-1	0.72	0.45	0.76	0.42	0.71	0.46
Unwanted	0-1	0.16	0.37	0.15	0.35	0.17	0.38
Age of baby's father at birth	14-36	19.71	2.88	18.98	2.49 **	20.23	2.94
Survey year 2006-08	0-1	0.45	0.49	0.35	0.47	0.52	0.50
Living Arrangements Measures							
One parent	0-1	0.17	0.38	0.25	0.43 **	0.11	0.32
Two parents	0-1	0.22	0.42	0.24	0.43	0.21	0.41
Partner	0-1	0.44	0.49	0.28	0.45 ****	0.55	0.50
Neither parent or partner	0-1	0.15	0.35	0.20	0.40 *	0.10	0.31
Outcome Measures							
Initiation of prenatal care	2-39	11.75	8.78	10.62	6.89	12.56	9.89
Infant birthweight (oz.)	26-165	113.19	20.14	110.41	22.34 ^	115.18	18.19
Sexual Risk Taking	0-3	1.39	0.84	1.23	0.85 *	1.50	0.82
Weeks breastfeeding[a]	0-53	7.94	13.95	7.65	14.73	8.15	13.40
N (weighted frequency)		215		91 (41.81)		124 (58.19)	

[a]Breastfeeding variable has an N of 202

T-test for difference in means between Early and Late Adolescent groups is significant at ^ p<.10,* p<.05, ** p<.01, *** p<.001, **** p<.0001

Note: All values are weighted to provide national estimates among girls ages 15-19, for 2002 and between 2006-08.

smaller than in later adolescence, it is surprising that the proportion was this high. However, this was most likely due to the current ages of the women sampled being between 15-19, thus giving slightly less of a chance for women to be aged 17-19 at the time of their first birth in this sample. Generally, a greater proportion of births occur in late compared to early adolescence.

On average the respondent's total income was 1.29 times the poverty line. Overall, 20% of the sample identified as Black or African American and 33% as Hispanic, whereas slightly less than half identified as White or Other. The educational level of the respondent's mother was slightly less than a high school degree for 39% of the sample, high school degree/GED for 35%, some college for 20%, and a college degree or higher for the remainder. The respondent's mean age at first sexual intercourse since menarche was 14.77 years. Respondents indicated that the wantedness or timing of the pregnancy resulting in their first birth came on time or later than desired for 11% of the sample. Seventy-two percent of the mothers indicated that the timing was too soon, and 16% indicated that the pregnancy/timing was unwanted. The average age of the baby's father at time of birth, as reported by the respondent, was 19.71 years. Forty-five percent of the sample came from the 2006-08 wave of NSFG data collection.

In terms of living arrangements, 17% of the adolescent mothers were living with one parent, 22% with two parents, 44% with a spouse or cohabiting partner, and the remainder (17%) did not report living with a parent or partner. Prenatal care was initiated between the 11^{th} and 12^{th} week of pregnancy for this first birth. The average birth weight was 113.19 ounces, or seven pounds and seven ounces. Over the last 12 months,

respondents reported engaging in more than one sexual risk-taking behavior (1.39). The adolescent mothers breastfed their infants an average of 7.94 weeks during the first year.

Significant differences existed between early and late adolescent mothers on a number of variables (see Table 10). Compared to mothers who first gave birth in late adolescence, those who were in early adolescence at the time of first birth reported a significantly lower proportion whose own mother attained a college degree or higher, a younger age at first sexual intercourse, a younger age of the baby's father, and a lower degree of sexual risk-taking behaviors. At the trend level, they reported a higher proportion whose own mother had less than a high school degree and lower total birth weight of their infants. Early adolescent mothers also showed significant differences in their living arrangements as a higher proportion reported living with one parent (25%) or apart from a parent or partner (20%), and a lower proportion reported living with a partner (28%) than late adolescent mothers. The proportion who reported living with two parents did not differ significantly between early and late adolescent mothers.

Assessing Sources of Support for Current Teen Mothers (Question 4)

What are the sources of social support as indicated by the living arrangements at the time of birth of a sample of current adolescent mothers? Furthermore, is there variation in these living arrangements between those who gave birth as an early or late adolescent? Are younger adolescents more likely to live with a parent and older adolescents more likely to live with a partner? Overall, 39% of the teen mothers lived with a parent and 44% lived with a partner, whereas the remainder did not live with either a parent or a partner at the time of their first birth (see Table 10). Seventeen percent of the adolescent mothers lived with one parent, whether biological, adoptive or a

stepparent, whereas 22% lived with two parents, whether they were both biological, adoptive, or a combination of biological, stepparent, and adoptive. Of those living with a partner, 20% were married, whereas 80% lived with a cohabiting partner (not shown).

Living arrangements varied significantly by the adolescent's age at the time of birth. Those in late adolescence at the time of birth were more likely to live with a partner (55%), than those in early adolescence (28%). Among early adolescents compared to late adolescents, there was a significantly higher proportion who lived with only one parent (25% compared to 11%) and a higher proportion who did not live with either a parent or a partner (20% compared to 10%). There was no significant difference between the two groups in the proportion of mothers living with two parents. The first hypothesis was supported in that the largest proportion of early adolescent mothers was living with one or two parents (49%), and the smallest proportion of early adolescent mothers was living apart from a parent or partner (20%). The second hypothesis was also supported in that the largest proportion of late adolescent mothers was living with a partner (55%), and the smallest proportion of late adolescent mothers was living apart from a parent or partner (10%).

Predicting Initiation of Prenatal Care, Birth weight, Sexual Risk-Taking Behavior, and Duration of Breastfeeding from Maternal Age (Question 5) and Testing the Moderation of Living Arrangements (Question 6)

Is there an association between maternal age at first birth and the prenatal, birth, and postpartum outcomes of initiation of prenatal care, birth weight, sexual risk-taking behavior, and duration of breastfeeding for a sample of current adolescent mothers? If so, are these outcomes poorer for younger adolescents? Furthermore, what is the effect of

supportive living arrangements on the relationship between maternal age and these outcomes? The following sections report the results, respectively, for each of the analyses predicting these outcomes by maternal age, including all background, control, and living arrangements measures in each model as well as testing for the moderation of living arrangements on these relationships. In order to test for the moderation of living arrangements, I entered interaction terms for maternal age and living arrangements into the second step of each of the following analyses. These interaction terms consisted of early adolescents living with one parent, early adolescents living with two parents, and early adolescents living with a partner. Early adolescents who were living apart from a parent or partner served as the reference category.

Initiation of prenatal care. I analyzed initiation of prenatal care using an ordinary least squares regression analysis of weeks to initiation of such care, with a larger number of weeks indicating later initiation of prenatal care. Early adolescent mothers initiated prenatal care earlier than late adolescent mothers; however this finding was not significant (see Table 11). Holding all other factors constant, early adolescent mothers initiated prenatal care 2.37 weeks sooner than late adolescent mothers. There were four predictors in this model that were significant, and these were Black and Hispanic race/ethnicity, too soon pregnancy timing, and living with two parents at the time of birth. Holding all other factors constant, Hispanic mothers began prenatal care 5.02 weeks later than mothers of White or other race/ethnicity ($p<.01$), and mothers of Black or African American race/ethnicity began prenatal care 2.34 weeks later ($p<.05$). Mothers who reported that their pregnancy timing was too soon began prenatal care 3.41 weeks

Table 11. Factors Predicting Initiation of Prenatal Care

	Model 1		Model 2	
	β	*SE* β	β	*SE* β
Maternal Age at Birth				
Early Adolescent	-2.37	1.62	3.71	2.4
Late Adolescent	omitted		omitted	
Demographic Measures				
Black	2.34	1.46 *	3.16	1.42 *
Hispanic	5.02	1.84 **	5.57	2.03 **
White/Other	omitted		omitted	
Poverty level	0.32	0.44	0.62	0.41
Background Measures				
Educational Level of R's mother				
Less than high school	omitted		omitted	
High school degree/GED	2.6	3.41	2.49	3.33
Some college	2.18	1.72	1.79	1.59
College degree or higher	2.45	3.46	2.23	3.43
R's age at first sex	-0.16	0.42	-0.09	0.43
Wantedness of pregnancy/timing				
On time or later than desired	omitted		omitted	
Too soon	3.41	1.63 *	3.21	1.73 ^
Unwanted	1.85	2.00	1.34	1.95
Age of baby's father at birth	-0.51	0.41	-0.45	0.39
Survey year 2006-08 (1=2006, 0=2002)	1.12	1.51	1.24	1.49
Living Arrangements Measures				
One Parent	0.01	2.16	1.03	2.21
Two Parents	3.75	1.74 *	7.73	2.05 ***
Spouse or Cohabiting Partner	2.18	1.76	6.49	1.86 ***
Neither Parent nor Partner	omitted		omitted	
Interaction Measures				
Early adolescent living with 1 parent			-2.06	2.79
Early adolescent living with 2 parents			-7.20	3.23 *
Early adolescent living with a partner			-9.40	2.91 **
Early adolescent not living with parent/partner			omitted	

N= 215

^ p < .10, 2-tailed test, * p<.05, 2-tailed test, ** p<.01, 2-tailed test, ***p<.001, 2-tailed test, ****p<.0001, 2-tailed test

Note: Weighted analysis was performed with SAS statistical software using PROC SURVEYREG to account for the complex survey design of the NSFG.

later compared to mothers with “on time” pregnancies ($p<.05$). Adolescent mothers living with two parents began prenatal care 3.75 weeks later than mothers who were not living with any parent or partner ($p<.05$). The remaining background, control, and living arrangements were not significant predictors in this model. These results did not provide support for the first hypothesis (5a) for research question 5 in either significance level or direction. The interaction for the moderation of maternal age and living arrangements on the relationship between maternal age and the initiation of prenatal care was then tested to examine research question 6.

In the second model of the regression analysis predicting initiation of prenatal care I entered terms for the interaction of maternal age and living arrangements. Of the interaction terms entered into the model, two were significant predictors of initiation of prenatal care. Early adolescent mothers who lived with two parents initiated prenatal care 7.2 weeks earlier than those who were living apart from a parent or partner ($p<.05$). Early adolescent mothers who lived with a spouse or cohabiting partner initiated prenatal care 9.4 weeks earlier than those who were living apart from a parent or partner ($p<.01$). Living with one parent during early adolescence was not a significant predictor of initiation of prenatal care in this model. The results provide support for the first hypothesis associated with research question 6 in that early adolescent mothers living with two parents initiated prenatal care earlier.

After the interaction terms for early adolescent age and living arrangements were entered in the model, the coefficient for early adolescents changed from model 1 such that younger mothers began prenatal care 3.71 weeks later than older mothers; however, this finding was not statistically significant. Among the demographic and background

predictors, Hispanic and Black race/ethnicity and too soon pregnancy timing continued to be significant predictors of later initiation of prenatal care. The remaining background and control factors were not significant predictors in this model.

The living arrangements that predicted initiation of prenatal care were living with two parents or living with a spouse or cohabiting partner. Early adolescent mothers living with two parents initiated prenatal care 7.73 weeks later than mothers living apart from a parent or partner ($p<.001$), and early adolescent mothers living with a spouse or cohabiting partner initiated prenatal care 6.49 weeks later than mothers living apart from a parent or partner ($p<.001$). Living with one parent was not a significant predictor in this model. When taken together with the interaction effect for early adolescents it is much more beneficial to live with two parents or a partner than to live independently. Being an early adolescent offsets the positive effect of living with two parents or a partner on delaying the initiation of prenatal care. This beneficial effect is the largest for married or cohabiting early adolescent mothers however, who show the earliest initiation of prenatal care (sum of coefficients = -2.91 weeks).

Infant birth weight. I analyzed the birth weight of the mother's first child in total ounces using an ordinary least squares regression analysis of infant birth weight in total ounces with a larger number of ounces indicating higher infant birth weight. Younger mothers gave birth to babies with a slightly lower birth weight; however, this finding was not statistically significant (see Table 12). Early adolescent mothers gave birth to babies with a birth weight .37 ounces lower than those of late adolescent mothers, holding all other factors constant. Of the demographic measures, Black race/ethnicity and poverty level incomes were both significant predictors in this model. Holding all other factors

Table 12. Factors Predicting Infant Birth Weight

	Model 1		Model 2	
	β	*SE* β	β	*SE* β
Maternal Age at Birth				
Early Adolescent	-0.37	4.4	-9.13	5.84
Late Adolescent	omitted		omitted	
Demographic Measures				
Black	-11.96	4.15 **	-11.97	4.07 **
Hispanic	-0.48	3.36	-0.60	3.36
White/Other	omitted		omitted	
Poverty level	2.15	1.14 ^	2.01	1.11 ^
Background Measures				
Educational Level of R's mother				
Less than high school	omitted		omitted	
High school degree/GED	3.21	3.96	2.61	4.26
Some college	0.55	2.91	0.12	2.98
College degree or higher	10.89	5.95 ^	11.69	6.02 ^
R's age at first sex	0.91	1.09	0.89	1.08
Wantedness of pregnancy/timing				
On time or later than desired	omitted		omitted	
Too soon	-10.53	3.77 **	-9.92	3.73 **
Unwanted	-9.22	4.19 *	-8.19	4.31 ^
Age of baby's father at birth	0.83	0.40 *	0.85	0.43 ^
Survey year 2006-08 (1=2006, 0=2002)	0.93	3.58	0.92	3.59
Living Arrangements Measures				
One Parent	-2.39	5.11	-8.01	6.94
Two Parents	0.61	4.65	-7.13	6.48
Spouse or Cohabiting Partner	-1.12	4.06	-5.98	5.26
Neither Parent nor Partner	omitted		omitted	
Interaction Measures				
Early adolescent living with 1 parent			9.87	10.64
Early adolescent living with 2 parents			14.35	9.83
Early adolescent living with a partner			8.37	9.15
Early adolescent not living with parent/partner			omitted	

N= 215

^ p < .10, 2-tailed test, * p<.05, 2-tailed test, ** p<.01, 2-tailed test, ***p<.001, 2-tailed test, ****p<.0001, 2-tailed test

Note: Weighted analysis was performed with SAS statistical software using PROC SURVEYREG to account for the complex survey design of the NSFG.

constant, the babies of Black or African American mothers had a birth weight 11.96 ounces lower than the babies of White or other race/ethnicity mothers ($p<.01$). For each one unit increase in the ratio of income to the poverty level, a young mother's baby weighed 2.15 additional ounces ($p<.10$).

Of the background factors, mothers' college education, too soon timing, unwanted pregnancy, and the age of the baby's father at birth were all significant predictors of infant birth weight in this model. Respondents whose mother had a college degree or higher gave birth to infants with 10.89 ounces higher birth weight ($p<.10$). Mothers who indicated that their pregnancy timing was too soon gave birth to infants with 10.53 ounces lower birth weight ($p<.01$). Mothers who reported that their pregnancy was unwanted gave birth to infants with 9.22 ounces lower birth weight ($p<.05$). Finally, for each one year increase in the age of the baby's father at birth, the baby's birth weight was .83 ounces higher ($p<.05$). None of the remaining background, control, and living arrangements variables was a significant predictor in this model. Although the second hypothesis for research question 5 was supported in the direction of the effect of early adolescent age on infant birth weight, this finding was not significant. However, might the interaction of maternal age and living arrangements have an effect on this relationship? The interaction for the moderation of maternal age and living arrangements on the relationship between maternal age and infant birth weight was tested next in association with research question 6.

In the second model of the regression analysis predicting infant birth weight I entered the interaction terms for maternal age and living arrangements. Of the interaction terms entered into the model, none was a significant predictor of infant birth weight.

Although the change in the regression coefficient indicated that younger mothers gave birth to babies with even lower birth weight in this model (*B*= -9.13), this finding was still not statistically significant. Therefore these results do not provide support for the second moderation hypothesis associated with research question 6. All significant demographic and background predictors from model 1 stayed consistent in the interaction model.

Sexual risk-taking behavior. I analyzed the sexual risk-taking behavior of the adolescent mother in the last 12 months using an ordinal logistic regression analysis. This analysis modeled the adolescent mother's risk of being in the highest category (3) of the index of sexual risk-taking behavior. The sexual risk index was a composite of three sexual risk-taking behaviors in the past 12 months regarding the number of sexual partners, use of contraception over the past 12 months, and use of contraception at last sex in the past 12 months. Although maternal age was a significant predictor of engaging in higher sexual risk-taking behavior, it was not in the direction hypothesized. Early adolescent mothers' odds of high sexual risk-taking behavior were 75% lower than those of late adolescent mothers, holding all other factors constant ($p<.05$) (see Table 13). Therefore, this does not lend support to the third hypothesis (5c) for research question 5.

Of the demographic and background measures, college education of the respondent's mother and the respondent's age at first sexual intercourse were significant predictors of high sexual risk-taking behavior. For respondents whose mother attained a college degree or higher, the odds of high sexual risk taking behavior were 76% lower ($p<.10$). This finding was only significant at the trend level, however. For every one year increase in the respondent's age at first sexual intercourse her odds of being in the high

Table 13. Logistic Regression Predicting Sexual Risk Taking Behavior

	Model 1			Model 2		
	β	*SE* β	OR	β	*SE* β	OR
Maternal Age at Birth						
Early Adolescent	-1.39	0.57	0.25 *	-0.79	0.72	0.45
Late Adolescent	omitted			omitted		
Demographic Measures						
Black	-0.32	0.39	0.72	-0.31	0.39	0.73
Hispanic	0.09	0.37	1.13	0.08	0.38	1.08
White/Other	omitted			omitted		
Poverty level	0.10	0.12	1.10	0.10	0.11	1.10
Background Measures						
Educational Level of R's mother						
Less than high school degree	omitted			omitted		
High school degree/GED	0.09	0.32	1.09	-0.02	0.37	0.98
Some college	-0.44	0.44	0.64	-0.43	0.45	0.64
College degree or higher	-1.44	0.81	0.24 ^	-1.44	0.70	0.23 *
R's age at first sex	-0.35	0.13	0.70 **	-0.35	0.12	0.67 **
Wantedness of pregnancy/timing						
On time or later than desired	omitted			omitted		
Too soon	-0.65	0.45	0.52	-0.78	0.43	0.45 ^
Unwanted	-0.31	0.50	0.73	-0.50	0.49	0.60
Age of baby's father at birth	0.01	0.05	1.01	-0.01	0.05	0.99
Survey year 2006-08 (1=2006, 0=2002)	-0.21	0.27	0.81	-0.35	0.27	0.70 ^
Living Arrangements Measures						
One Parent	-0.76	0.49	0.47	0.01	0.71	1.01
Two Parents	-0.86	0.47	0.42 ^	-0.93	0.51	0.39 ^
Spouse or Cohabiting Partner	-0.67	0.41	0.51 ^	-0.15	0.52	0.85
Neither Parent nor Partner	omitted			omitted		
Interaction Measures						
Early adolescent living with 1 parent				-1.34	0.93	0.26
Early adolescent living with 2 parents				0.39	0.81	1.47
Early adolescent living with a partner				-1.21	1.14	0.29
Early adolescent not living with parent/partner				omitted		

N= 215

^ p < .10, 2-tailed test, * p<.05, 2-tailed test, ** p<.01, 2-tailed test, ***p<.001, 2-tailed test, ****p<.0001, 2-tailed test

Note: Weighted analysis was performed with SAS statistical software using PROC SURVEYLOGISTIC to account for the complex survey design of the NSFG.

sexual risk-taking category were 30% lower ($p<.01$). No other demographic or background factors were significant predictors of high sexual risk-taking behavior.

Of the living arrangements, living with two parents at the time of birth and living with a partner were both significant predictors of sexual risk-taking behavior at the trend level. Adolescent mothers who lived with two parents had 58% lower odds of being in the high sexual risk-taking category than adolescent mothers who were not living with any parent or partner ($p<.10$). Adolescent mothers who lived with a spouse or cohabiting partner had 49% lower odds of being in the high sexual risk-taking category ($p<.10$). Living with one parent was not a significant predictor in this model. Although maternal age was a significant predictor in this model, the direction of the effect was not consistent with the hypothesis. However, will the interaction of maternal age and living arrangements have an effect on this relationship? This will be examined next in association with research question 6.

In the second model of the ordinal logistic regression analysis predicting sexual risk-taking behavior I entered in the interaction terms for maternal age and living arrangements. The third hypothesis associated with research question 6 for the moderation of maternal age and living arrangements was not supported, in that none of the interaction terms was a significant predictor of sexual risk-taking behavior. Additionally, in this model, after entering the interaction terms, maternal age was no longer a significant predictor of sexual risk-taking behavior. Although it was no longer significant, the results indicated that the directionality remained the same in that early adolescent mothers had lower odds of being in the high sexual-risk taking category than late adolescent mothers.

Maternal college degree and age at first sexual intercourse continued to be significantly associated with lower odds of high sexual risk taking. In addition, too soon pregnancy timing and survey year were also associated with lower odds of high sexual risk taking at the trend level ($p<.10$). Living with two parents continued to be a significant predictor in this model. Adolescent mothers living with two parents had 61% lower odds of being high in sexual risk-taking behavior compared to mothers who did not live with any parent or partner ($p<.05$). Living with a spouse or cohabiting partner was no longer a significant predictor in this model.

Breastfeeding during the first year. I analyzed the hazard of breastfeeding cessation during the first year postpartum using a life table analysis and proportional hazards event history regression analysis. The results of the life table analysis showed that overall only 36.3% of adolescent mothers were still breastfeeding after four weeks (See Table 14). By about 6 months postpartum only 11.5% of the adolescent sample was still breastfeeding. At the end of the first year 6% of adolescent mothers were still breastfeeding their infants. When comparing early and late adolescent mothers, the early adolescent mothers drop off at a faster rate for the first seven months, and then for the remainder of the first year have slightly higher percentages at each time point who remained breastfeeding than late adolescents. Is there a relationship between breastfeeding duration and maternal age after demographic and background factors are controlled? I will evaluate the hypotheses in a multivariate framework.

Table 14. Probability of Breastfeeding by Weeks During First Year and Mother's Age at Birth

	Maternal Age at Birth		
Weeks	**Total**	**Early Adolescent**	**Late Adolescent**
0	1.000	1.000	1.000
4	0.363	0.292	0.413
8	0.291	0.236	0.329
12	0.271	0.220	0.306
16	0.217	0.189	0.237
20	0.143	0.125	0.156
24	0.115	0.125	0.107
28	0.096	0.095	0.097
32	0.090	0.095	0.084
36	0.087	0.090	0.084
40	0.068	0.077	0.060
44	0.068	0.077	0.060
48	0.068	0.077	0.060
52	0.060	0.061	0.060
N	202	86	116

Note: All results were weighted using SAS statistical software.

The fourth hypothesis (5d) regarding the main effect of early adolescent age was not supported as early adolescent age was not a significant predictor of risk of breastfeeding cessation during the first year. However, although it was not significant, the results indicated that early adolescents had a higher risk of breastfeeding cessation during the first year than older adolescent mothers, which was consistent with the hypothesized direction of the effect (see Table 15).

Of the demographic and background predictors Hispanic race/ethnicity and maternal educational attainment were strong predictors of the risk of breastfeeding cessation. For mothers of Hispanic race/ethnicity the risk of breastfeeding cessation over the first year was 61% lower than that of mothers of White or other race/ethnicity ($p<.0001$). Respondents whose mothers completed high school/GED had a 32% lower

Table 15. Factors Predicting Risk of Breastfeeding Cessation over First Year

	Model 1			Model 2		
	β	*SE* β	OR	β	*SE* β	OR
Maternal Age at Birth						
Early Adolescent	0.14	0.20	1.15	0.11	0.39	1.11
Late Adolescent	omitted			omitted		
Demographic Measures						
Black	-0.33	0.23	0.71	-0.31	0.23	0.73
Hispanic	-0.92	0.19	0.39 ****	-0.94	0.19	0.39 ****
White/Other	omitted			omitted		
Poverty level	-0.03	0.07	0.96	-0.04	0.07	0.96
Background Measures						
Educational Level of R's mother						
Less than high school	omitted			omitted		
High school degree/GED	-0.37	0.18	0.68 *	-0.35	0.19	0.70 ^
Some college	-0.53	0.23	0.58 *	-0.48	0.24	0.61 *
College degree or higher	-0.26	0.34	0.76	-0.27	0.34	0.76
R's age at first sex	0.05	0.06	1.05	0.05	0.06	1.05
Wantedness of pregnancy						
On time or later than desired	omitted			omitted		
Too soon	-0.11	0.26	0.89	-0.13	0.26	0.87
Unwanted	0.18	0.31	1.19	0.16	0.31	1.17
Age of baby's father at birth	-0.03	0.03	0.97	-0.04	0.03	0.96
Survey year 2006-08 (1=2006, 0=2002)	0.20	0.17	1.22	0.16	0.17	1.18
Living Arrangements Measures						
One Parent	-0.13	0.26	0.87	0.17	0.43	1.19
Two Parents	-0.07	0.25	0.93	-0.05	0.37	0.94
Spouse or Cohabiting Partner	-0.29	0.23	0.75	-0.34	0.33	0.71
Neither Parent nor Partner	omitted			omitted		
Interaction Measures						
Early adolescent living with 1 parent				-0.46	0.57	0.63
Early adolescent living with 2 parents				-0.02	0.51	0.97
Early adolescent living with a partner				0.25	0.46	1.29
Early adolescent not living with parent/partner				omitted		

N= 202

^ p < .10, 2-tailed test, * p<.05, 2-tailed test, ** p<.01, 2-tailed test, ***p<.001, 2-tailed test, ****p<.0001, 2-tailed test

Note: All results were weighted using SAS statistical software.

risk of breastfeeding cessation during the first year than those whose mothers did not complete high school ($p<.05$). Respondents whose mothers completed some college had a 42% lower risk of breastfeeding cessation ($p<.05$). The remaining demographic and background factors were not significant predictors in the model. None of the living arrangements was a significant predictor in the model. Model 2 incorporated interaction terms for maternal age and living arrangements to examine their effect on the possible relationship between maternal age and breastfeeding duration. These are examined next in association with research question 6.

In the second model of the proportional hazards regression analysis I entered the interaction terms for maternal age and living arrangements. The interaction terms were not significant predictors in the model; thus the fourth hypothesis (6d) for moderation was not supported. Maternal age was still not significant in this model; however, it remained stable and continued to indicate that younger mothers had an increased risk of breastfeeding cessation during the first year compared to late adolescent mothers. Hispanic race/ethnicity and maternal high school degree and some college attainment continued to be significant predictors in this model. The living arrangement measures were not significant predictors of breastfeeding duration over the first year.

Summary of Results from Research Question 5 and 6 of the Sample of Current Adolescent Mothers

Overall, considering the results from research questions 5 and 6 examining a sample of current adolescent mothers, a low level of support was found for the hypotheses associated with these research questions. First, hypotheses associated with research question 5 were not supported at all as early adolescent age was not significantly

associated with the outcomes of initiation of prenatal care, infant birth weight, or duration of breastfeeding as measured in this study. Although early adolescent age was significantly associated with sexual risk taking behavior in the last 12 months, the sign of the association predicted lower rather than the hypothesized higher risk.

The hypotheses associated with research question 6 regarding the moderation of the interaction terms for maternal age and living arrangements were not well supported. The interaction of maternal age and living arrangements was not significantly associated with infant birth weight, sexual risk taking behavior, or duration of breastfeeding as measured in this study. The initiation of prenatal care, however, was significantly predicted by the interaction of maternal age and living arrangements, thus providing support for hypothesis 6a. Overall, results indicated that for this sample maternal age was not a strong predictor of health and well-being outcomes for adolescent mothers and their children. Rather, living arrangements and the interaction of maternal age and living arrangements were stronger predictors of initiation of prenatal care, for this sample, over maternal age alone.

Summary of All Results

A summary of the research questions, test of hypotheses, and results presented in chapters 4 and 5 can be seen in the beginning of the following chapter in Table 16. A discussion of the findings is also presented in Chapter 6.

Chapter 6: Discussion

This chapter integrates the findings of the study and discusses them in relation to the study hypotheses (see Table 16 for a summary of the study hypotheses and results). First, this chapter interprets the findings and discusses the relative importance of maternal age and the social support of living arrangements for selected maternal and child outcomes. Next, this chapter notes the limitations to this study and the interpretation of these findings. Additionally, the implications for policy and programs are discussed. Finally, directions for future research are suggested.

Summary and Interpretation of Findings

This study examined the association between maternal age and health and well-being outcomes for adolescent mothers and their children. Additionally, this study sought to examine the effect of the social support of the mother's living arrangements at birth on this association. This was first examined for a larger sample of 4,477 women who first gave birth as an adolescent or young adult and were adults age 25-44 at the time of survey. Next, this study took a more detailed look at the living arrangements of a focused sample of 215 young mothers who were currently adolescents (age 15-19) at the time of survey.

Overall, several of the findings of this study support previous research on the relationship between young maternal age and risk of poorer social, educational, and health outcomes both for mother and child. This support was stronger for the sample of adolescent and young adult mothers, potentially due to the larger sample size. Secondly, the findings of this study both support and extend previous research on the association of

Table 16

Summary of Results

Hypothesis	*Results*
Questions 1-3 address the larger young adult and adolescent mother sample	
1) What is the relationship between maternal age and duration of breastfeeding? Is this relationship moderated by partner social support?	
a) Women who first gave birth as a young adult will breastfeed significantly longer during the infant's first year than women who first gave birth as a late adolescent.	a) Not Supported. Young adult age was not significantly associated with duration of breastfeeding in this study.
b) Young adolescent mothers will breastfeed for a shorter duration during the infant's first year than late adolescent mothers.	b) Not supported. Early and middle adolescent ages were neither significantly associated with breastfeeding duration in this study, nor in the predicted direction.
c) Partner social support will significantly moderate this association for young adolescent mothers such that those residing with a partner or spouse will have longer duration of breastfeeding.	c) Supported. Cohabiting middle adolescent mothers had a 33% lower risk of stopping breastfeeding. Married early and middle adolescent mothers, although not significant, showed a 93% and 22% lower risk of breastfeeding cessation.
2) What is the relationship between maternal age and rapid repeat birth? Is this relationship moderated by partner social support?	
a) Women who first gave birth as a young adult will be less likely than late adolescent mothers to have a rapid repeat birth.	a) Not supported. Although not statistically significant, young adult mothers had a slightly lower risk of rapid repeat birth than late adolescent mothers.
b) Young adolescent first-time mothers will be more likely to experience a rapid repeat birth than late adolescent mothers.	b) Partially supported. As expected, middle adolescent mothers had a 36% higher risk of rapid repeat birth; however, early adolescent mothers had a 47% lower risk.

c) Partner social support will significantly interact with maternal age such that young adolescent mothers residing with a partner or spouse will be the most likely to have a rapid repeat birth.	c) Not supported. Married middle adolescents had a 39% lower risk of rapid repeat birth. Although early adolescents living with a cohabiting partner had a higher likelihood of rapid repeat birth, this interaction was not significant.

3) What is the relationship between maternal age and total educational attainment? Is this relationship moderated by partner social support?

a) Women who first gave birth as a young adult will have higher educational attainment than women who first gave birth as a late adolescent.	a) Supported. Young adult mothers had .54 additional years of educational attainment, compared to late adolescent mothers.
b) Young adolescent mothers will have lower educational attainment than late adolescent mothers.	b) Supported. Middle adolescent mothers had .38 fewer years educational attainment. Early adolescent mothers, though not significant, also had lower educational attainment.
c) Partner social support will significantly interact with maternal age such that young adolescent mothers residing with a partner or spouse will have the lowest educational attainment, whereas partnered young adults will have the highest educational attainment.	c) Supported. Married early adolescent mothers had 1.52 fewer years of educational attainment, and married middle adolescents had .67 fewer years. Although not significant, cohabiting early and middle adolescent mothers also had lower educational attainment, whereas married and cohabiting young adults had higher educational attainment.

Questions 4-6 address the smaller current adolescent mother sample

4) What were the sources of social support of a current sample of adolescent mothers at the time of birth? Is there variation among adolescent age groups?

a) The largest proportion of early adolescent mothers will be living with at least one parent at the time of birth, whereas the smallest proportion will be living apart from a parent or partner.	a) Supported. Forty-nine percent of early adolescent mothers were living with at least one parent and 20% were living apart from a parent or partner.

b) The largest proportion of late adolescent mothers will be living with a partner, whereas the smallest proportion will be living apart from a parent or partner.	b) Supported. Fifty-five percent of late adolescent mothers were living with a partner and 10% were living apart from a parent or partner.

5) What are the prenatal, birth, and short term postpartum health outcomes for current adolescent mothers and children?

a) Early adolescents will initiate prenatal care later compared to late adolescent.	a) Not supported. Early adolescent age at first birth was not significantly associated with initiation of prenatal care in this study.
b) Early adolescents will have babies born with lower birth weight than late adolescents.	b) Not supported. Early adolescent age at first birth was not significantly associated with infant birth weight in this study.
c) Early adolescents will be more likely to engage in high risk sexual behavior than late adolescents.	c) Not supported. Although early adolescent age was significantly associated with sexual risk behavior, it was in the opposite of the predicted direction.
d) Early adolescents will have shorter duration of breastfeeding over the first year than late adolescents.	d) Not supported. Early adolescent age at first birth was not significantly associated with duration of breastfeeding over the first year in this study.

6) Additionally, what is the association between an adolescent's social support and the prenatal, birth, and short-term postpartum outcomes for adolescent mothers and their children?

a) Social support will significantly moderate the relationship between early adolescent age and outcomes for adolescent mothers and their children such that: a) early adolescent mothers living with a parent will initiate prenatal care earlier.	a) Supported. Early adolescent mothers living with two parents initiated prenatal care 7.2 weeks earlier.
b) Early adolescent mothers living with a parent will have higher infant birth weight.	b) Not supported. Social support of living with a parent did not significantly moderate the relationship between early adolescent age and infant birth weight in this study.
c) Early adolescent mothers living with a partner will have lower sexual risk taking behavior.	c) Not supported. Living with a partner was not significantly associated with lower sexual risk taking in this study.
d) Early adolescent mothers living with a partner will have longer duration of breastfeeding.	d) Not supported. Living with a partner was not significantly associated with longer duration of breastfeeding in this study.

social support through the living arrangements of adolescent mothers and maternal and child outcomes. Moreover, the findings of this study indicate that the influence of partner or parental social support may last beyond the time of birth to affect outcomes one, two, or more years after the initial birth.

Context of Adolescent Pregnancy and Childbearing

Adolescent pregnancy is not a neutral subject in American society. It is a topic that is politically, emotionally, and culturally charged. Adolescent pregnancy brings to the forefront cultural and societal values and judgments around adolescent sexuality that have long been considered taboo, and still often remain undiscussed. Clearly, adolescent childbearing does not occur in a social vacuum. However, the fact that this country has one of the highest rates of adolescent childbearing among comparable industrialized countries suggests a unique opportunity. Researchers, policymakers, and public health professionals can identify approaches to adolescent childbearing that as improve the outcomes for adolescent mothers and their children.

Cultural variations along racial/ethnic and socio-economic lines in rates of adolescent pregnancy and childbearing exist. . Black and Latina teens have much higher rates of pregnancy and childbearing than do White teens. Such differences in rates have been attributed to differences in resources, future expectations, and cultural acceptance. Teens who give birth are more likely to come from underprivileged backgrounds and to lack the opportunities that may be available to a teen from a higher socioeconomic status. In the present study, the majority of young women who gave birth as an early adolescent were Black or Latina, whereas the majority of those who gave birth as a young adult were White or Other. Black and Latina teens were also overrepresented among births in middle

and late adolescence, constituting 49% and 43% respectively. Similar to other ethnic minority health disparities, it may be suggested that if these statistics were reversed and the majority of adolescent births occurred to young White women, perhaps this issue would be given even more attention and resources.

Context of Adolescent Development

This study has endeavored to examine early childbearing in a manner that is consistent with the study of adolescent development. Adolescence may begin as early as age 10; its end is not well defined chronologically, but has more to do with the ability to be independent and take on adult responsibilities including employment and financial self-sufficiency. These boundaries are further blurred for adolescent mothers, as they transition into parenthood before they are financially independent and self-sufficient. Therefore, they may fare better when receiving support from parents or a partner at the time of birth. I defined adolescent motherhood in this study as a first birth at age 10-19, comparable to the national statistics on adolescent childbearing. Furthermore, along developmental lines, adolescent age at first birth was stratified into the developmental stages of early, middle, and late adolescence for the larger sample, and early and late adolescence for the smaller sample. Both stratifications have been well documented in the study of adolescence (DeHart, et al., 2004; Santrock, 2010), and were chosen according to the distribution of age at first birth of the mothers in each sample.

Many unique factors influence the experience of early pregnancy and childbearing during this time. Among them are physical, cognitive, and psychosocial development, as well as cultural and societal norms and expectations for adolescents. Physically, puberty has generally occurred during early adolescence; however the adolescent female's body

continues to grow during adolescence. This period of rapid physical change may collide with the intense physical demands of gestation, childbirth, and breastfeeding. Potentially influenced by changing hormones, adolescents experience volatile emotions that may be further intensified by the hormonal shifts and resultant emotional upheavals of an unexpected pregnancy, birth, and the transition to parenting.

Part of the physical development during adolescence is the completion of sexual maturation. Sexual development not only enables the young woman to become pregnant, but also influences the time table of initiation of sexual intercourse. Previous research has shown that earlier age at menarche is associated with earlier age at sexual debut. Although most teens have become sexually active by the end of middle adolescence or age of 17, this is still considered very young to have a baby. Therefore, as adolescents develop their sexuality, they must navigate their increasing sexual desires and possible initiation of sexual activity while mitigating the risk of becoming pregnant at such an early age.

Cognitively, adolescents are entering Piaget's period of formal operational thinking, wherein they will begin to think more hypothetically and use reasoning and logic more consistently. They are also developing the ability to think about the future in hypothetical terms; however, all of these cognitive processes may still be immature and under development. Furthermore, adolescents experience a resurgence of egocentrism, labeled cognitive egocentrism that intensifies their feelings of social scrutiny and potentially social isolation as well. All of these cognitive factors work together to challenge the adolescent mother's ability to anticipate realistically the possible risks facing her or her child.

Finally, socio-emotionally, interaction with peers and gaining independence and autonomy are at the forefront during adolescence, particularly for later adolescents. Women who become mothers during this time may experience a non-normative transition due to the competing social demands of peer relationships and parenting. During the transition to parenting it is difficult to maintain peer relationships due to parenting constraints. Furthermore, adolescent mothers may have varying experiences with independence and autonomy. Those who live with a cohabiting partner or are married may feel that they have successfully established independence and autonomy. However, young mothers who continue to live with their parents, no matter how helpful it is, may perceive this as a setback in their quest for independence and autonomy. Finally, identity development is also a central theme of adolescence, as young women are answering the questions "Who am I? Where am I going? What am I all about?" Depending on how far advanced they are in their journey of identity development at the time of pregnancy and birth, their identity development may be stalled or eclipsed by the transition into parenthood. Taking on the responsibility for a baby may become all consuming, leaving little psychological and emotional energy to pursue identity development. Additionally, as some research has indicated that adolescent childbearing may be a rational choice when faced with limited future options, some adolescents may already have established their identity as a young mother early on. The study of adolescent childbearing must be informed by an understanding of the unique developmental factors of adolescence.

Context of Supportive Living Arrangements

Social support plays an important role in improving the outcomes for teen mothers and their children. Parents and partners are the primary sources of support for

most adolescent mothers, with small contributions of support from siblings, extended family members, or peers. This study examined the social support of living with a spouse or cohabiting partner for the larger sample of young adult and adolescent mothers, and living with one or two parents or a married/cohabiting partner for the smaller current adolescent sample.

The effect of partner social support may be different depending on the adolescent's developmental stage. Early adolescents are generally too young to enter into a marriage relationship, and therefore rates of such early marriage are very rare. Middle and late adolescent mothers may be more likely to marry and particularly to live with a cohabiting partner who may or may not be the baby's biological father. For these older adolescents, partner social support may be a protective factor in many ways providing instrumental economic support and shared housing as well as emotional and co-parenting support. However, the stability of these relationships, particularly cohabitation, may vary. Conflict due to multiple stressors of financial difficulty, parenting, and a relationship that is still in the early stages of development may contribute to conflict and stress in the partner relationship and lower quality of partner social support. Certain outcomes may be less likely to benefit from partner support as well, as research has previously indicated that mothers living with a partner are less likely to complete their education.

Parental social support would be the most likely and beneficial source of support for early adolescent mothers. Middle and late adolescent mothers may be attempting to gain independence and autonomy and transitioning into either independent living arrangements, or living with a spouse or cohabiting partner. Generally, the social support of a parent, particularly the adolescent's mother, is beneficial to the adolescent's

transition into parenthood, and provides economic and housing support, emotional and parenting support, as well as support for long-range objectives such as educational attainment. Living with a parent, however, may not be entirely beneficial. If the mother-daughter relationship is problematic or conflictual, it may be less supportive. Furthermore, it has been theorized that living with a parent may relieve too much of the parenting responsibilities from the adolescent and inadvertently contribute to increased rates of rapid repeat pregnancy, as was found by Davis (2002).

Living with two parents is expected to be generally associated with better outcomes for adolescent mothers as the social support of two parents may yield increased economic resources as well as family and housing stability for the mother and her child. A larger body of research exists on the coresidence of the adolescent with only one parent, which is usually her mother. Although research has noted positive outcomes for the adolescent and her child such as increased parenting skills, education, and improved development, a growing area of research is exploring the strain that this living arrangement may put on the single mother of the adolescent. Several studies note the role overload of continuing to parent the adolescent while also providing many parenting functions for the adolescent's child (Culp, Culp, Noland, & Anderson, 2006; Dallas, 2004). Furthermore, single mothers may more acutely feel the stress of providing childcare, increased financial pressures, as well as the strain of parenting and working or potentially caring for her own parents as well (McNeil & Murphy, 2010).

The present study examined the outcomes of adolescent childbearing for two samples of young women in relation to the social support available to them at the time of

birth. Below the findings are discussed in light of the central research questions and specific hypotheses of this study.

Hypotheses and Interpretation of Findings for the Young Adult and Adolescent Mother Sample

Hypothesis 1a

Women who first gave birth as a young adult will breastfeed significantly longer during the infant's first year than women who first gave birth as a late adolescent.

The results did not support this hypothesis. Although consistent with tenets of the Health Belief Model and previous research it was predicted that older maternal age would be associated with breastfeeding longer during the infant's first year, this was not borne out in the results. Young adult mothers had an 18% lower risk of breastfeeding cessation than late adolescent mothers, even after controlling for race/ethnicity, poverty level income, educational level of the respondent's mother, and wantedness of the pregnancy, but this was not statistically significant. Breastfeeding can be challenging for any first-time mother, particularly if she must return to work or school shortly after the baby is born. This is likely to reduce the duration of breastfeeding over the first year. In addition, social support has been identified as a strong influence on whether or not a mother begins and continues breastfeeding, particularly for younger mothers such as adolescents.

Hypothesis 1b

Young adolescent mothers will breastfeed for a shorter duration during the infant's first year than late adolescent mothers.

This hypothesis was not supported. Neither early nor middle adolescent aged mothers had a higher risk of quitting breastfeeding during the first year than late adolescent mothers. Furthermore, both early and middle adolescent age groups had a *lower* risk of quitting breastfeeding over the first year, though neither of these associations was statistically significant. Although this finding was unexpected, it may demonstrate one of two things. First, in terms of continuing to breastfeed over the first year, it may be that whereas adolescent mothers overall have lower rates of breastfeeding than adult mothers, among adolescent age groups, rates are not significantly different. A second possibility is that late adolescent mothers constitute a group that may face significantly different breastfeeding challenges than younger adolescents and young adults. As measured in this study as late adolescence, mothers who are age 18-19 may be at a particular juncture socially and economically where they are less likely to be living with parents and more likely to be living on their own. They may be under higher pressure to return to work more quickly due to both economic reasons, as well as having a higher likelihood of being in unskilled jobs that lack formal maternity leave options. Further study of the impact of returning to employment may help to elucidate this possible relationship.

Hypothesis 1c

Partner social support will significantly moderate this association for young adolescent mothers such that those residing with a partner or spouse will have longer duration of breastfeeding.

This hypothesis was supported. Partner support significantly reduced young adolescent mother's risk of quitting breastfeeding over the first year. The findings for

middle adolescent mothers provided the strongest support for this hypothesis. For middle adolescent mothers, cohabitation greatly reduced the risk of breastfeeding cessation relative to not living with a partner. Although married middle and early adolescents also showed a lower risk of quitting breastfeeding, this association was not statistically significant, probably because few were married.

Marriage had the most beneficial effect on this association across all age groups, with early, middle, and young adult married mothers showing a lower risk in breastfeeding cessation over the first year. Cohabitation was a protective factor only for middle adolescent mothers. There is very little research examining partner social support for breastfeeding on specific adolescent age groups. Generally, partner support has been identified as beneficial for breastfeeding outcomes among adolescent mothers overall; however, this research indicates that middle adolescent mothers may benefit the most from the social support of a partner in breastfeeding over the first year. There may be two things at work here. Mothers who are partnered may have more economic resources if their partner is working, and therefore have less pressure to return to work as quickly. Furthermore, partnered adolescent mothers, in particular those who are married, are also less likely to return to school. Whereas this may be detrimental to their educational attainment, it may be protective for continuing a breastfeeding relationship over the first year.

Hypothesis 2a

Women who first gave birth as a young adult will be less likely than late adolescent mothers to have a rapid repeat birth.

This hypothesis was not supported by the results. Although the results did indicate that young adults had a slightly lower risk of rapid repeat birth over the first two years than late adolescents, this finding was not statistically significant. The incidence of a second birth within the first 24 months postpartum was 20.2% for the late adolescent mothers and 18.3% for the young adult mothers. This is consistent with rates found in previous research on repeat adolescent pregnancy and birth (Boardman, Allsworth, Phipps, & Lapane, 2006; Raneri & Wiemann, 2007). Thus, although the rate was higher for late adolescent mothers, it was not significantly different from the rate for young adult mothers. Although a rapid repeat birth is a concern for late adolescent mothers who may be financially and emotionally stressed by the demands of a second child within two years, it is likely that mothers who first gave birth between ages 18 and 19 would have transitioned into young adulthood by the birth of the second child. They would be more likely to have graduated from high school or earned their GED by this point, and may be more stable than younger adolescent mothers. Therefore, late adolescent mothers may be more similar to young adult mothers in this outcome as they themselves are transitioning into young adulthood within two years of giving birth.

Hypothesis 2b

Young adolescent first-time mothers will be more likely to experience a rapid repeat birth than late adolescent mothers.

This hypothesis was partially supported by the results. Consistent with previous research, middle adolescent mothers had a 36% higher risk of rapid repeat birth than late adolescent mothers. Kalmuss and Namerow (1994) also found a higher prevalence of rapid repeat births among mothers who first gave birth before age 17 using data from the

National Longitudinal Study of Youth. Early adolescent mothers, however, had a 47% lower risk of rapid repeat birth than late adolescent mothers. This finding was significant at the trend level. Although contrary to what was hypothesized, there are two plausible reasons why this risk was much lower. First, the number of early adolescent mothers in this sample was very small (n = 83). This is consistent with national rates of early adolescent (ages 10-14) births; however, it may have affected the results. Second, mothers who are this young may be the most likely to be engaged in school and the family and to benefit from school or community programs designed to prevent repeat adolescent pregnancy and/or support young adolescent mothers. Although they may be more likely to eventually experience a second birth as an adolescent given the increased exposure period as a function of their early age at first birth, they may be less likely to do so in the first 24 months postpartum. In addition, parents may tighten parental control and monitoring after such an early adolescent birth in a concerted effort to help the adolescent stay on track educationally and avoid a rapid repeat birth. Such early adolescent mothers may also benefit from targeted interventions from health professionals involved in their maternal care to engage in more effective contraceptive methods..

In contrast, mothers in middle adolescence will be transitioning into late adolescence within 2 years of their first birth, generally coinciding with a loosening of parental controls and monitoring while continuing to gain independence. This is a natural progression during the course of adolescence; however, this developmental process may be accelerated for adolescents who have taken on the responsibilities of being a parent. These mothers may also be more likely to be married or cohabiting with a partner within the two years following their first birth, which may influence their second birth rates.

Overall, 12.3% of the early adolescent sample experienced a second birth within the first 24 months postpartum, whereas 27.4% of middle adolescent mothers gave birth to a second child within 24 months.

In terms of identity development, a central process of adolescent development, mothers in middle adolescence may be the most likely to have foreclosed their identity into that of being a mother. Rational Choice Theory may apply in that these mothers may be choosing to have another child in accordance with their identity and goals, and in the absence of other viable life alternatives. Having another birth so closely spaced would be in line with their identity and life goals. In contrast, late adolescent mothers would be more likely to have completed their high school education, and may have transitioned into post-secondary education either before or after the birth of their first child. Their identity development may have been more advanced at the birth of their first child and have included employment or educational aspirations, influencing them to delay a second birth beyond the first two years postpartum. Future research would benefit from examining the role of identity development as well as the influence of employment and educational aspirations on the timing of a second birth for adolescent mothers.

Hypothesis 2c

Partner social support will significantly interact with maternal age such that young adolescent mothers residing with a partner or spouse will be the most likely to have a rapid repeat birth.

This hypothesis was not supported by the results. Interestingly, the findings of this analysis were contrary to the hypothesis in that married middle adolescents had a 39% *lower* risk of rapid repeat birth. It was expected that mothers living with a partner would

be more likely to resume sexual activity in the postpartum period, and thus at higher risk for a repeat pregnancy and birth within the first two years postpartum. This is supported by previous research on postpartum resumption of sexual activity in adolescent mothers that found a strong association between early postpartum sexual activity and living with a partner, however a distinction was not made between marriage and cohabitation (Kelly, Sheeder, & Stevens-Simon, 2005). Although the present finding was unexpected, the effect of middle adolescent age on the risk of rapid repeat birth was already so strongly negative that marriage actually offset it and the net effect was 5% reduction in risk, with married adolescents being only slightly less likely than late adolescent mothers to have a rapid repeat birth (OR = .95). Married early adolescent mothers were also less likely to have a second birth in the first 24 months; however, this finding was not statistically significant.

Why would marriage provide such a beneficial effect for young adolescent mothers against experiencing a rapid repeat birth? Young mothers who are living with a married spouse when they first give birth may be less likely to engage in the sexual risk taking behavior that leads to another adolescent pregnancy and closely spaced second birth. Young married mothers are more likely to be sexually monogamous, which lowers the pregnancy risk associated with multiple sexual partners. Another benefit of marriage may be the nature of the long-term committed relationship and the effect that it has on sexual communication concerning contraceptive use. Young married mothers may be more likely to effectively and consistently use contraceptive methods that lead to lower risk of rapid repeat birth. Future research including measures of sexual risk-taking

behaviors and sexual communication could shed light on the indicated protective aspects of early marriage.

Hypothesis 3a

Women who first gave birth as a young adult will have higher educational attainment than women who first gave birth as a late adolescent.

This hypothesis was supported by the results. Young adult mothers had .54 additional years of education attainment compared to late adolescent mothers. This finding is consistent with previous research that older maternal age is associated with higher educational attainment. This association may work through a combination of two mechanisms. The first is that women who have higher educational aspirations may intentionally delay childbearing in order to attain them. The second is the added challenge that early childbearing poses to educational attainment. Primarily this difference in educational attainment between late adolescent and young adult mothers may lie in college attainment. Whereas late adolescent mothers may graduate from high school by the time of their first birth, they may be less likely to attend or graduate from college. Young adult mothers however, may be more likely to attend some college or to graduate from college.

Hypothesis 3b

Young adolescent mothers will have lower educational attainment than late adolescent mothers.

This hypothesis was also supported by the results. Middle adolescent mothers had .38 fewer years of educational attainment compared to late adolescent mothers. Early

adolescent mothers also had lower educational attainment than late adolescent mothers, though this association was not significant. These findings are consistent with previous research documenting that older age at first birth is associated with higher educational attainment. Young mothers who give birth between ages 15-17 may face significant challenges in continuing their education and finishing high school. These challenges may include child care issues, balancing school and parenting responsibilities, as well as financial difficulties, among others.

It is also possible that young women who become pregnant at such an early age have already disengaged from school or experienced a disruption in their education before the birth of their first child. If they do graduate from high school or obtain their GED they may be less likely to initiate any post-secondary education compared to mothers who first give birth between the ages of 18-19. Late adolescent mothers may be more likely to have completed a high school degree or GED, as well as have initiated post-secondary education.

Hypothesis 3c

Partner social support will significantly interact with maternal age such that young adolescent mothers residing with a partner or spouse will have the lowest educational attainment, whereas partnered young adults will have the highest educational attainment.

This hypothesis was also supported by the results. The effect of marriage on educational attainment differed depending on the age at first birth. Married early adolescent mothers had 1.52 fewer years of educational attainment, and married middle adolescents had .67 fewer years. Married young adults however, had .26 more years of educational attainment than late adolescent mothers; however, this finding was not

significant. The results indicated a similar pattern of effect for cohabitation; however, these findings were also not significant.

The interpretation of the interactions shows more clearly the varying effect of age for married mothers. The effect of early adolescent or middle adolescent age for married mothers was 1.75 and .82 fewer years of educational attainment respectively. Therefore, having a partner is the most deleterious for the youngest adolescent mothers. It is clear that the effect of marriage is not the same for all first time mothers, the critical factor that has the largest impact on their educational trajectory is the age at which these young mothers give birth.

The majority of adolescent births are unplanned and nonmarital. For mothers who marry at such a young age it is difficult to say whether the intention to marry came first or if the marriage was due to the unplanned pregnancy. Historically, the latter has been the case; however this is changing currently as nonmarital births are increasing and pregnancy is no longer seen as an imperative for marriage. For this sample, however, who may have been an adolescent mother during the late 1970's to early 1990's, the societal stigma and pressure for a pregnant adolescent to marry early may still have been an influential factor. With marriage and parenthood come increased responsibilities and less time and energy to devote to educational attainment.

Women who marry early may also subscribe to more traditional gender roles and be more likely to forego educational attainment in favor of staying home and caring for their child. This would also be consistent with Rational Choice Theory, such that these mothers are identifying more strongly with motherhood and marriage and choosing to curtail additional educational attainment. Additionally, educational may be curtailed out

of economic necessity as childcare is costly and difficult to find for lower income families. All of these factors combined may help to explain the significant interaction between age at first birth and marriage on educational attainment.

Hypotheses and Interpretation of Findings for the Current Adolescent Mother Sample

The first sample in this study of 4,477 women who were young adults or adolescents at the time of their first birth was used to examine health and well-being outcomes in the post-partum period and their association with the mother's partner social support at the time of birth. Although this analysis provided insight into the role of partner support in moderating the outcomes of duration of breastfeeding, rapid repeat birth, and total educational attainment, there remained questions that could perhaps be better answered with the addition of a smaller, more focused sample. How might the association between social support and maternal and child outcomes be influenced by the addition of parental social support? Whereas marriage was found to influence the association between maternal age and outcomes in the postpartum period, would this still hold true with the addition of parental support? Additionally, for early adolescents marriage is rare and examination of parental social support is more important. Although not available for the larger sample, it was theorized that inclusion of parental support would provide additional insight into the association of social support and outcomes for adolescent mothers and their children. Thus, a sample of current adolescent mothers that allowed for the inclusion of parental support of one or two parents was also examined. Furthermore, this sample also allowed for examination of certain health measures that were only available for births more proximal to the time of survey. These included the

timing of the initiation of prenatal care, infant birth weight, and recent sexual risk-taking behavior. Similar to the analysis in the first sample, the duration of breastfeeding over the first year was also examined for the sample of current adolescent mothers. Together, these two samples allowed for a more complete picture of the social support of young first time mothers and a variety of health and well-being measures.

The interpretation of the findings for the current adolescent mother sample will now be discussed in the context of the study hypotheses. First, the descriptive analysis of the living arrangements for current adolescent mothers will be discussed. Then the four outcomes of interest for this sample, initiation of prenatal care, infant birth weight, sexual risk taking behavior, and duration of breastfeeding, will each be discussed in the context of both their main effects (hypotheses 5a-d) as well as their interaction effects (hypotheses 6a-d).

Hypothesis 4a

The largest proportion of early adolescent mothers will be living with at least one parent at the time of birth, whereas the smallest proportion will be living apart from a parent or partner.

This hypothesis was supported by the results. Consistent with previous research the largest proportion of early adolescent mothers was living with at least one parent. Forty-nine percent of early adolescent mothers were living with one or two parents and 20% were living apart from a parent or partner. Although rates of cohabitation are increasing for adolescent mothers, it is still relatively rare for the youngest adolescent mothers. It would be expected that younger mothers would still be living at home with one or two parents, whether biological, step, adoptive, or a combination. What is

interesting is the relatively high proportion who reported living apart from a parent or partner. There may be two possible explanations for this. Early adolescence is generally the peak of parent-adolescent conflict already, and adding the crisis of an early teen pregnancy may create an unlivable situation for the teen mother and her parent(s). A second possibility is that a pre-existing troubled home life preceded the early adolescent pregnancy, contributing to both the risk of becoming pregnant at an early age as well as to moving out. In order to better understand the relationship between early maternal age and living arrangements future longitudinal research should explore levels of parent-adolescent conflict as a precursor to or result of the early adolescent pregnancy.

Hypothesis 4b

The largest proportion of late adolescent mothers will be living with a partner, whereas the smallest proportion will be living apart from a parent or partner.

This hypothesis was supported by the results. The largest proportion of late adolescent mothers, 55%, were living with a married or cohabiting partner, and the smallest proportion, 10%, were living apart from a parent or partner. Late adolescent mothers had a significantly higher proportion living with a partner than early adolescent mothers, as well as significantly lower proportion that were living apart from a parent or partner. Although a significantly lower proportion of late adolescent mothers lived with one parent, a similar proportion of early and late adolescent mothers lived with two parents. How does age at first birth influence the likelihood of certain living arrangements? It is more common for older adolescents to move out of their parent's home compared to younger adolescents, whether they are parents themselves or not.

Becoming a parent may accelerate this transition to independence, resulting in such a high proportion of older adolescents living with a married or cohabiting partner.

Hypothesis 5a

Early adolescents will initiate prenatal care later compared to late adolescents.

This hypothesis was not supported by the results. As measured in this study, early adolescent age at first birth was not a significant predictor of initiation of prenatal care. Furthermore, the results indicated that early adolescent mothers initiated prenatal care 2.37 weeks earlier than late adolescent mothers. There may be two possible explanations for this. The first is that younger adolescent mothers may be less likely to recognize that they are pregnant and more likely to seek medical attention due to the onset of the unfamiliar physical symptoms associated with pregnancy (nausea, fatigue, increased frequency of urination). Thus, discovering the pregnancy in the context of seeking medical care for pregnancy symptoms may help them to initiate prenatal care earlier than later adolescents. Similarly, older adolescent mothers may recognize the pregnancy more quickly than a younger mother and then avoid prenatal care as a way of trying to hide the pregnancy or remain in denial.

A second contributing possibility is the likelihood of younger adolescents living with a parent. Previous results discussed that a larger proportion of early adolescent mothers in this study were living with a parent compared to the late adolescent mothers. Living with a parent may influence earlier initiation of prenatal care through several mechanisms; these will be discussed in the interpretation of the moderation below in Hypothesis 6a.

Hypothesis 6a

Social support will significantly moderate the relationship between early adolescent age and outcomes for adolescent mothers and their children such that early adolescent mothers living with a parent will initiate prenatal care earlier.

This hypothesis was supported by the results. Early adolescent mothers living with two parents initiated prenatal care 7.2 weeks earlier than early adolescent mothers not living with a parent or partner. This is consistent with tenets of the Family Stress Model and with previous findings that adequate family support is associated with earlier initiation of prenatal care (Lee & Grubbs, 1995). Living with two parents may provide several protective factors for the early adolescent mother that helps them to respond to the crisis of the early and unexpected pregnancy and receive necessary and timely prenatal care. First, in terms of healthcare utilization, they may be more likely to have the economic resources and health care insurance coverage to ensure that they have access to prenatal care. Two parents may be able to more closely monitor the adolescent as well and therefore may be more likely to discover that she is pregnant. Once they are aware that she is pregnant, living with two parents may provide more support for facing the crisis of the early pregnancy and taking positive steps such as initiating prenatal care. This is consistent with family stress theory; with more resources in the two-parent household, the family is better able to cope with the crisis of an early pregnancy and respond in ways that may mitigate negative future outcomes such as late initiation of prenatal care and resultant low birth weight or other complications.

Although not directly tested in the hypothesis, early adolescent mothers living with a partner also initiated prenatal care 9.4 weeks earlier than those not living with a

parent or partner. This is consistent with previous research showing that even just being in contact with the baby's father was associated with earlier initiation of prenatal care for adolescent mothers (Wiemann, et al., 1997). Partner social support and resources may also serve as protective factors for early adolescent mothers in initiating prenatal care in a timely manner. Overall, the results indicate that, for the youngest adolescent mothers, earlier initiation of prenatal care is strongly supported by the social support and resources available from living with two parents or a partner. Early adolescent mothers in a living arrangement without a parent or partner seem to fare the worst in terms of initiation of prenatal care.

Hypothesis 5b

Early adolescents will have babies born with lower birth weight than late adolescents.

This hypothesis was also not supported by the results. Early adolescent age at first birth was not significantly associated with infant birth weight in this study. The direction of the coefficient (positive), however, was consistent with the hypothesis. Additionally, as indicated by the descriptive results, early adolescent mothers in the study gave birth to infants with significantly lower average birth weight ($p < .10$). One of the limitations that may have kept this from being a significant predictor in the regression model may have been the small sample size for the current adolescent mother sample.

Hypothesis 6b

Early adolescent mothers living with a parent will have higher infant birth weight.

This hypothesis was not supported by the results. Social support of living with a parent did not significantly moderate the relationship between early adolescent age and

infant birth weight in this study. Again, however, the direction of the coefficients for the interaction of early adolescents living with one or two parents is in line with the hypothesis. Living with one or two parents offset the negative effect of early adolescent age on infant birth weight, with early adolescent mothers living with two parents showing the greatest gains in infant birth weight. Rather than concluding that a relationship does not exist here, it seems more likely that the sample size was not large enough to detect the relationship.

Hypothesis 5c

Early adolescents will be more likely to engage in high risk sexual behavior than late adolescents.

This hypothesis was also not supported by the results. Although early adolescent childbearing was significantly associated with sexual risk behavior, it was in the opposite of the predicted direction. Consistent with the descriptive results, regression analyses showed that early adolescent mothers had lower average scores on the sexual risk taking index compared to late adolescent mothers. Whereas it was hypothesized that early adolescent cognitive development would lead to poorer decision making and more risk taking behavior, this was not borne out by the results. Instead, early adolescent mothers showed lower odds of high sexual risk taking behavior, compared to late adolescent mothers. This may have been influenced by freedom and access to engage in such behaviors. Younger adolescent mothers may be more restricted in their opportunities to engage in high-risk sexual behavior by parental monitoring as well as lack of access to a driver's license. Furthermore, as discussed regarding rapid repeat birth, early adolescents may be the most likely to benefit from medical intervention surrounding such an early

birth in terms of their reproductive health and contraceptive use. Contraceptive use contributed to half of the score on the sexual risk-taking index. Thus, if an early adolescent mother adopted a long lasting birth control method after her first birth, then she would be less likely to be in a high sexual risk-taking category as measured in this study.

Hypothesis 6c

Early adolescent mothers living with a partner will have lower sexual risk taking behavior.

This hypothesis was also not supported by the results. Living with a partner was not significantly associated with lower sexual risk taking in this study. The sign of the coefficient was in the direction hypothesized, however. Early adolescent mothers living with a partner had lower odds of high sexual risk taking behavior. The sexual risk taking behavior score was based upon two types of sexual risk taking behavior, contraceptive use and the number of sexual partners. Partnered early adolescent mothers would be more likely to be monogamous or have a lower number of sexual partners over the last year than mothers who are not in a committed, partnered relationship. Furthermore, as theorized in regards to rapid repeat birth, mothers in a committed, long term relationship may benefit from increased communication and openness with their partner around contraception. They, therefore, may be more likely to use contraception, also lowering their sexual risk taking behavior. Overall, although not significant in this analysis, it is plausible that early adolescent mothers in a committed, partnered relationship may engage in fewer sexual risk taking behaviors.

Hypothesis 5d

Early adolescents will have a shorter duration of breastfeeding over the first year than late adolescents.

This hypothesis was also not supported by the results. Early adolescent age at first birth was not significantly associated with duration of breastfeeding over the first year in this study. Similar to the results from the larger sample of young adult and adolescent mothers, early adolescent mothers did not differ from late adolescent mothers in breastfeeding duration over the first year. The life table analysis for the current sample of adolescent mothers shows that by the end of the first year only 6% of both early and late adolescent mothers were still breastfeeding. Although adolescent mothers have been shown in previous research to have lower rates and duration of breastfeeding than adult mothers, it may be that among adolescent mothers there is little variation in duration of breastfeeding. Adolescent mothers face many challenges in breastfeeding, including social stigma and potential discomfort with breastfeeding in front of others. Nearly 40% of pregnant adolescents feel stigmatized during their pregnancy (Wiemann, Rickert, Berenson, & Volk, 2005), and this feeling may continue during the transition into parenthood and negatively affect decisions such a breastfeeding that are so physically and symbolically tied to the concept of motherhood. Developmentally, adolescents' bodies are still changing and maturing and young mothers may not be as comfortable with their developing bodies and breastfeeding. Cognitively adolescents also go through a period of egocentrism, where they feel heightened social scrutiny from others (Santrock, 2010). This may already be exacerbated by the experience of being a pregnant adolescent. During the early postpartum period, adolescents may make the decision not to breastfeed

to avoid any further social scrutiny attached with breastfeeding their infant in front of others.

Many first time mothers find breastfeeding challenging under the best of circumstances, particularly in terms of the restriction of freedom the mother may feel in needing to be constantly available to feed her infant. The alternatives offered by pumping breast milk are often even more of a challenge and require increased perseverance and investment. This may further influence adolescent mothers to cease breastfeeding during the first year.

Hypothesis 6d

Early adolescent mothers living with a partner will have a longer duration of breastfeeding.

This hypothesis was also not supported by the results. Living with a partner was not significantly associated with longer duration of breastfeeding in this study. The direction of the coefficient was consistent with the hypothesis, however. For early adolescent mothers, the social support of a partner may help to increase their duration of breastfeeding, particularly compared to those living on their own apart from a partner or parent. Mothers who are living with a partner may also be able to delay their return to a full-time work or school schedule so that they can establish breastfeeding and/or pumping. This also may increase the likelihood of breastfeeding over the first year.

Summary of Findings on Living Arrangements

Overall, taking into account the results from the six research questions, it is clear that there are varying costs and benefits for teen and young adult mothers of different

living arrangements. When considering partner support and living arrangements, marriage provides benefits for middle adolescent mothers in terms of reducing the risk of rapid repeat birth. However, the cost of this living arrangement is that married adolescent mothers are more likely to curtail their educational attainment. Cohabitation provides benefits for middle adolescent mothers in terms of reducing the risk of breastfeeding cessation, allowing young mothers to breastfeed longer over the first year of their infant's life. Similarly, however, the results indicate that the cost of this living arrangement is also that of curtailment of educational attainment.

Among both partner and parental supportive living arrangements, the results indicate that parental living arrangements provide benefits for early adolescent mothers in terms of earlier initiation of prenatal care and reduced sexual risk-taking behavior for both early and late adolescents. Specifically it is living with two parents that provides these benefits; one parent may not be able to provide the same level of monitoring and resources. Early adolescents living with a married or cohabiting partner also benefitted from earlier initiation of prenatal care. Both early and late adolescents benefitted from living with a partner in reducing sexual risk taking behavior for. Overall, of those partnered, married adolescent mothers potentially receive the most benefits from this living arrangement, yet also risk lower educational attainment. For unpartnered mothers, living with two parents provides clear benefits and no identified costs.

Limitations

The findings of this study help to advance the state of current knowledge regarding maternal age and the social support of living arrangements at birth for

adolescent mothers. However, these findings must be viewed in light of the study limitations.

The implications and interpretation of the findings are limited by the cross sectional nature of the data and analyses. Although several significant associations were found among the study variables, this does not indicate that these associations are causal. It was not possible to precisely examine the temporal order of these associations as might have been feasible with longitudinal data. One of the major moderating variables in this study was the parent and/or partner social support as measured by the living arrangements at the time of the mother's first birth. Certain outcomes of interest were closer in proximity to the time of birth such as duration of breastfeeding over the first year or rapid repeat birth over the first two years. However the temporal order is more ambiguous for prenatal care and birth weight, the mechanisms for which arguably occur before the birth. Based on recent research on stress and social support in pregnant and parenting adolescents (Devereux, et al., 2009), however, a case can be made that levels of support during pregnancy may be consistent with the levels of social support through the early postpartum period. Those authors found that pregnant adolescents' social support was significantly associated with their levels of support at both two and six months postpartum. Farther removed from the time of birth is the analysis of educational attainment, a longer-term outcome, as well as sexual risk-taking behavior, behavior in the 12 months preceding the survey.

Variable Construction. The author's construction of the variables may also have affected the findings of this study. Many of the variables serve as proxies for other concepts, he most important of which are the parent and partner supportive living

arrangements. This study uses the reported living arrangements of young mothers at their time of first birth as a proxy for the social support that they are receiving. The quality of these relationships is not assessed, however, and it may be, in fact, that these relationships do not provide the expected extent of social support to the young mother. A measure of social support that includes aspects of emotional and material support may be more appropriate. Future research should include measures of relational quality to better understand the relationship between social support and living arrangements.

Furthermore, the method used by the author to construct the living arrangements variable may have affected the results. Whereas partner living arrangements (married or cohabiting) at the time of birth were easily accessible in the NSFG data, construction of the parental living arrangements was more challenging. For the smaller sample of current adolescent mothers, parental living arrangements was created from a composite of several variables including the number of parents in the household at the time of survey, as well as at age 14 and 18, for mothers who did not report living with a spouse or cohabiting partner at the time of birth. For mothers who reported not living with a spouse or cohabiting partner as well as not living with any parent, their living arrangement was categorized as living apart from a parent or partner. Although the data do not conclusively indicate that these mothers lived alone, for the purposes of this study they did not have the social support of a parent or partner in their household.

Some overlap may exist between the partner and parental living arrangements if, for example, an adolescent mother and her partner were living in her parents' household. Although some adolescents lived with both a partner and a parent there were too few to separate from the other categories. Thus, it was deemed that if a mother indicated living

with a spouse or cohabiting partner, this would be her primary source of social support and she would be categorized in the partner living arrangements. A final limitation of the living arrangements variable is that information on parental living arrangements as an adolescent was not available for the older mothers in the sample (age 25-44), and thus parental living arrangements could not be included for the larger sample of young adult and adolescent mothers. Future studies should examine parental living arrangements in addition to partner living arrangements for a larger sample of young mothers.

Additionally, selected outcomes were chosen for this study to represent health and well-being outcomes for young mothers and their children. It may be that other outcomes, such as parenting quality, child health and cognitive development, or residential mobility and economic stability, would be better indicators of the health and well-being of adolescent mothers and their children. Furthermore, the health and well-being outcomes examined in this study were viewed in isolation from each other. It may be that certain earlier outcomes affect later ones. For example, mothers of any age may be less able to breastfeed a baby born with very low birth weight or other serious health problems. Although the NSFG data are not adequate to identify babies with serious health problems, future analyses could include information on prematurity and low birth weight. Future research may benefit from including additional indicators of health and well-being for the mother and child as well as examining the possible interconnectedness of health indicators such as low birth weight and premature birth.

Selection and Sample Size. It must be noted that becoming a teen parent is not a random event. There are multiple precursors to early motherhood, including underprivileged or disadvantaged backgrounds, an already troubled childhood or school

disengagement, as well as a higher likelihood of belonging to an ethnic/racial minority group and being of lower socio-economic status. It may be that factors which contribute to the later outcomes of teen mothers and their children, rather than the teen birth itself (Hoffman & Maynard, 2008). Although this research did not directly address this potential selectivity factor, all analyses included controls for known precursors that were available in the data, such as maternal education, poverty level income, and racial/ethnic group.

Although the larger sample of young adult and adolescent first time mothers was sufficient for all of the desired analyses, the sample of current adolescent mothers was much smaller. The smaller size of the current adolescent sample necessitated the collapse of married and cohabiting partners into one category of partner support, thereby reducing the amount of variability in the measurement of this construct. Furthermore, although it would have been preferable to examine this sample using three adolescent age groups (early, middle, and late), similar to the larger study sample, this was not feasible due to the smaller sample size. Thus, the current adolescent mother sample was divided in two age groups (early and late), which slightly reduces the comparability of results between the two study samples. Whereas the analyses of the smaller current sample of teen mothers in this study were exploratory, future research would benefit from a larger sample size for this population.

Although data are nationally representative, generalizability is limited to the U.S. population of women ages 15-19 and 25-44 during the years 2002 and 2006-08. As the NSFG surveyed households, there are adolescent mothers whom this data may have missed. Women who were homeless, residentially transient, or incarcerated during the

survey years would not have been surveyed. Therefore, important information may be missing regarding adolescent mothers and their children who may be most at risk for negative outcomes. Although these are difficult populations to study, it is important to attempt to gain this underrepresented perspective in future research.

Study Strengths

One of the major strengths of the study is the use of high quality nationally representative data from the NSFG. This allowed for the study of phenomena such as adolescent childbearing that might otherwise be relatively hard to find in a smaller sized sample and is an improvement over previous studies that have used very small samples, convenience samples, or geographically restricted samples. Although the reliability, representativeness, consistency, and thoroughness of the data available in the NSFG constitute one of the proposed study's major strengths, there were also limitations of this dataset. Some phenomena are known to be underreported in the NSFG, such as abortions; however, the proposed analyses do not examine the abortion data available in the NSFG. Additionally, as described above, the data available in the NSFG are limited in regards to living arrangements. However, there does not appear to be another large nationally representative dataset that includes more detailed living arrangement data as well as information on outcomes for mothers and children.

Finally, although longitudinal data may be more desirable in certain instances, the ongoing nature of the new continuous NSFG, as well as the existence of the previous cycles allows for an analysis of trends over time for adolescent mothers and their children. This type of data analysis may be particularly useful for informing programs and policies on the ways in which outcomes for this population are changing or

improving, as well as which issues still need to be addressed. I plan to expand these analyses using previous cycles of NSFG data (Cycle 5) as well as the 2008-10 continuous survey data that will be released in the near future. This will enable me to gain a larger sample size, as well as potentially to compare trends and results over different time periods from the 1995, 2002, and most recent 2006-10 data.

Future Directions of Research

Further research is needed to address the limitations of the current study. Whereas the present study represents initial exploration into the associations between the social support of living arrangements and outcomes for adolescent mothers and their children, this is just a beginning point from which to launch further research in this area. As indicated above, I have already planned future analyses that will utilize additional cycles of the NSFG, including the most current data from the continuous survey that are yet to be released. Adding additional cycles of data may correct for some of the limitations that were encountered. Primarily this will add to the sample size of current adolescent mothers, for whom the most detailed living arrangements information is available.

Furthermore, this may enable two important subdivisions of a sample of current adolescent mothers that was not possible in the present study. The first is more specificity in the partnered living arrangements. Although preliminary data analyses of this study indicated that living with a spouse was associated with distinct outcomes than living with a cohabiting partner, due to the small sample size these were both combined into partner social support. Results from the primary sample of young adult and adolescent mothers indicated that married and cohabiting partner living arrangements were differentially

associated with the study variables. This further suggests the importance of separately examining the influence of married and cohabiting partner support in future research. Future analyses with a larger sample size may be able to disentangle the separate effects for living with a married or cohabiting partner, as well as yielding more power to the analyses. A larger sample size for current adolescent mothers may also be able to examine mothers who are living with both a partner and a parent, a group that the present study could not consider.

The second major subdivision that a larger sample size might enable is that of the maternal age groups. It would be beneficial to examine current adolescent mothers in early, middle, and late adolescence, whereas the present study was only able to assess two broader categories of maternal age, early and late adolescence. Findings from the young adult and adolescent mother sample again indicated that the separate examination of adolescent developmental stages yielded significant associations with the study variables. In addition, adding these subdivisions of maternal age and partner support would increase comparability between the current adolescent mother sample and analysis of a sample of adult and adolescent mothers.

Social Support. The social support of parent and partner relationships may change over time for the adolescent mother. These contexts may physically change as the mother establishes independence and leaves the parental home or the partner relationship dissolves. Additionally, some research has indicated that even if adolescent mothers stay in the same living context, such as with the adolescent's mother, the effect of this supportive relationship can change over time. Whereas it may be most beneficial in the first one to two years postpartum, over time the continuing dependence on the

adolescent's mother may not serve her well in establishing her own parenting role and practices (Culp, et al., 2006). Future research should explore the ways in which social support for adolescent mothers may change over time. The concept of social support could also be expanded to understand the ways in which parents or partners that are non-residential may also be supporting the adolescent mother.

Breastfeeding. One of the outcomes of interest in common between the two samples of the present study was the duration of breastfeeding during the first year, analyzed as the risk of breastfeeding cessation. Future analysis of the duration of breastfeeding should explore the influence of work/school reentry on breastfeeding by maternal age and social support. Although the present study was not able to take this into account, the timing of the reentry into part-time or full-time work or schooling may influence the duration of breastfeeding for adolescent mothers. The current findings are consistent with previous research indicating the importance of partner support in initiation and duration of breastfeeding for adolescent mothers (Dykes, et al., 2003). However, based on the findings, it is further theorized that living with a spouse or cohabiting partner may be associated with a longer duration of breastfeeding (or lowered risk of breastfeeding cessation) in part due to the decreased likelihood of reentry into school or work during the first year.

Prenatal Care. Future research regarding initiation of prenatal care would be strengthened by the addition of a control for health insurance status that this analysis did not include. Use of Medicaid has been previously associated with later enrollment in prenatal care (Haeri, et al., 2009). Mothers without health insurance may be even less likely to enroll in prenatal care in a timely manner. Previous research has also indicated

that abortion history or abortion considerations during the current pregnancy may also play heavily into the timing of the initiation of prenatal care (Johnson, et al., 2003; Wiemann, et al., 1997). Therefore, future research should incorporate measures of abortion history and/or current abortion considerations if possible, in the context of an examination of partner and parent social support on the initiation of prenatal care.

Rapid Repeat Birth. Future examinations of rapid repeat birth may benefit from extending the period of observation beyond two years, as only a small number of mothers had experienced a second live birth within two years of their first. Furthermore, this analysis could be broadened to include rapid repeat pregnancy as well, since not all pregnancies within the first two years postpartum result in a live birth. Previous research examining rapid repeat pregnancy found that 42% of adolescent mothers became pregnant again within 24 months (Raneri & Wiemann, 2007) and that 34% of such rapid repeat pregnancies were reported to be intended (Boardman, et al., 2006). Further research including rapid repeat pregnancy may yield important information on the efficacy of repeat pregnancy prevention, as well as illuminate whether there is a "danger zone" for adolescent mothers during which they are most likely to become pregnant again. This may aid in targeting prevention programs so that they are the most successful in preventing a rapid repeat pregnancy or birth, as well as efficient in utilizing their resources.

Independent Mothers. The present study indicates that mothers who are living independently or apart from the social support of a parent or partner are at risk for more negative outcomes at any age. Future research should further explore this finding for young mothers. This research touches on but does not really elucidate this living

arrangement. The Center for Research on Child Wellbeing (2007) found, in a study of mothers' residential mobility using data from the Fragile Families and Child Well-being study, that two thirds of mothers experienced at least one residential transition in the first three years postpartum. Unpartnered mothers were the most likely to experience a change in residence, particularly if they experienced a change in relationship status. This raises several questions. What characterizes these mothers and is there variation within this group? How does the number of transitions in living arrangements influence outcomes? Who do young mothers live with if they are not living with a parent or partner? How do young mothers fare who live alone? Additionally, an often unexplored and overlooked population is homeless adolescent mothers, or those whose living arrangements are otherwise precarious or transient. Recent research is beginning to examine the complexity faced by these young parents (Thompson, Bender, Lewis, & Watkins, 2008). As this is a challenging population to document in large national surveys, the study of transient or homeless young mothers may benefit from a more qualitative approach.

Inclusion of Fathering. Given the important implications of the findings on partner support, the inclusion of more fathering variables would improve programmatic and policy recommendations. The present study included the age of the father at the time of the baby's birth as a proxy for the level of resources he may be able to offer the mother and child, with the theory that older fathers have more resources in terms of economic capital or educational attainment to offer. A rapidly growing literature base on fathering in general, and specifically fathering in the context of adolescent childbearing, could serve well to inform future research endeavors in the inclusion of fathering (Amin & Ahmed, 2004; Fagan, Bernd, & Whiteman, 2007; Fagan & Palkovitz, 2007; Thompson &

Crase, 2004). Future research should include measures of relational quality for the mother and partner, as well as measures of father involvement. In particular, it may be important to explore the issue of whether and how non-residential partners/fathers provide social support, as this research only examined the social support of residential partners.

Risk and Resilience. Whereas much of the literature surrounding adolescent pregnancy and childbearing focuses on the risks to the adolescent mother and her child, the present study has endeavored to examine a perspective of both risk and resilience. For many outcomes risks were found for both younger compared to older adolescent mothers as well as adolescent compared to young adult mothers; however, in some instances risks were also found to be moderated by the supportive living arrangements of a parent or partner. A small amount of previous research, much of it qualitative, has made the case that adolescent mothers fare no worse than their comparable non-childbearing counterparts, when matching adolescents on socioeconomic and educational levels (Beers & Hollo, 2009; Spear & Lock, 2003). Furthermore, it may be posited that an adolescent pregnancy and birth may serve as a developmentally motivating event such that adolescent mothers who were already at risk for poorer life outcomes before the pregnancy or birth may make positive changes in their circumstances for the sake of their child (Herrman, 2006; SmithBattle, 2003). For example, having a child may provide motivation for re-enrolling in school, taking better care of one's health, seeking out necessary support, and educating oneself on beneficial postpartum practices such as breastfeeding and safer sexual practices. Pregnancy and birth may constitute unique intervention opportunities with adolescent mothers to promote positive changes in health

and well-being behaviors. Future research should further explore the role of resilience or protective factors for adolescent mothers.

Implications for Programs and Policy

Programmatic Implications. These findings continue to confirm the need for increased and ongoing support for adolescent mothers and their children. As the results seem to suggest, in some instances, the youngest mothers need even more support and assistance to avoid negative outcomes. Given the noted multiple risks facing young mothers, such as rapid repeat birth, lower educational attainment, later initiation of prenatal care, and others, this research would support the implementation of comprehensive programs for adolescent mothers designed to meet the multiple needs that they have. The Pathways Teen Mother Support Project is an example of such a comprehensive intervention program designed to address repeat pregnancy, educational attainment, life skills and leadership development over the first 24 months postpartum (McDonell, Limber, & Connor-Godbey, 2007). It has been piloted with rural populations of adolescent mothers and demonstrated success compared to control groups.

The results of this study provide continuing evidence that early age at first birth influences both short and long-term outcomes for the mother and her child. Additionally, adolescence is contextual and risks may vary for early versus late adolescent mothers. Programs for adolescent mothers must, therefore, be developmentally appropriate and assess the individual needs of the adolescent mother in light of her current levels of cognitive and psychosocial development. Although, in general, adolescents are still developing the ability to think hypothetically about the future and to plan for future goals, this may vary according to the level of life experience and development of formal

operational thinking (Santrock, 2010). Those who are working with adolescent mothers in an advisory, counseling, or social worker role may need to help them adopt a more future oriented vision and realistic plans and goals for their pregnancy and postpartum period through the use of scaffolding, modeling, and perspective taking exercises (Benson, 2004). This may aid pregnant and parenting adolescents in initiating prenatal care, planning for breastfeeding, reducing sexual risk-behavior, and setting goals for educational attainment.

Intervention programs aimed at improving child health must start with prenatal care. The Federal Healthy Start Initiative, which provides home visitation and family support services to urban and rural underserved women, is consistent with these goals and an example of such an intervention program (National Healthy Start Association, 2010). Early intervention is of special importance for adolescent mothers, who may delay initiation of prenatal care. Whereas adolescent mothers in general are at risk for delayed prenatal care, in this study early adolescent mothers living apart from a parent or partner had a later initiation of prenatal care than early adolescent mothers living with two parents or a partner. Timely and consistent prenatal care may help to reduce the risk of preterm birth as well as low birth weight. Conversations and education regarding contraception, prevention of rapid repeat pregnancy and birth, as well as lowering of sexual risk taking behaviors should also all begin prenatally. It is important for an adolescent to recognize the risky sexual behaviors that contributed to the current pregnancy and to make an educated plan for preventing a repeat adolescent pregnancy and birth.

Breastfeeding support and education programs should also begin before the infant is born, ideally as part of an adolescent mother's prenatal care or in conjunction with a comprehensive program designed to address the needs of teen mothers. Programs such as these have demonstrated success when implemented in an educational setting, such as a high school (see Barnet, Arroyo, Devoe, & Duggan, 2004; Key, Barbosa, & Owens, 2001; Omar, et al., 2008 for examples). Results from the present study showed that late adolescent mothers had the highest risk of quitting breastfeeding over the first year. As these mothers may no longer be in a high school setting, community agencies such as WIC clinics may also be instrumental in supporting and educating young mothers in breastfeeding. Special classes or support groups targeting teen mothers may be beneficial. Marriage and cohabitation had a beneficial influence on duration of breastfeeding for middle adolescents in this study. Therefore support groups or classes should capitalize on that and endeavor to include partners in breastfeeding education and support programs.

The current findings suggest that age at first birth has a significant influence on later educational attainment. The educational attainment of adolescent mothers may have far-reaching future implications for employability and earning a living wage. It is clear that the higher one's educational attainment, not only the higher are the average earnings, but also the lower the unemployment rates. Data from the 2010 Current Population Survey indicate that workers with only a high school degree earn 40% less on average than those with a college degree and experience double the rate of unemployment (Bureau of Labor Statistics, 2011). Workers with less than a high school diploma fare even worse in terms of average earnings and rate of unemployment. As adolescent mothers must not only provide for themselves, but also for their child, educational

attainment has even weightier implications. Intervention programs offering child care and educational advising may aid young mothers in continuing or resuming their education. Furthermore, results suggest that marriage has a deleterious effect on adolescent mothers' educational attainment. Programs seeking to enhance adolescent mothers' educational attainment should endeavor to address the challenges facing young married adolescent mothers.

The study findings show that the youngest adolescent mothers are at the greatest disadvantage in educational attainment; therefore intervention programs must target these mothers and provide supportive services to enable them to complete their education, beginning with a high school degree or GED completion. Recent research using the Panel Study of Income Dynamics also supports the continuing education of adolescent mothers and indicates that continuing school enrollment may mediate certain negative outcomes associated with early childbearing (Sullivan, et al., 2011). Additionally, as we evolve into an even more technologically complex society, it has become much more necessary to pursue post-secondary education. Adolescent mothers are much less likely to complete a college degree compared to adult mothers. Moving teen mothers from high school completion to enrollment in post-secondary education must be the next step in improving the overall future prospects for young mothers and their children. While it is important not to overburden those young mothers who have successfully achieved a high school or college degree, it may be beneficial for them to serve as role models to other young mothers who are struggling to remain in school or complete their degrees.

As this research highlights the importance of supportive parental and partner living arrangements, implications for interventions with couples and families aimed at

improving outcomes for adolescent mothers and their children surface. Family and couples programs addressing issues such as prenatal care, educational attainment, rapid repeat birth, or sexual risk taking behavior may be appropriate. The findings of this study indicate that parent and partner social support can effectively moderate some of these negative effects for young adolescent mothers, thus inclusion of parents or partners in interventions targeting adolescent mothers may be beneficial.

Given that parent or social support has been shown in this study to influence outcomes for adolescent mothers, it may be helpful to assist adolescent mothers in assessing these potential sources of support during the prenatal period. Adolescent mothers may not be well equipped to anticipate their needs for support as young parents. One recent study of Australian teen mothers showed that, while still in the prenatal period, adolescent mothers significantly overestimated their postpartum support, in contrast to their actual support networks at six months postpartum (Quinlivian, Luehr, & Evans, 2004). These overestimates of levels of future support are consistent with the adolescent cognitive tendency to have more idealized expectations that have not yet been tempered by experience. Thus, while social support may be a key factor in moderating outcomes for adolescent mothers, intervention programs should pay particular attention to helping pregnant adolescents accurately assess their prenatal and postpartum needs and sources for such support.

Policy Implications. This study holds implications for policies that involve or aim to affect the parental or partner living arrangements of young mothers. The findings lend some support to marriage enrichment or promotion policies that are already in place or may be implemented. Living with a spouse was linked to better outcomes for longer

duration of breastfeeding as well as a lower risk of rapid repeat birth for adolescent mothers. The educational attainment of married adolescent mothers, however, lagged behind that of their unpartnered counterparts. Thus special attention should be given to the interaction between marital status and educational attainment for young adolescent mothers.

Current welfare policies under PRWORA stipulate that unmarried minor mothers (under 18) must live with an adult parent or guardian in order to receive their benefits (U.S. Department of Health and Human Services, 1996). The findings from this study generally support this policy in that adolescent mothers experienced less negative outcomes when living with a parent, particularly two parents. This study did not take into account however, harmful situations that may exist in the home such as parental abuse or mistreatment, or a dangerous home environment for the adolescent mother and her child. These situations are the ones adolescent mothers are most likely to leave.

Special attention and support should be given however, to adolescent mothers who are living independently of a parent or partner, for whatever reason. Findings from this study suggest that adolescent mothers not living with a parent or partner may be at higher risk for quitting breastfeeding, lower educational attainment, increased sexual risk-taking behavior, and later initiation of prenatal care. Young mothers without partner or parental support may be most in need of supportive child care services in order to continue their education or employment. Policymakers should consider subsidized and accessible child care services for this population. Consistent with the current study, previous research also shows that these mothers are significantly more likely to experience negative outcomes, potentially due to decreased resources and lower levels of

social support (Institute for Children and Poverty, 2003; Thompson, et al., 2008). Diversity may exist in this population as well; however, adolescent mothers living apart from a parent or partner may be more likely to experience transient living arrangements, instability, and homelessness. Therefore policies should aim to protect and support this particularly vulnerable population of adolescent mothers and their children.

Conclusion

The present study contributes to the literature base on adolescent childbearing and explores the new situational contexts of the living arrangements of adolescent mothers and their children. In particular, this study examines the interaction of supportive partner or parental living arrangements and maternal age at first birth on the health and well-being outcomes for the mother and her child prenatally, at birth, and in the postpartum period. The findings indicate that although several outcomes for younger mothers are expectedly more negative, supportive living arrangements may improve these outcomes. Although this study was limited in certain ways regarding sample size and variable construction, it begins the exploration of the impact of the changing social contexts and support for adolescent mothers.

The findings indicate that further research is necessary to continue to examine these changing social contexts and the effect that they may have on outcomes for adolescent mothers and their children. This research raises questions regarding an examination of the quality of the social support of adolescent mothers living arrangements as well as the nature of the social support of adolescent mothers who are not living with a parent or partner. The present study confirms much of what has been found in the literature regarding outcomes for adolescent mothers while examining the

effect of changing social demographics on these outcomes. Improving outcomes for adolescent mothers and their children remains an important public health goal for our country, and as such, research into the factors that contribute to both risk and resiliency for these mothers and their children must continue.

Appendix A

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INSTITUTIONAL REVIEW BOARD

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February 01, 2010

MEMORANDUM

Application Approval Notification

To: Dr. Sandra Hofferth
Kate Riera
Family Science

From: Joseph M. Smith, MA, CIM JMS
IRB Manager
University of Maryland, College Park

Re: **IRB Application Number:** 10-0041
Project Title: "Social Support and Outcomes of an Early Birth"

Approval Date: February 01, 2010

Expiration Date: February 01, 2013

Type of Application: Initial

Type of Research: Exempt

Type of Review for Application: Exempt

The University of Maryland, College Park Institutional Review Board (IRB) approved your IRB application. The research was approved in accordance with the University IRB policies and procedures and 45 CFR 46, the Federal Policy for the Protection of Human Subjects. Please include the above-cited IRB application number in any future

communications with our office regarding this research.

Recruitment/Consent: For research requiring written informed consent, the IRB-approved and stamped informed consent document is enclosed. The expiration date for IRB approval has been stamped on the informed consent document. Please keep copies of the consent forms used for this research for three years after the completion of the research.

Continuing Review: If you intend to continue to collect data from human subjects or to analyze private, identifiable data collected from human subjects, after the expiration date for this approval (indicated above), you must submit a renewal application to the IRB Office at least 45 days before the approval expiration date. If IRB approval of your project expires, all human subject research activities including the enrollment of new subjects, data collection, and analysis of identifiable private information must stop until the renewal application is approved by the IRB.

Modifications: Any changes to the approved protocol must be approved by the IRB before the change is implemented, except when a change is necessary to eliminate apparent immediate hazards to the subjects. If you would like to modify the approved protocol, please submit an addendum request to the IRB Office. The instructions for submitting a request are posted on the IRB web site at : http://www.umresearch.umd.edu/IRB/addendum app.htm.

Unanticipated Problems Involving Risks: You must promptly report any unanticipated problems involving risks to subjects or others to the IRB Manager at 301-405-0678 or jsmith@umresearch.umd.edu.

Student Researchers: Unless otherwise requested, this IRB approval document was sent to the Principal Investigator (PI). The PI should pass on the approval document or a copy to the student researchers. This IRB approval document may be a requirement for student researchers applying for graduation. The IRB may not be able to provide copies of the approval documents if several years have passed since the date of the original approval.

Additional Information: Please contact the IRB Office at 301-405-4212 if you have any IRB-related questions or concerns or email at irb@umd.edu.

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