FATHER-DAUGHTER RELATIONSHIP AND TEEN PREGNANCY: AN

EXAMINATION OF ADOLESCENT FEMALES RAISED IN HOMES WITHOUT

BIOLOGICAL FATHERS

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By

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ABSTRACT

The aim of this dissertation was to further our knowledge of the processes underlying teenage pregnancy among adolescent females who are reared in "absent-father" homes (i.e., in homes without the biological father), a population at heightened risk for pregnancy. For this population, I hypothesized that the biological father-daughter relationship quality (FDRQ) as well as the stepfather-daughter relationship quality (SFDRQ) would predict the likelihood of teenage pregnancy, after controlling for sociodemographic risk factors and other known correlates of teen pregnancy. Further, based on the theory of "Father Hunger" (Fraiberg, 1959), two measures of need for intimacy (motivation to engage in sex and desire for a romantic relationship) were hypothesized to mediate the relationship between both FDRQ and SFDRQ and teenage pregnancy. Data were drawn from The National Longitudinal Study of Adolescent Health (Add Health, Harris et al., 2009). The sample included 2,829 adolescent females whose biological father left their home prior to age 13, and approximately 12% of the sample (312) experienced a teenage pregnancy. All predictor, control, and mediator variables were measured at the onset of the study (Wave I) when the adolescents were between ages 11 and 21. Teenage pregnancy was recorded at Wave III which was collected seven years later. Results from a series of mixed multilevel logistic

regressions did not support either hypothesis. The discussion focuses on potential reasons why the hypotheses were not supported in addition to considering several interesting findings including the lack of empirical multidimensionality in the measurement of FDRQ and the inverse relationship between age and pregnancy.

APPROVAL PAGE

The faculty listed below, appointed by the Dean of the College of Arts and Sciences have examined a dissertation titled "Father-Daughter Relationship and Teen Pregnancy: An Examination of Adolescent Females Raised in Homes without Biological Fathers," presented by Amber Marie Hinton-Dampf, candidate for the Doctor of Philosophy degree, and certify that in their opinion it is worthy of acceptance.

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DEDICATION

I dedicate this dissertation to my amazing family. It is dedicated first to my husband, David Dampf, for being my rock and my realist. I am deeply appreciative for his willingness to do more than his share to support our family throughout the course of graduate school. For all the times he felt like a single parent and stuck by me anyway, I am truly grateful. He has shown me the meaning of true love and support. It would have been next to impossible to complete this dissertation or this journey without you! I love you!

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CHAPTER 1

OVERVIEW

Pregnancy among teenagers is a societal concern, because of the life-course disadvantages for the mother, the child, and the costs to the larger society. For the teenage mother, the negative consequences of birthing a child include lower educational attainment, and decreased employment earnings. Only about 50% of teenage mothers graduate from high school (Perper, Peterson, & Manlove, 2010) in an era when there are increasing benefits to completing higher education (Belfield & Levin, 2007; Goldin, & Katz, 2008). Consequently, teen mothers are more likely to face unemployment in adulthood (Hoffman, 2008) and to make use of governmental assistance, such as cash assistance (Fletcher & Wolfe, 2009) than are females who did not get pregnant during adolescence. Teenage pregnancy has also been associated with increased mental and physical health problems for the mother, as well as inadequate social support (i.e., supportive relationships and networks such as neighborhoods). The children of teenage mothers face an increased risk of abuse and neglect and are more likely to be incarcerated than children born to adult mothers (Furstenberg, Brooks-Gunn, & Chase-Lansdale, 1989; Hoffman, 2008; Konner & Shostak, 1986; Woodward & Fergusson, 1999).

The United States has one of the highest teen pregnancy rates of any Western industrialized country (Ellis et al., 2003). Approximately 10% of teenage females become pregnant, and about half of those pregnancies result in a live birth. With over one million teen pregnancies per year in the United States at an estimated cost of $9 billion dollars to United States tax payers (this includes direct and indirect costs), teen pregnancy is a phenomenon that requires attention (Hoffman, 2006; Kost, Henshaw, & Carlin, 2010). As

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such, it is not surprising that there has been a significant amount of consideration to the antecedents and prevention of teenage pregnancy in both the academic and policy arenas. For this study, teen pregnancy was defined as becoming pregnant between the ages of 15-19 and prior to high school graduation in keeping with the preponderance of the literature reviewed in the following pages.

One specific group of females that has an elevated likelihood of getting pregnant during the teen years includes females who grew up without biological fathers in their homes (Geronimus & Korenman, 1992; Hogan & Kitagawa, 1985; McLanahan, 1999). One explanation advanced for this finding is that it is a result of the relationship between the father's absence and females' sexual development and sexual activity. Quinlan (2007) reported that females from divorced families with absent fathers were younger at the age of their menarche and became sexually active earlier than females from intact families. Teenage females with biological fathers absent from the home were four times more likely to become sexually active earlier than females whose mothers and fathers were still married; they were 2.5 times more likely to become pregnant during their teenage years than females from intact homes. This relationship between father absence, early sexual activity, and teenage pregnancy has been documented in a multitude of socioeconomic and racial groups (Jeynes, 2001; McLanahan, 1999). For example, Whitehead (1995) found that a Caucasian female from an advantaged background, with an absent father was five times more likely to become pregnant as a teenager than if she grew up with both parents present in the household. Ellis et al. (2003) also found father absence to predict teen pregnancy after controlling for sociodemographic variables (i.e., age, income, etc.).

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Although the links between an absent biological father, sexual activity, and pregnancy have been documented repeatedly, there is conflicting and incomplete knowledge about why having an absent father during childhood/adolescence puts teenage girls at greater risk of pregnancy than those whose fathers were present during this time. One of the most often used theories to explain this phenomenon is the life-course adversity theory, which suggests that girls raised in homes without biological fathers are more likely to become pregnant due to the increase in adversity that these adolescent females face because of the additional stressors (i.e., economic strain, mother's increased stress level, decreased level of supervision, etc.) present in a single-parent home (Belsky, Steinberg, & Draper, 1991; Coley & Chase-Lansdale, 1998; Fergusson & Woodward, 2000; Robbins, Kaplan, & Martin, 1985; Scaramella, Conger, Simons, & Whitbeck, 1998). In short, these perspectives emphasize the stressors created by living in a single-parent household as risk factors for pregnancy.

Although the life-course adversity model accounts for some of the variance in the teen pregnancy rates of females raised with versus without residential biological fathers, other research has suggested that this theory alone is an insufficient explanation (Ellis et al., 2003; Ellis, McFadyen-Ketchum, Dodge, Petit, & Bates, 1999; Phares, 1996). For example, Ellis et al. (2003) found that while controlling for factors posited by the life-course adversity theory such as economic strain, increased mother stress, decreased supervision, etc.; having an absent father still explained some of the variance in teenage pregnancy. Moreover, the model does not further our understanding of the variability in outcomes among the population of young women reared without biological fathers, most of whom do not become pregnant.

Within the life-course adversity models, the conceptualization of a "father-daughter" relationship is almost singularly defined in terms of the presence or absence of the biological father in the home which disregards variability in the quality of father-daughter relationships experienced by young women reared without a biological father. This oversight is present in much of the research examining adolescent girls raised in homes with "absent fathers". Although developmental researchers began to notice this limitation and have started examining the developmental effects of relationship quality versus family structure alone, few of these studies have examined father-daughter relationship quality in association with sexual risk behaviors and pregnancy specifically nor have these studies specified and/or tested the mechanisms by which the quality of females' relationships with their fathers might influence their likelihood of becoming pregnant. Finally, stepfather-daughter relationships have also been found to significantly relate to adolescent outcomes, such as delinquency and self-esteem (Berg, 2003; Bulanda & Majumdar, 2009; King, 2006; Yuan & Hamilton, 2006). Many girls without biological fathers have a stepfather or stepfather-like figure residing in the home (Blackwell, 2010). Despite these facts, there is limited research that considers the joint developmental impact of stepfathers and nonresident biological fathers, and the outcomes studied in association with stepfather relationships have not included teenage pregnancy (Berg, 2003; King, 2006; Yuan & Hamilton, 2006).

The current study sought to further our understanding of the role that father-daughter and stepfather-daughter relationships play in predicting teen pregnancy among females who were raised with a physically absent biological father. Specifically, the primary aim of the study was to determine the extent to which the quality of the father-daughter relationship predicts teenage pregnancy among adolescent females reared in absent father homes after

controlling for the sociodemographic risks associated with not having a biological father in the home posited by the life-course adversity theory. Similarly, the extent to which the quality of the relationship with a stepfather adds to the prediction of teenage pregnancy outcomes among the subset of females raised without a biological father in the home but with a stepfather present was examined. The posited links between the quality of the father and stepfather relationships and pregnancy outcomes rests on an explanatory model that was also tested in this study. Thus, a secondary aim of this dissertation was to test an explanatory model to further explain the link between the quality of the father-daughter and stepfather-daughter relationships and teenage pregnancy. Specifically, I examined whether poorer quality relationships with fathers and stepfathers would increase the adolescents need for intimacy and mediate (or explain) the link between relationship quality and teenage pregnancy.

The following chapter is organized into five main sections. First, I introduce the life-course adversity model and offer a review and critique of the research from the life-course adversity paradigm, linking teenage pregnancy among adolescent females to absent fathers. Section two provides a theoretical overview of the developmental role attributed to fathers in female development. In the third and fourth sections, I review the empirical literature on the role of the father-daughter relationship (and subsequently stepfather-daughter relationship) on females' developmental outcomes, with a particular focus on female sexuality. Section five offers evidence for need for intimacy as a potential mechanism linking father-daughter relationship quality to teenage pregnancy. Subsequent to these reviews, I operationally define the variables that will be used in this study and state the research hypotheses.

CHAPTER 2

LITERATURE REVIEW

Life-Course Adversity Model

The life-course adversity model suggests that familial and ecological stress leads to earlier onset of sexual activity and thus a greater likelihood of teenage pregnancy (Ellis et al., 2003). With respect to teen pregnancy, girls raised in homes without fathers are presumed to be more likely to become pregnant due to the increase in adversity that these females face because of the additional stressors (i.e., economic strain, mother's increased stress level, decreased level of supervision, etc.) put on the family when there is only a single-parent in the home. As such, the elevated pregnancy risks for females with absent fathers is seen as having more to do with stressors associated with the realities of living in a single-parent home as opposed to the specific relational benefits of having a father in and of itself (i.e., Belsky et al., 1991; Coley & Chase-Lansdale, 1998; Fergusson & Woodward, 2000; Robbins et al., 1985; Scaramella et al., 1998).

McLanahan and Booth's (1989) review of the research offered support for the life-course adversity model as applied to teenage pregnancy risk. After analyzing several large, nationally representative surveys containing information on children's family structure, educational attainment, and social adjustment during young adulthood, they concluded that the financial instability and insecurity faced by children from absent father homes are two of the biggest contributors to problematic adolescent behavior, such as engaging in early sexual intercourse. They estimated that the economic strain children in single-mother homes face accounts for approximately half of the disadvantages associated with father absence. They

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theorized that other disadvantages children from father absent homes face are the loss of

parental time and involvement, inadequate levels of supervision, loss of social capital and

social support from the neighborhood and community, and increased residential mobility.

However, none of these factors was tested as predictors of developmental outcomes.

Following McLanahan and Booth's (1989) reasoning, if single mothers were able to maintain

financial stability, offer routine and structure, provide adequate levels of supervision, and

maintain neighborhood ties by not moving around, then children from single-mother homes

would do just as well as children raised in two-parent households and be no more likely to

get pregnant as teenagers.

In their nationally representative longitudinal study of risk and protective factors for

teenage pregnancy among 958 adolescent females, Kalil and Kunz (1999) studied the

predictive power of sociodemographic risk factors such as the type of neighborhood the

adolescent female lived in (i.e., urban, and the combined educational level), a household

income below poverty-level, mother's level of education, number of siblings, number of

reading materials present in the home, etc. Findings from this study were similar to

McLanahan and Booth (1989): Pregnancy rates increased as the total number of risk factors

or "cumulative risk" increased. In fact, those adolescents with five or more

sociodemographic risk factors were 16 times more likely to become teenage mothers than

those adolescent females with only one sociodemographic risk factor. Among these females,

high self-esteem and high educational aspirations were found to be protective factors that

mitigated the likelihood of teen pregnancy, but they were "less protective" for those with

cumulative risk than those with only one sociodemographic risk factor.

Although the above studies provide some support for the life-course adversity model as an explanation for the higher teen pregnancy rates among fatherless females, research conducted by Ellis and his colleagues (2003) suggests that adversity is not the whole story. They conducted prospective longitudinal studies of developmental outcomes among US (*N*=242) and New Zealand (*N*=250) females ages 5-18. These females were classified in a "father presence" group (birth father present in the home through age 13) or in an "early onset father absence" or "late onset father absence" group. After controlling for ten sociodemographic risk variables posited in the life-course adversity model (early childhood externalizing behavior problems, mother's age at first birth, race, SES, early childhood family life stress, early childhood dyadic adjustment, early childhood harshness of discipline, preadolescence harshness of discipline, preadolescence parental monitoring, and preadolescence neighborhood danger), there were still significant differences in sexual activity and teenage pregnancy rates between adolescent females with absent biological fathers and adolescents with biological fathers present in the home. Further, the risk increased as a function of the timing of father absence (i.e., how old the female was when her biological father stopped living in the home). With these same controls in place, they reported a significant relationship between the length of time that females had lived without their biological fathers present in the home (the younger the female was when he became absent), and their likelihood of early sexual activity and teenage pregnancy. Girls whose fathers were not present prior to the age of five were seven to eight times more likely to become pregnant as a teenager than those girls with a present father. Further, if the father left when the girl was between the ages of 6-13, she was two to three times more likely to become pregnant as a teenager than those whose fathers were present during that time. The

increased risk of early sexual activity and teenage pregnancy among females with absent fathers was not explained by familial, ecological, or personal disadvantages associated with father absence in the sample of US females and only partially explained by these sociodemographic risks in the New Zealand sample. Finally, they found stronger evidence of the effects of father absence on early sexual activity and teenage pregnancy, controlling for risk factors, than on a myriad of the other behavioral, mental health, and achievement indicators that were also examined. Thus, although explanations offered by the life-course adversity theorists for the high rates of pregnancy among fatherless teenage girls are all plausible and account for some of the variance in teen pregnancy rates, not all of the variance related to having an absent father could be explained.

The findings of Ellis and colleagues (2003) suggest that there is something beyond the stressors introduced by an absent father that increases an individual's risk for pregnancy as a teen. Although the authors speculated on some other possible explanations for the heightened pregnancy risk (i.e., the girls learned dating behavior and sexual behavior from their dating mothers, they were more likely to interact with and want to be close to men because their fathers were not present, etc.), they did not specifically test any of these hypotheses. Moreover, as with most of the research focusing on females in father absent homes, the article did nothing to explain variation within the population of fatherless teenage girls despite the fact that approximately 80% of girls reared in homes without biological fathers do not get pregnant before high school graduation (McLanahan, 1999).

In sum, although the life-course adversity model explains some of the variation in teenage pregnancy rates between females raised in homes with and without the presence of their biological father, these studies do not explain all the between-group variance in this

outcome. Moreover, by focusing only on the structural aspects of having or not having a father in the home, the model ignores variations in the qualitative aspects of a female's relationship to her father that may be important contributors to her development, even if she does not live with him. The following sections provide some theoretical and empirical justification for further attending to father-daughter relationships.

Theoretical Role of Fathers in Adolescent Female Development

Erikson's (1968) theory of psychosocial development posits that people develop through a series of eight phases from childhood to adulthood with each phase presenting a specific issue or "crisis" that must be successfully resolved in order to move on to the next stage and eventually achieve identity formation. Parents and other societal influences are seen as key agents in the socialization of personality and one's sense of "self" within this theory. Much of Erikson's work focused on the developmental period of adolescence or the fifth stage, "identity vs. role confusion." During this stage, young adults attempt to achieve an array of identity related goals such as career aspirations, sexual identity, and gender roles. If they are successful, then they have developed a sense of self, but if they are unsuccessful then they experience role confusion. Erikson noted that failure in earlier phases will manifest itself again during adolescence and particularly identity formation. Any interruption on the resolution of each phase results in a crisis, and something like the loss of a parent (no matter the reason for that loss – i.e., death, divorce, etc.) can impact the successful resolution of the phases (Krueger, 1983). Thus, the impact of the father-absence on the children's psychosocial development depends on the stage-specific issues and how the resolution of the issues may or may not be interrupted by this absence (Krueger, 1983; Wearing, 1984). This perspective would imply that while father's physical absence from the home might influence

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a daughter's psychosocial development, the absence alone may not necessarily negatively impact her, particularly if they maintain a relationship that would encourage resolution of any issues at each stage of development.

Within Eriksonian theory, the stage of personality development following identity development is intimacy versus isolation. The major task at this stage is developing intimate relationships and ultimately finding love. Erikson posits that those who have successfully formed a strong identity will have more success in intimate relationships and be better prepared to develop meaningful relationships than those who do not have a strong identity. More specifically, he maintained that identity formation is important in the development of self-esteem, and that true intimacy (which is more than sexual intimacy) can only occur after one has started developing a strong identity. A youth who is unsure of herself will be unable to achieve true intimacy because she will either shy away from intimacy or desperately try to achieve it and potentially be promiscuous. While these stages of development are considered to be "internal" events (Erikson, 1968), external factors such as the family can contribute to their development. Thus, variables consistent with the life-course adversity model (i.e., financial strain, mother's stress, decreased adult supervision, etc.) as well as the quality of the father-daughter relationship are logically influential in adolescent female development.

Contemporary biopsychosocial models of human development that built on Erikson's theory such as those of Bronfenbrenner (1979; 1986) and Ainsworth and Bowlby (1991), continue to acknowledge the family unit as a key domain shaping development. However, there is no clear delineated role for fathers. Pleck (2007) examined four theoretical perspectives on father involvement and development, with particular focus on how father involvement could be beneficial or positively impact child development. The four

perspectives he addressed were attachment theory, social capital theory, Bronfenbrenner's

ecological theory, and "essential father" theory.

Social Capital Theory is similar to the life-course adversity model in that it theorizes

the different components of socioeconomic status (SES) impact development. Coleman

(1988) stated there are two types of "capital" that parents provide, financial capital and social

capital. Financial capital refers to the material resources children have access to via their

parents (and in this case fathers) including food, shelter, goods, and services. According to

this theory, there are two forms of social capital: family social capital and community social

capital. Family social capital refers to things like parenting, school readiness, educational

ambition, etc., and it is related to parents' levels of education. Community social capital

refers to connections to the larger world (i.e., neighborhood ties, sharing of knowledge, and

access to the parents' own social networks). Pleck (2007) regarded the main limitation of

this theory as its lack of specificity, such that it does not posit how the different forms of

capital influence development.

Bronfenbrenner's ecological theory (1979; 1986) posits that the paternal influence on

development comes primarily from "proximal processes" or father-child interactions. In

addition, his theory suggests that the interactions children have with their fathers are different

from the interactions they have with their mothers. For example, fathers may play more with

children, whereas mothers may engage in more nurturing types of activities. However, as

noted by Pleck (2007), the main difficulty with this theory is in determining the validity of

differences in the types of effects of mother versus father interactions.

Attachment theory also does not delineate a clear paternal role on development per se.

However, it does suggest that father involvement promotes secure infant attachment to the

father, and secure attachment has been linked to positive outcomes. According to this theory, successful development requires secure attachment with parental figures, and the father's role in development is limited to early childhood. Thus, it cannot explain any influence fathers may have on development in the later years (Ainsworth & Bowlby, 1991).

One commonality across all these psychological theories of development (Ainsworth & Bowlby, Bronfenbrenner, Erikson, etc.), is that development is viewed as a relational event rather than an internal or individually based phenomenon. Thus, studying the relational aspects of the father-daughter relationship is vital. Pleck (2007) proposed an integrated ecological-parental capital theory of father influence on child development and called for empirical studies to acknowledge this integration. In his proposed integrated theory, father involvement would include not only time spent and engagement in activities with children, but also qualitative characteristics of the relationship such as warmth and support. In keeping with Pleck's views, in this study three dimensions of the broader concept of the father-daughter relationship were assessed: amount of contact with the father, engagement in activities with father, and adolescents' perceived closeness to their father. These variables were assessed to represent father-daughter relationship quality (FDRQ) and stepfather-daughter relationship quality (SFDRQ).

Although research has documented that the presence of a father reduces the risk of teen pregnancy, little is known about the way in which the interpersonal relationships between fathers and daughters influences adolescents' sexual decision making and teen pregnancy. Some scholarship has examined FDRQ in relation to other developmental outcomes and has found fathers to be influential in nearly every functional domain including intellectual functioning, academic achievement, and social development (Phares et al., 2005).

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For example, perceived closeness to father has been associated with internalizing behaviors, externalizing behaviors, and achievement (Booth, Scott, & King, 2010; King, 2006; Yuan & Hamilton, 2006). Although no studies have examined perceived closeness to one's father in relationship to teenage pregnancy specifically, scholars have found that perceived closeness is related to other constructs known to predict increased sexual risk behavior and thus pregnancy (i.e., self-esteem, intelligence).

In the following section, I will present on literature that has considered the importance of the quality of the parent-child relationships for various developmental outcomes and offer some tertiary evidence for a link between FDRQ as a basis for justifying the aims of the current study.

Father-Daughter Relationship Quality (FDQR) and Developmental Outcomes

Generally speaking, children's feeling of closeness with parents is known to reduce risky behavior. Substantial evidence suggests that (a) feeling close to one's father is protective and beneficial for children, and (b) closeness can be developed regardless of residential status (Booth et al., 2010; Manning & Lamb, 2003). For example, a meta-analysis of 63 studies examining well-being among children with nonresident biological fathers concluded that feelings of closeness to nonresident fathers was positively associated with academic success and negatively related to externalizing and internalizing problems (Amato & Gilbreth, 1999). Other major works suggest that when parents are divorced, children benefit from close relationships with parents, and close relationships with fathers continue to be important. First, Coleman, Ganong, and Fine's (2000) review of a decade's worth of literature on stepfamilies found many similarities in outcomes of children living in single mother homes and those living in stepfamilies. Specifically, the children from both of these

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family types had similar developmental outcomes (i.e., frequency of problem behaviors, academic achievement, and internalizing behaviors), and higher levels of problem behaviors as compared to children living with two biological parents. However, across the board these differences were quite small with effect sizes ranging from (.07-.37). Among their recommendations for future research was to focus on interpersonal relationships and family quality rather than simply focusing on structure.

Pryor and Rodgers (2001) examined the literature on developmental outcomes of children reared in families characterized by marital separation or divorce. There were three major findings: (1) adolescents who reported better relationships with their mothers were also more likely to have positive relationships with their stepfathers (2) there was a negative relationship between frequency of contact with the nonresidential biological father and the quality of the relationship with the stepfather and (3) high quality relationships with nonresidential biological fathers and stepfathers has independent positive effects on adolescent well-being.

Finally, Hetherington, Bridges, and Insabella (1998) reviewed the literature on the relationship between marital transitions (i.e., divorce and remarriage) and children's adjustment and well-being. By examining children's adjustment after divorce in both single-parent households and stepfamilies, they were able to examine father absence in relation to several outcome measures (i.e., intelligence, achievement, internalizing behavior, externalizing behavior, etc.) and found father absence to be linked to many of these. Across the studies, they found that father absence did not appear to have a main effect on well-being, but rather that the relationship between father absence and so many outcomes such as internalizing and externalizing behaviors and self-esteem was moderated by other factors

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such as the child's gender (i.e., the issues related to father absence can be quite different for boys and girls), the quality of the parent-child relationships, and the reason why the father is unavailable. Therefore, they concluded that although there was an association between absent fathers and many well-being outcomes, the exact mechanism explaining the relationship remains unknown.

Findings from across these comprehensive reviews, consistently illustrate that men's presence alone is not sufficient to create positive outcomes for adolescents, nor is male presence alone necessary for adolescent well-being (Coleman et al., 2000; Hetherington et al., 1998; Pryor & Rodgers, 2001). It appears there is more than the mere presence or absence of a father at play, and that the quality of the relationship makes a difference.

Subsequent to these reviews, Manning and Lamb (2003) examined the relationship of family structure and other aspects of the family relationship quality and adolescent well-being. Specifically, they questioned whether or not the marital status of the mother impacted the adolescent's well-being (i.e., problem behavior such as being suspended or expelled from school, delinquency, cognitive development, academic achievement, and college expectations), while simultaneously accounting for parenting characteristics (i.e., closeness to mother and nonresident biological father, as well as maternal monitoring), sociodemographic variables (mother's level of education, household income, number of siblings living in the household, etc.), and family stability (number of mother's marriages and duration of relationships). The adolescent participants came from the National Longitudinal Study of Adolescent Health (Add Health) database (Harris et al., 2009). Three family structures were compared: a family structure that included two married biological parents, a biological mother married to a stepfather, or a biological mother cohabitating but not married

to a stepfather figure. Adolescents living with two-biological married parents had fewer problem behaviors and higher levels of academic achievement and college expectations than adolescents from the other two family structures. More importantly, they found that the effect of the family structure was explained by other variables, such that the sociodemographic variables (race, family income, mother's age, and mother's level of education) and the parenting variables (specifically closeness to mother and maternal monitoring) reduced the effect of marital status on adolescent well-being. Further, closeness to both mother and nonresident father was associated with fewer behavioral problems, higher GPA, and higher expectations for college. These results suggest that the quality of the relationships within the family might mediate the effects of family structure on developmental outcomes.

Ellis et al. (2003) found that the length of time the biological father was absent from the home was positively related to the risk of teenage pregnancy. Although they attempted to acknowledge the importance of the quality of the father-child relationship by examining the relationship of the timing of father absence to risk for teenage pregnancy, they did not test any father-daughter relational variable specifically.

More recently, Booth et al. (2010) examined the link between adolescents' perceived closeness to biological fathers (both resident and nonresident) and several problematic behaviors including school grades, self-esteem, delinquency, violence, substance use, and depression. Data for the study came from Add Health, and included youth who either lived in a household with two biological parents (N=9,686) or lived in a household with a biological mother, but who also had a living nonresident biological father (N=4,724). Among those adolescents living with their biological mother only, there were mothers who

were single, cohabitating with a male partner, or remarried. The predictors were father residence (yes/no) and closeness (1 = *not at all*, 2 = *very little*, 3 = *somewhat*, 4 = *quite a bit*, and 5 = *extremely close*). The participants who responded with 4 or 5 were considered "close" and the others were categorized as "not close," The researchers then combined the two independent variables into four categories (dummy codes): (1) resident father-close, (2) resident father-not close, (3) nonresident father-close, and (4) nonresident father-not close. After controlling for perceived closeness to mother, parental education, household income, total number of children under the age of 18 living in the household, and the participant's age, race, and gender, having a close relationship with a nonresident father was a benefit to adolescents and was more advantageous for some outcomes than living with a biological father with whom the adolescent was not close. Specifically, adolescents who had a close relationship with a nonresident biological father reported higher self-esteem, less delinquent behaviors, and less depressive symptoms than adolescents with resident fathers with whom they were not close. However, their results illustrated that living with a biological father, even if not close to him, has advantages over not living with one's father. In particular, those adolescents who lived with a father they were not close to had better grades, reported less involvement in violent activities, and reported less substance abuse than adolescents with a nonresident biological father, irrespective of how close they were to him. Thus, the best situation is living with a biological father and having a close relationship with him. This study further demonstrated the importance of examining the quality of the father-child relationship and not just the residential status in research.

Although no studies have specifically examined if father-daughter relationship quality predicts teen pregnancy, recall that Ellis et al. (2003) attempted to acknowledge the

importance of the quality of the father-child relationship by demonstrating that the longer the father was absent from the home, the greater a female's risk of pregnancy during adolescence. Although it seems reasonable that the quality of the relationship between father and daughter might be dependent on how long the father has been physically absent from the home, there was no assessment of FDRQ, making this explanation untestable with their data.

Despite there being no direct evidence that perceived closeness to one's father reduces the risk of teen pregnancy per se, the aforementioned studies have found links between the quality of the father-daughter relationship and other risky behaviors as well as variables such as self-esteem that correlate with teen pregnancy. Still other scholars have reported links between various family process variables such as quality of communication, which may be proxies for FDRQ and adolescent sexual behavior. For example, Peterson (2006) found that self-esteem, sociodemographic factors, and communication in father-daughter relationships were related to sexual risk-taking among late-adolescent African American girls. More specifically, daughter's communication about sexuality with their fathers was predictive of sexual risk behavior. Those who had directive and insightful (positive) communications with their fathers displayed less sexual risk behavior, and those engaged in absent or avoidant communication styles with their fathers displayed more sexual risk behavior, as well as endorsed more feelings of rejection and regret.

Carlson (2006) tested whether father involvement mediated the relationship between father absence (family structure) and adolescent outcomes (externalizing behavior, internalizing behavior, delinquency, and negative feelings). She improved on previous research by including a measure of father involvement that reflected both quantity and quality of time spent with children. Adolescents responded to a 7-item questionnaire on a

scale from 1 = *hardly ever* to 4 = *extremely* (i.e., "how often the father talks over important decisions," "how often the father listens to the adolescent's side of an argument," "how close the adolescent feels to the father," etc.). The responses were averaged, and the adolescents were then grouped into categories (low, moderate, and high involvement). For both male and female adolescents, father involvement was more beneficial for adolescents when the father was present in the home than when he was absent. However, nonresident father involvement was still important and had a direct effect on adolescent behavior (Carlson, 2006).

Finally, Clawson and Reese-Weber (2003) found that fathers' discussions about sex with their children resulted in later sexual onset. These three studies suggest that various aspects of the father-daughter relationship that would be expected in closer relationships (talking, etc.) are protective factors for sexual activity and pregnancy.

Impact of Stepfathers

For many of the girls who do not live with their biological fathers, a stepfather (or stepfather like person) is present in the household. In fact, according to the National Center for Health Statistics, from 2001-2007 an estimated 11.8% of all children under the age of 18 in the United States were living with a biological mother and her married or cohabitating male partner, and it is suggested that these data are underestimates (Blackwell, 2010). Presumably, having another male figure in the home might also serve the developmental function of providing a close male relationship. Surprisingly, only a few studies have considered the joint developmental impact of girls' relationship with their stepfathers and nonresident fathers, and the outcomes that have been studied are limited. Yuan and Hamilton (2006) utilized the Add Health database to examine predictors of depression and problem behaviors among female and male youth who lived with their biological mother and

stepfather (mother and stepfather were legally married) and also had a living nonresident biological father. Predictor variables included parental involvement, parental closeness, level of conflict within the parent-child relationship for all the parent-child relationships (i.e., mothers, stepfathers, and nonresident biological fathers), and the years the stepfather lived in the home. They found that adolescents who reportedly feel close to their stepfathers have lower depression levels and fewer behavioral problems. Conversely, adolescents who reported higher conflict within the relationship with their stepfathers had higher scores on the depression scale and more problem behaviors. However, the relationship between closeness to stepfather and adolescent well-being was moderated by closeness to mother. Adolescents appeared to benefit separately from being close to either their stepfather or mother, but had the lowest levels of depression and problem behavior when they reported being close to both. Interestingly, adolescent well-being was not related to stepfather involvement in shared activities, but only to perceived closeness. Further, all interactions between nonresidential biological father involvement and stepfather involvement were not significant. The adolescents' gender did not moderate any of these relationships. In summary, this study illustrated that the impact of the quality of the stepfather-child relationship is similar to the impact of the quality of the biological father-child relationship. That is, relationship quality (i.e., feeling closer to one's stepfather) was positively associated with adolescent well-being, and level of conflict within the adolescent-stepfather relationship was negatively related to adolescent well-being. Further, the relationship an adolescent has with her/his nonresident biological father appears to be distinct or separate from the relationship she has with her stepfather.

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King (2006) examined the prevalence, antecedents, and consequences of adolescents' closeness to their stepfathers and nonresident biological fathers simultaneously. Participants included a sample of adolescents (N=1,149) who had both a nonresident biological father and a stepfather. The consequences examined were externalizing behaviors (i.e., delinquent behaviors such as graffiti, smoking cigarettes, stealing, fighting, etc.), internalizing problems (i.e., feeling bothered, depressed, socially accepted, self-esteem, etc.), and failing grades. About 25% of the adolescents who have both a stepfather and a nonresident father reported enjoying close relationships with both of them whereas, 24% were not close to either of them, 35% reported being close only to their stepfather, and only 16% of the adolescents reported being close to only their nonresident father. More important, she found that adolescents benefit from having a close relationship with one or both of their fathers. The adolescents who lacked close ties to either their father or stepfather exhibited the most externalizing and internalizing problems and were the most likely to receive failing grades in school. Those adolescents were also the most likely to report weak ties with all family members (i.e., they are not close to mothers or their fathers). Having close relationships with both stepfathers and nonresident fathers simultaneously was associated with the best adolescent outcomes, and closeness to stepfathers was found to be somewhat more protective than closeness to nonresident fathers. Specifically, adolescents reporting close relationships with stepfathers only had outcomes similar to those adolescents reporting close relationships to both their father figures (i.e., fewer externalizing and internalizing problems, and less likely to receive failing grades in school). For those adolescents reporting a close relationship with nonresident biological father only, they were less likely to receive failing grades in school than adolescents reporting no close relationship with either father figure, but

did not differ significantly from those same adolescents on the likelihood of externalizing and internalizing behaviors. These results were not moderated by gender. However, males were more likely than females to be either close to both fathers or only to the nonresident father. Females were more likely than males to be close only to their stepfathers or to neither father nor stepfather. In conclusion, King refutes the idea that both stepfathers and nonresident fathers are largely irrelevant for child well-being and suggests that fathers do have an impact on children, and that the quality of the father-child relationship is important.

Berg (2003) examined the relationship between perceived closeness to parental figures (custodial mother, stepfather, and nonresident biological father; custodial father, stepmother, and nonresident biological mother) and adolescent self-esteem in a sample of adolescents from the Add Health dataset in two types of family structures (930 adolescents in mother/stepfather families and 301 adolescents in father/stepmother families). Adolescents' level of self-esteem did not vary by family structure, which further underscores the importance of research focusing on something other than the family type/structure alone. Among adolescents in the mother/stepfather families, there was an interaction between amount of contact with the nonresident father and perceived closeness to the nonresident father on the adolescents' self-esteem. Specifically, as contact with the nonresidential father increased, the relationship between perceived closeness and self-esteem also increased, and these results were not moderated by gender. Closeness to all three parental figures had both unique effects and joint effects on self-esteem. Perceived closeness to the custodial mother explained approximately 39.1% of the variance in self-esteem, closeness to stepfathers accounted for approximately 15.2% of the variance, and closeness to nonresident fathers

accounted for approximately 9.8%. An additional 35.9% of variance in self-esteem was explained by the joint/shared effect of all three closeness variables (Berg, 2003).

In summary, although there is limited research that considers the parent-child relationship quality both with the nonresident biological father and stepfather simultaneously, the findings among those that have been conducted suggest that higher quality relationships with both the nonresident biological father and the stepfather can foster positive developmental outcomes for both males and females. However, the effects parent-daughter relationship quality has not been considered in relationship to pregnancy for either father figure. Thus, for this study, I considered the relationship quality to both the father and the stepfather. The FDRQ was operationalized as perceived closeness to father, amount of contact with father, and engagement with father. The SFDRQ for young women with resident stepfathers was operationalized as perceived closeness with stepfathers and engagement with stepfather. After controlling for other factors related to teen pregnancy, having a stronger relationship with one's biological father was expected to lower the odds of becoming pregnant while a teenager. Consistent with the literature on stepfathers and teenage risk, having a stronger relationship with one's stepfather was expected to lower the odds of becoming pregnant while a teenager, but the magnitude of the effect was anticipated to be lower than that for biological fathers. I turn now to a body of literature that offers some suggestion as to why relationships with fathers might be important for protecting against teen pregnancy.

Need for Intimacy

One possible explanation for a relationship between father-daughter relationship quality and teenage pregnancy is that adolescent females with poor FDRQ have father

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hunger, which leads to an increased need for male intimacy, some of which is filled by trying to attract sexual partners.

Fraiberg (1959) hypothesized that young people who grew up with dads who were uninvolved, absent, or inconsistent developed what she first termed "father hunger." More specifically to daughters of absent fathers, she stated that when deprived of their father's attention and reinforcement in early life, they will develop insecurities and low self-esteem. Clinicians since have further defined "father hunger," after continually observing the negative impact of fatherlessness on children, particularly daughters. They have found father absence to be related to self-doubt, pain, anxiety, depression, self-esteem, as well as learning and behavioral problems (Herzog, 2001; Longmore, Manning, Giordano, & Rudolph, 2003; Maier, 1985; Maine, 1991; Peterson, 2006; Rosenberg, 1965; Shahar & Henrich, 2010).

Perrin, Baker, Romelus, Jones, and Heesacker (2009) agreed that children with absent fathers have "father hunger," but noted that it had never been directly measured (i.e., researchers only measured father presence or father absence), and thus they developed the Father Hunger Scale. This scale operationally defined father hunger as "the emotional and psychological longing that a person has for a father who has been physically, emotionally, or psychologically distant in the person's life," (p. 315). The researchers conducted two studies to aid in development of this scale. In study one, there were 105 undergraduate participants who responded to 41 father-hunger items and 4 open-ended questions. The researchers found through exploratory factor analysis procedures one primary factor with 11-items that accounted for 49% of the variance in the total score of all 41-items. They conducted a second study to test the convergent validity and test-retest reliability. The second study consisted of 240 undergraduate participants. The results of the second study supported the

one-factor structure and so only the 11-items were kept (i.e., "I was jealous of others' relationships with their fathers; my father never thought I was good enough; I wish my father and I were close," etc.). Further, they found a positive relationship between SES and father hunger, but no significant relationship to other demographic variables (gender, sexual orientation, ethnicity, or age). Relationships between "father hunger" and developmental outcomes were not assessed.

The clinical literature posits that father hunger is particularly concerning for daughters, as they are taught to put relationships first and thus demand a lot more intimacy than boys in general (Maine, 1991). Maine further states that because daughters need more intimacy, father hunger thus often results from too little intimacy between daughter and father. According to the theory, girls who experience this father hunger often develop eating disorders, depression, low self-esteem, and are at higher risk for teen pregnancy than those daughters who have close relationships with their fathers. As these females get older, they may develop maladaptive behaviors driven by a need for security, a need to constantly please others, and ultimately a need for intimacy (Maine, 1991). In short, it is presumed that daughters experiencing father hunger would have a greater need for intimacy. Appleton (1981) and Secunda (1992) wrote about their observations of fatherless females as well stating that father hungry adolescent daughters often feel insecure about their ability to attract males and thus are insecure in their relationships. Further, father hungry adolescent daughters may develop an excessive hunger for male attention, of which she can never get enough and may even develop into a "love-addict" as an adult. Although the data set that was used in this current study did not have a measure of "father hunger," it did include measures of two constructs that theoretically should be manifestations of "father hunger;" a

measure of adolescents' need for intimacy in their relationships with their romantic partners and a measure of motivation to engage in sexual behaviors. Moreover, because "father hunger" is presumed to be a result of a lack of psychological intimacy with one's father, it seems reasonable that those females with poorer FDRQ might manifest these needs for intimacy more so than those with better FDRQ.

Several studies provide indirect evidence for some of the predictions made about "father hunger." Cangelosi (1993) studied 144 college women to examine the impact of father absence on identity development and relationship intimacy. They hypothesized that the two groups of females would significantly differ on their identity development and ability to establish emotional and sexual intimacy in relationships. The father absent group (N=62) were women from divorced families whose fathers had permanently left their home before they were 12. The father present group (N=82) was matched on demographics to the father absent group, but lived with both of their biological married parents. All participants completed a demographic questionnaire, The Erikson Psychosocial Stage Inventory, and the Personal Assessment of Intimacy in Relationships Inventory. Females' level of identity development (or task resolution at this stage) was not as developed in the father absent group as it was in the father present group. Those in the father absent group also had higher sexual intimacy scores and lower emotional intimacy scores than the father present group. Cangelosi framed the findings in accordance with the theory of father hunger suggesting that father absent girls were using sex to compensate for the lack of a father-daughter emotional connection.

Although intimacy is not sex (and vice versa), it appears that adolescent females often tend to equate intimacy with sex and to a greater extent than adolescent males (Bollerud,

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Christopherson, & Frank, 1990; Gilligan, 1982; Mccabe, 1999; Thompson, 1984, 1990, 1995; Tolman, 2002; Youdell, 2005). They also are likely to forgo safe sex practices (particularly in more casual relationships) to achieve greater intimacy. It appears that in more committed relationships that the intimacy needs may be met by the relationship. However, in less committed and more casual relationships where intimacy is not met, adolescent females make sexual decisions based on the intimacy of the relationship (Bollerud et al., 1990). Thompson (1995) posits that young women who tend to equate intimacy and sexuality are also less likely to practice safer sex than those who are less likely to equate intimacy and sex.

Most of the above data linking intimacy to teenage pregnancy has been based on small clinical samples and theory. There is limited empirical research on need for intimacy particularly in relationship to teenage pregnancy. However, there are large scale studies that have linked need for intimacy to high risk sexual behaviors, such as increased sexual activity and decreased condom use, both of which are correlated with teenage pregnancy.

The link between intimacy and condom use has been researched among many populations; female sex workers (Kerrigan et al., 2003; Murray et al., 2007), adolescents (Gebhardt, Kuyper, & Greunsven, 2003; Pallonen, Timpson, Williams, & Ross, 2008; Tschann, Adler, Millstein, Gurvey, & Ellen, 2002), and heterosexual adults (Pilkington, Kern, & Indest, 1994). A substantial body of research has illustrated that the relationship between intention to use condoms and actual condom use has been found to be the weakest among those in the most intimate relationships (Bowen, 1996; Katz, Fortenberry, Zimet, Blythe, & Orr, 2000), suggesting forgoing condom use may illustrate a higher level of intimacy in the context of a relationship. Tschann et al. (2002) examined the association

between power in romantic relationships and condom use. They examined both decision making power and emotional intimacy power. There were 228 adolescents aged 14-19 years in the study (69% of the sample was female). They found that males rated themselves as higher than females did in power on both domains. However, there was not a significant gender difference in condom use. The results indicated that those who had more power would get their way in regards to condom use. Those with higher levels of emotional intimacy tended to have less power within the relationship and would succumb to her/his partner's desire regarding condom use. Thus, the results suggest those with less emotional intimacy have more power in romantic relationships, especially in relationship to condom use, and those with higher emotional intimacy will tend to give in to their partner's preference for condom use. Fortenberry, Tu, Hareslak, Katz, and Orr (2002) found that condom use rates for adolescent females were higher in "new" relationships than in established relationships where presumably there is more intimacy. However, reported condom use rates were similar after only 21 days of being in a "relationship" ("new" relationships were viewed as established after a relatively short period). Thus, in less than a month perceived intimacy within relationships increased and thus condom use decreased. The use of condoms is being discontinued early in adolescent romantic relationships increasing their risk for pregnancy. Gebhardt et al. (2003) conducted a study examining the relationship between condom use and need for intimacy in both steady relationships as well as casual sex experiences. Their study consisted of 701 adolescents (424 males and 277 females) aged 15-23 years old. They found that in casual sex experiences, need for intimacy was positively related to condom use. However, in steady relationships they found that condom use was negatively related to need for intimacy, that is those in a serious relationship

with higher levels of need for intimacy were less likely to use condoms than those with lower levels of need for intimacy. Thus, it appears that adolescents are foregoing condom use to achieve greater intimacy within their romantic relationships. If they do not use condoms in an attempt to achieve intimacy (or as a symbol of greater intimacy), then it is reasonable to hypothesize adolescent females with greater needs for intimacy would be at increased risk of getting pregnant.

In sum, the level of "father-hunger" experienced by adolescent females whose biological fathers were absent from the home may be dependent on the quality of the relationship they have with their biological father and/or their resident stepfather. Increased "father-hunger", expressed as a higher need for intimacy, could increase a female's risk for pregnancy because (a) she is more determined to have an intimate relationship and (b) may be less likely to use a condom than females with less "father-hunger" (i.e., lower intimacy needs). In the current study, it is hypothesized that girls with poorer relationships with their fathers (as measured by perceived closeness and father engagement) will have higher need for intimacy (i.e., close relationships with males) as measured by (a) desire for a romantic relationship and (b) more desire for sexual contact. Moreover, it is hypothesized that the relationships between father-daughter relationship quality and pregnancy will be mediated by the above two measures of need for intimacy.

Definition of Terms

Absent Father. An absent father refers to a biological father who is the known living, father of the adolescent female, but who does not reside with the female adolescent. In this study, the departure from the home must have occurred prior to the age of 14.

Teen Pregnancy. Teenage pregnancy refers to an adolescent female who becomes pregnant between the ages of 15-19 and prior to her graduation from high school.

Father-Daughter Relationship Quality. In this study, father-daughter relationship quality refers to the father-child closeness and father-child involvement and engagement (i.e., amount of contact and engagement in activities). These variables were assessed for both fathers and stepfathers.

Need for Intimacy. The desire for intimacy variable (or need for intimacy) refers to how much the adolescent female desires a romantic relationship and her motivation to engage in sexual behaviors.

Hypotheses

- Within the group of adolescent females with absent fathers, after controlling for timing of father absence, sociodemographic variables (age, race, IQ, SES number of siblings) and other known risk factors for pregnancy including, religiosity, abstinence pledging, maternal monitoring, timing of father absence, and perceived closeness to mother:

   (a) Father-daughter relationship quality (FDRQ, as measured by indices of contact frequency and relationship quality) will predict teenage pregnancy. Specifically, adolescents with more FDRQ (closer father-daughter relationships, more contact, and higher levels of father engagement) will be less likely to experience a teenage pregnancy than adolescent females with less FDRQ.

   (b) Stepfather-daughter relationship quality will predict teenage pregnancy. Specifically, among adolescents who have a stepfather present in the home, those with higher SFDRQ (i.e., more perceived closeness with step father, higher levels of involvement and engagement in activities) will be less likely to experience a teenage

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pregnancy than adolescent females with less SFDRQ. It is further expected that this relationship will not be as strong as the relationship for biological fathers between FDRQ and teen pregnancy.

(c) Adolescent females' need for intimacy will predict teenage pregnancy. Specifically, those females with a higher desire for a romantic relationship and higher level of sexual motivation will be more likely to experience a teenage pregnancy than adolescents with lower levels of need for intimacy.

(d) Need for intimacy will mediate the relationship between father-daughter relationship quality (FDRQ and SFDRQ) and the likelihood of teenage pregnancy.

CHAPTER 3

METHOD

Study Design and Procedure

Data for this study were drawn from the National Longitudinal Study of Adolescent Health (Harris et al., 2009). This longitudinal study is a national sample of adolescents who during the 1994-95 school year were in grades 7-12 in the United States. Researchers implemented systematic sampling and implicit stratification to choose a sample (with an unequal probability of selection) of 80 high schools and 52 middle schools in the United States that would be representative of schools in the United States with respect to region of country, urbanicity, school type, ethnicity, and school size. The sample is not representative of the United States; however, in that some groups such as middle and upper income African American students were deliberately oversampled to allow for students that would provide generalizations to these subpopulations. To be eligible for the sample, the high schools had to have an 11th grade with a minimum enrollment of 30 students. Over 70% of the originally sampled high schools participated. Those that declined were replaced by another school within the same stratum. The participating high schools then identified feeder schools (i.e., schools that included a 7th grade and sent at least five of its graduates to that high school). From the list of identified feeder schools, one was selected with a probability proportional to the number of students it contributed to the high school. Declining feeder schools were selectively replaced. In summary, the data were obtained through a stratified clustered sampling design.

During the 1994-1995 (Wave I) data collection, self-report information was obtained using an in-school and in-home interview administered to and collected from 7th-12th graders. The approximate percentage of the sample from each grade was 13% 7th grade, 13% 8th grade, 17% 9th grade, 19% 10th grade, 18% 11th grade, and 16% 12th. The in-school questionnaire was a self-administered instrument formatted for optical scanning. The questionnaire took approximately 45-60 minutes to complete and was administered during a class period (no "make-up" for absent students). Parents were informed ahead of time and could decline their child's participation. The in-home interview was administered using a Computer-Assisted Self-Interview (CASI) to ensure security and confidentiality. The interviewer read questions aloud and recorded the participants' responses. For more sensitive topics, such as sexual behaviors, the participants listened to pre-recorded questions and responded via the laptop computer directly to help minimize response bias and potential interviewer or parental influence. Other data collected at Wave I, but not utilized for the present study include data from parent questionnaires, sibling questionnaires, fellow student questionnaires, school administrator questionnaires and interviews with romantic partners when relevant. Information about neighborhoods and communities was also recorded.

This cohort of participants has been followed through four "Waves" of data collection with in-home interviews being conducted at each wave: Wave I data collection took place between 1994-1995, Wave II data one year later, Wave III data were collected between August 2001-April 2002, when the respondents were between ages 18-26 years old (24 of them were 27-28), and Wave-IV in 2008 (the sample of participants were between the ages of 24-32, except 52 participants who were 33-34 at the time of the interview). Other types of data collection mechanisms (e.g., genetic markers, transcript data) were added at the various

data collection periods, but they are not relevant to the current investigation. All of the data for this investigation came from the in-home interview of Wave I (predictor variables), except for the outcome variable (teenage pregnancy) which came from in-home interview at Wave III. Teenage pregnancy was operationalized as an adolescent who at Wave III was age 19 or under and whose pregnancy occurred after Wave I and prior to Wave III data collection and prior to high school graduation.

From the sample selected from those who participated in the in-school interview process, 78.9% participated in the in-home interview process as well. The response rate for Wave III was 77.4%. The reasons for non-response between Wave I and Wave III were split almost equally by those who could not be located and those who declined to participate for various reasons. The nonresponse bias was evaluated by Add Health researchers (Chantala, Kalsbeek, & Andraca, 2005), who concluded that there were not significant differences between Wave I and Wave III samples, so that the two samples were estimating the same population.

Sample

The current investigation of factors predicting teenage pregnancy focused specifically on females raised in homes where the biological father was not present. As such, it is a within-groups design with the goal of explaining variability in pregnancy within that population. The sample of adolescent females who reported having a living nonresident biological father (N=2,829) included females with fathers who had always been absent from the home (i.e., the biological father and biological mother never lived together after the birth of the child) through females whose fathers had left the home up to the age of 13. The 13-year-old cutoff was chosen based on the variable of father presence implemented in Ellis et

al. (2003), and to be certain that the father was absent from the home prior to a possible "teenage pregnancy". Approximately 29% (*n*=818) of the adolescent females with biological fathers absent from the home reported having a stepfather figure in the home.

Approximately 12 percent of the sample (*n*=312) experienced a teenage pregnancy as defined in this study (after Wave I interview and prior to the Wave III interview). Noting that there was an age range implemented as part of the operational definition of teenage pregnancy, the age range the sample was pregnant included the full operationally defined range (ages 15-19) with a mean age of 17.30 (*SD*=1.44).

Variables (see Appendix A table of variables for more detail)

Dependent Variable. The outcome measure for this study was teenage pregnancy, and it was measured at Wave III. The adolescent female participants were asked, "Have you ever been pregnant? Be sure to include if you are currently pregnant and any past pregnancy that ended in an abortion, stillbirth, miscarriage, or a live birth after which the baby died". For the participants who answered "yes", they were also asked, "Since January 1, 1994, in what month (and year) did you (first) get pregnant?" and "How far had you gone in school when you got pregnant?" Only teens who responded that they had been pregnant sometime between the age of 15-19 and prior to graduating high school were considered to have a "teenage pregnancy."

Predictor Variables. All predictor variables were obtained from Wave I data.

Father-daughter relationship quality (FDRQ). Three measures of the father-daughter relationship were included: *perceived closeness*, *engagement*, and *amount of contact* (see descriptions of the three variables below). *Closeness to nonresident biological father* was measured using one item: "How close do you feel to your biological father?"

which was answered on a 1-5 scale, 1=*not close at all*, 2=*not very close*, 3=*somewhat close*, 4=*quite close*, and 5=*extremely close*. This question is face valid and has been used in several other studies as a measure of relationship quality, specifically the feeling of closeness to one's parental figures (Berg, 2003; Booth et al., 2010; King, 2006; Manning & Lamb, 2003; Yuan & Hamilton, 2006) *Engagement with biological father* was assessed via 10 yes/no items indicating if the female adolescents' biological father had engaged in various specific activities with her in the past four weeks (i.e., shopping, played a sport, discussed the adolescent's life). There were parallel items for stepfathers. "Argued about behavior" was dropped from the total scale to improve the scale's reliability. Thus, father engagement or involvement in activities with the adolescent female was computed based on 9-items (Cronbach's α = .81). This same index was used by Yuan and Hamilton (2006) to measure both father and stepfather involvement. The third dimension of FDRQ was the *quantity or amount of contact with biological father* which was measured as the average of two items indicating how often in the past 12 months (0=*not at all*, 5=*more than once a week*) the adolescent had stayed overnight with the father, and how often the adolescent talked with the father in person, or on the telephone, or received a letter from him. Analysis revealed that these two items scaled had a Cronbach's α = .67 (similar to α = .71 found by Mitchell, Booth, and King (2009) in their study using Add Health data).

Preliminary analyses revealed that three measures of FDRQ were highly correlated with one another (with correlations ranging from r=.64 -66, $p<.01$). The three variables were measured in different units, so all three variables were transformed into *z*-scores. Principal components analysis (PCA) was then conducted on the three standardized measures. Using an eigenvalue criteria of 1.0, one component was extracted which accounted for over 76% of

the variance; all of the three measures had similarly high loadings on the one component

(range = .87-.88). Thus, the average of the three *z*-scores was computed to create a total

nonresident biological father-daughter relationship variable, so the construct of FDRQ in this

study was unidimensional (see Table 1 for PCA details).

Table 1

Factor loadings, communalities (h^2), and Percent of Variance for Principal Components Analysis for the Father-Daughter Relationship Quality (FDRQ) Variable

Item	Factor loadings	h^2
Nonresident Biological Father		
Perceived Closeness	.87	.75
Amount of Contact	.87	.76
Engagement in Activities	.88	.78
Percent of Variance	76.33	
Step Father		
Perceived Closeness	.86	.75
Engagement in Activities	.86	.75
Percent of Variance	74.49	

Stepfather-daughter relationship quality (SFDRQ). Two measures of the stepfather-

daughter relationship were included: *perceived closeness* and *engagement* (see descriptions

of the two variables below). *Closeness to stepfather* was measured using an alternate form of

the same item that was used to measure perceived closeness to biological father: "How close

do you feel to your stepfather?" which was answered on a 1-5 scale, 1=*not close at all*, 2=*not

very close*, 3=*somewhat close*, 4=*quite close*, and 5=*extremely close*. *Engagement with

stepfather* was measured with an alternate form of the same items that were used to measure

engagement with nonresident biological father. Adolescents responded to 10 yes/no items

which indicated if the female adolescents' stepfather had engaged in the activity with her in

the past four weeks (i.e., attended a religious service, discussed the adolescent's life, went to

a movie, discussed a personal problem, talked about school grades). After dropping the item "argued about behavior," the internal consistency for the remaining 9 items was .63.

Preliminary analyses revealed that the two measures of SFDRQ were also highly correlated with one another ($r=.50$, $p<.01$). Because the two variables were measured in different units, they were first transformed to z-scores, and a PCA using those two transformed variables was conducted. Using an eigenvalue criteria of 1.0, one component was extracted which accounted for over 74% of the variance. The two variables both had loadings of .86 on the one component. Thus, the average of the two z-scores made the unidimensional SFDRQ variable (see Table 1).

Need for intimacy. The adolescent females' need for intimacy was measured with two different variables: *desire for a romantic relationship* and *motivation to engage in sex*.

Desire for a romantic relationship. The desire for a romantic relationship variable consisted of a one question item that asked adolescent females, "How much would you like to have a romantic relationship in the next year?" and they responded on a scale from 1= *not at all* to 5=*very much*.

Motivation to engage in sex. The motivations to engage in sex scale included eight questions about one's motivation for engaging in sexual intercourse. The participants listened to pre-recorded administration guidelines and questions via headphones and answered the questions directly on a laptop via CASI. They were told that it does not matter whether they have had intercourse, just to indicate whether or not they agree with the statements, 1=*strongly agree* to 5=*strongly disagree*. The 8-items were (1) If you had sexual intercourse, your friends would respect you more; (2) If you had sexual intercourse, your partner would lose respect for you; (3) If you had sexual intercourse, afterward, you would

feel guilty; (4) If you had sexual intercourse, it would upset your mother; (5) If you had sexual intercourse, it would give you a great deal of physical pleasure; (6) If you had sexual intercourse, it would relax you; (7) If you had sexual intercourse, it would make you more attractive to men; and (8) If you had sexual intercourse, you would feel less lonely. Items 2, 3, and 4 were reverse coded so that all the items were numbered in a consistent direction during analysis. For this scale, higher numbers represented more motivation to engage in sex (so lower numbers represented less motivation). The questions are face valid and appear to be asking questions about one's romantic desires and motivations for engaging in sexual behavior. The scale had a Cronbach's α of .69, reflecting adequate reliability.

Many well-known intimacy measures assess levels of intimacy in current relationships (Corcoran & Fischer, 2000; Sternberg, 1997; Tzeng, 1993). The present study was interested in the need for intimacy as a manifestation of "father hunger," and thus questions about the desire to have a romantic relationship were chosen rather than questions about a current relationship. Further, Gebhardt et al. (2003) included a motivation for sex scale that is quite similar to the questions used in this study.

Control Variables

Sociodemographic Variables. The participant's age, race, and IQ (Halpern, Joyner, Udry, & Suchindran, 2000) were included as demographic variables. Further, the participant's mother's level of education (as a proxy for SES, Barber & Mueller, 2011), the number of siblings, religiosity and abstinence pledging, maternal supervision, and perceived closeness to mother were also included as control variables. The coding information is reported in Appendix A. A table of variables and frequencies are reported in the descriptive tables (Table 4 and Table 5 for nonresident biological fathers and stepfathers respectively).

Mother's education. Participants were asked "How far in school did your mother go?". There were originally 12 response categories, but due to small cell sizes the categories were collapsed into four categories: (1) Less than High School (*N*=429; 16.8%); (2) High School Degree (*N*=1002; 39.3%); (3) Some Education Beyond High School (*N*=576; 21.2%); and (4) Completed Higher Education (*N*=541; 21.2%).

Race. The race categories included African-American, Hispanic, Native American, Asian, White, Multiracial, and other. Due to small cell sizes, these were collapsed into four categories: (1) White (*N*=1151; 45.2%); (2) African-American (*N*=779; 30.6%); (3) Hispanic (*N*=388; 15.2%); and (4) Other (*N*=230; 9%).

IQ. At the beginning of the in-home interview, participants were given the Add Health Picture Vocabulary Test (AHPVT), which is a computerized abridged version of the Peabody Picture Vocabulary Test-Revised. Halpern et al. (2000) described that participants listen to the interviewer read words and then selected the picture that best fit the meaning of the word (multiple-choice format). For example, the word "furry" has simple, black and white pictures of a parrot, dolphin, frog, and cat from which to choose. There are 87 items on the AHPVT, and raw scores have been standardized by age. Validity evidence in this population was demonstrated via a subset of participants from the overall Add Health sample who completed both the AHPVT and the PPVT, with correlating scores (*r*=.96). In other studies, the PPVT has been correlated with other well-known measures of IQ, such as the Weschler Intelligence Scale for Children (WISC) (reviewed in Halpern et al., 2000). The AHPVT is better suited for field work than the WISC due to its quick and easy administration. The AHPVT has been used in other published studies based on the Add

Health data set as a measure of IQ (Barber & Mueller, 2011). The mean score for this sample was 97.74 (*SD*=14.30), with a range of 16-136.

Number of siblings. Participants were asked "How many children have your biological parents had together?" In this study, responses ranged from 1-14 (1=35.3%, 2=35.3%, 3=17.7%, 4=7.3%, 5=2.8%, 6-14=combined 1.7%).

Religion and abstinence pledging. Evidence of religiosity, both public (i.e., attendance at services) and personal (i.e., personal assessment of importance), were considered as potential control variables based on findings from Uecker (2008). Both of these constructs were measured by single items. Amount of religious service attendance, "In the past 12 months, how often did you attend religious services?" was measured on a rating scale (1 = *once a week or more*, 2=*once a month or more, but less than once a week*, 3=*less than once a month*, 4=*never*). Scores were recoded so that 0 was never, and higher scores reflected more attendance or more public religiosity. Self-importance of religiosity, "How important is religion to you?" was also measured on a rating scale (1=*very important*, 2=*fairly important*, 3=*fairly unimportant*, 4=*not important at all*) and was included as the personal religiosity measure. Because both items were highly correlated with one another (r=.68, p<.01), the two variables were averaged to create a total religiosity variable.

The single dichotomous item, "*Have you taken a public or written pledge to remain a virgin until marriage?*" was also included as a control variable. It was coded as 0=no and 1=yes.

Maternal supervision. Maternal supervision was measured using 3-items, assessing how often the participant's mother is home in the morning before school, after school, and in the evening. The participant responded using a rating scale where 1=*always* and 5=*never* (I

reversed coded so that higher numbers represented more supervision). The questions were face valid and measured how often the adolescent is home alone. These items are included as three separate control variables based on the life-course adversity theory. The items were not collapsed into a single scale as they represent different aspects of mother's availability for monitoring and a PCA analysis identified three components.

Timing of father absence. Previous research (Ellis et al., 2003) has found that the timing of father absence is related to teenage pregnancy, specifically that the earlier the biological father leaves the home, the more likely the adolescent female is to become pregnant. The timing of father absence was operationalized in this study as early absence (age 5 and below) and later absence (after age 5) in line with developmental theories suggesting this differentiation (Bereczkei & Csanaky, 1996; Blain & Barkow, 1988; Draper & Harpending, 1982; and Hetherington, 1992). Father's early departure from the home may impact attachment, and thus the younger a child is when her father leaves the home, the more potential for interfering with developmental tasks that set the stage for later tasks such as identity and intimacy (Ainsworth & Bowlby 1991; Erikson, 1968). The current sample only included females who reported having a nonresident biological father. However, the female participants who responded that they do not live with their biological father also reported how many years it has been since they last lived with him. Consistent with Ellis (2003), *Early Absence* was defined as females whose father was absent from birth-5-years-old, and *Late Absence* was defined as females whose father left the home when the female was between the ages of 6-13.

Perceived closeness to mother. Adolescent females' perceived closeness to mothers was included as a control variable. Adolescents reported how close they felt to their mothers

on a scale from 1 to 5 (1=*not at all close*, 2=*not very close*, 3=*somewhat close*, 4=*quite close*, and 5=*extremely close*).

CHAPTER 4

RESULTS

Data Screening, Cleaning, and Preliminary Analyses

All analyses of the data were conducted using IBM SPSS version 19.0 (IBM, 2012). Data were initially organized and coded after examination of the codebooks from Add Health Data and were first examined for missing values. For the variables with more than 5% of the cases missing data, a missing values analysis was conducted. For all the variables (except motivation to engage in sex), the data were determined to be missing at random. The group mean (pregnant or not pregnant) was imputed for the missing values. Group mean substitution for missing values was chosen as it is less conservative than imputing the overall mean, but not as liberal as using prior knowledge to try and guess the mean (Tabachnick & Fidell, 2007). Further, the pregnancy group is smaller than the not pregnant group. Listwise deletion was implemented for the variables that had less than 5% of the cases missing data and only missing from the not pregnant group. The motivation to engage in sex scale had missing data not at random. This is because any adolescent below the age of 15 at Wave I was not asked those questions. Thus, the missing data were not imputed. These missing cases turned out to be inconsequential for the final regression analyses because motivation to engage in sex was not correlated with either teen pregnancy or FDRQ, so it was not used in any of the mixed multilevel logistic regression models. Thus, the reported mixed multilevel logistic regression models included the full sample of adolescent females with absent fathers even though there were fewer participants in the sample that had data on the motivation to engage in sex questions.

Preliminary analyses were conducted to examine all assumptions required for logistic regression. Recall that all adolescent females in this sample has a non-resident biological father; a subset also had a step father (*n*=748). Because separate models will later be run on both groups, and there are different relevant variables for each group, results are presented for each. Logistic regression is robust to violations of normality. It requires no distributional assumptions on the predictors (the predictors do not have to be normally distributed, linearly related or have equal variance in each group). The assumptions of logistic regression include (1) no outliers, (2) lack of collinearity among predictor variables, and (3) independence of errors. Univariate outliers were examined using a +/-3.29 cutoff criteria for standardized scores. Simple Pearson correlations were employed to examine associations among variables. Multicollinearity was assessed in two ways: by examining the simple Pearson correlation coefficients between all pairs of the predictor variables and by examining their tolerance values if entered simultaneously in a regression (Tabachnick & Fidell, 2007). Tolerance ranges from 0 to 1.0 and expresses the amount of variance in a given variable that cannot be explained by a linear combination of the other independent variables. Several preliminary issues of collinearity were dealt with when there were multiple measures of a construct (see Methods sections) and the measures were reduced accordingly (see Methods section). Tables 2 and 3 show the intercorrelations among all of the variables, and Appendix B includes a table with the tolerance values for all predictors for the entire sample of adolescent females with absent fathers and the sample of females with a resident stepfather respectively. In Table 2, the sample used was all adolescents in the study. In Table 3, the sample used was all adolescents in the study who had a resident stepfather (or stepfather like

figure). Means, standard deviations, and ranges for the final variables are presented in Table

4 and 5 for entire sample and the subsample with stepfathers respectively.

Table 2
Correlations of Variables for Entire Sample

	1	2	3	4	5	6	7	8	9	10	11	12a	12b	12c	13	14	15	16
Control Variables																		
1. Age	1																	
2. African-American	-.05*	1																
3. Hispanic	.08**	-.28*	1															
4. Other Race	-.02	-.06**	-.04	1														
5. IQ	-.08	-.25**	-.14**	.01	1													
6. Number of Siblings	.03	-.01	.11**	.00	-1.6**	1												
7. Abstinence Pledge	-.13**	.01	.06**	.03	-.09**	.02	1											
8. Timing of Absent Father	-.02	-.06**	-.00	.02	.05*	.27**	.02	1										
9. Mother's Education Level (SES)	-.06**	.04	-.16**	-.02	-.08**	-.09**	-.01	.05**	1									
10. Average of Religion	-.11**	.26**	-.00	-.02	.05*	.06**	.20**	-.01	.09**	1								
11. Perceived Closeness to Mom	-.01	.03	-.04*	-.02	-.05*	.00	.01	-.04*	-.03	.05*	1							
12. Maternal Supervision																		
a. Morning	-.04*	.00	-.02	.01	.00	.03	.02	-.01	.01	.03	.06**	1						
b. After School	-.03	.07**	.07**	.00	-.17**	.06**	.07**	-.04*	-.20**	.06**	.08**	.19**	1					
c. Bedtime	.05*	.02	.06**	.01	-.05*	-.04*	.03	-.02	-.02	.08**	.13**	.08**	.07**	1				
13. Desire for romantic relationship	.22**	-.15**	-.00	-.02	.16**	-09**	-.09**	-.00	.07**	-.10**	-.11**	-.04*	-.10**	-.05**	1			
14. Motivation to Engage in Sex	.45**	.05**	.07**	-.02	-.08**	.01	-.03	.01	-.04	.03	-.02	-.00	.02	.01	.01	1		
15. FDRQ	-.17**	.04	-.09**	-.04*	.05*	.04*	.04*	.25**	.06**	.06**	.01	.01	-.04	.01	-.02	.09**	1	
Dependent Variable																		
16. Teenage Pregnancy	-.12**	.04	.03	.02	-.09**	.02	.01	.00	-.10**	.02	-.03	.01	.04	-.03	-.02	-.05*	-.03	1

Note. N=2548 for all variables except Motivation to Engage in Sex (N=2290) * p<.05, ** p<.001 (2-tailed)

Table 3
Correlations of Variables for Subsample of Adolescent Females with Resident Stepfathers

	1	2	3	4	5	6	7	8	9	10	11	12a	12b	12c	13	14	15	16	17
Control Variables																			
1. Age	1																		
2. African-American	-.06	1																	
3. Hispanic	.05	-.20**	1																
4. Other Race	-.03	-.05	-.04	1															
5. IQ	-.01	-.21**	-.17**	.04	1														
6. Number of Siblings	-.04	.03	.02	.02	-.15**	1													
7. Abstinence Pledge	-.19**	.03	.02	.03	-.05	.15**	1												
8. Timing of Absent Father	-.09*	-.09*	-.08*	-.02	.09*	.23**	.04	1											
9. Mother's Education Level (SES)	-.04	.09*	-.15**	-.05	.27**	-.01	.01	.08*	1										
10. Average of Religion	.20**	.27**	-.00	-.01	-.14**	.08*	.19**	-.05	.08*	1									
11. Perceived Closeness to Mom	.07*	.02	-.08*	-.02	.02	-.02	.02	-.04	.01	.08*	1								
12. Maternal Supervision																			
a. Morning	-.08*	.01	-.04	.01	.05	-.01	-.00	-.04	.01	.04	.06	1							
b. After School	-.04	.01	.10**	-.01	-.16**	.02	.02	-.14**	-.18**	.04	.09*	.19**	1						
c. Bedtime	-.07	.03	.01	.02	-.05	-.04	.01	.00	-.02	.04	.07*	.09*	.04	1					
Predictor Variables																			
13. Desire for romantic relationship	.20**	-.15**	-.01	-.03	.12**	-.09*	-.11**	.02	.08*	-.11**	-.10**	-.06	-.06	-.05	1				
14. Motivation to Engage in Sex	.46**	.04	.03	-.04	-.08*	-.01	-.06	-.10**	-.02	-.01	-.04	-.05	.03	0.01	.03	1			
15. Biological FDRQ	-.18**	.05	-.11**	-.03	.05	.07*	.09*	.27**	.10**	.08*	.02	-.04	-.03	.05	.06	-.12**	1		
16. Stepfather FDRQ	-.09*	.06	-.10**	.02	.03	.05	.10**	-.05	.02	.21**	.37**	.10**	.10**	.05	-.15**	-.02	-.01	1	
Dependent Variable																			
17. Teenage Pregnancy	-.10**	.00	.08*	.02	-.08*	.11**	-.01	-.01	-.11**	.00	-.06	-.02	.06	-.07	-.03	-.05	-.06	-.03	1

Note. N=748 for all variables except Motivation to Engage in Sex (N=679) * p<.05, ** p<.001 (2-tailed)

Table 4

Descriptive Statistics for Key Study Variables for the Entire Sample

	N	M (SD) %	Range
Age at Wave I	2548	15.84 (1.71)	11.60-21.23
White	1151	45.2%	
African-American	779	30.6%	
Hispanic	388	15.2%	
Other Race	230	9%	
IQ	2548	97.74(14.30)	16-136
Number of Siblings	2548	2.15(1.30)	1-14
Abstinence Pledge	2548	Yes=84%; No=16%	
Mother's Education Level (SES)			
Less than High School	429	17%	
High School Degree	1002	39%	
Some Beyond High School	576	23%	
Higher Education Degree	541	21%	
Religiosity	2548	.00(.92)	-1.63-1.01
Perceived Closeness to Mom	2548	4.58(.88)	1-5
Maternal Supervision			
Morning	2548	4.18(1.3)	1-5
After School	2548	3.25(1.50)	1-5
Bedtime	2548	4.63(.80)	1-5
Timing of Father Absence			
Early Absence	1554	61%	
Late Absence	994	39%	
FDRQ	2547	.00(.87)	-1.13-2.28
Desire for Romantic Relationship	2548	3.34(1.24)	1-5
Motivation to Engage in Sex	2290	3.12(.82)	1-5
Teenage Pregnancy			
Yes	312	12%	
No	2236	88%	

Table 5

Descriptive Statistics for Key Study Variables for the Subsample of Adolescent Females with a Resident Stepfather

	N	M (SD) %	Range
Age at Wave I	748	15.94(1.13)	11.60-20.25
White	421	56%	
African-American	144	19.3%	
Hispanic	108	14.4%	
Other Race	75	10%	
IQ	748	98.80(13.54)	41-136
Number of Siblings	748	2.05(1.19)	1-12
Abstinence Pledge	748	Yes=17.4%	
		No=82.6%	
Mother's Education Level (SES)			
Less than High School	115	15.4%	
High School Degree	308	41.2%	
Some Beyond High School	161	21.5%	
Higher Education Degree	164	21.9%	
Religiosity	748	.04(.89)	-1.63-1.01
Perceived Closeness to Mom	748	4.55(.79)	1-5
Maternal Supervision			
Morning	748	4.20(.79)	1-5
After School	748	3.32(1.48)	1-5
Bedtime	748	4.71(.71)	1-5
Timing of Father Absence			
Early Absence	240	32.1%	
Late Absence	508	67.9%	
Biological FDRQ	748	-.09(.89)	-1.13-2.28
Stepfather FDRQ	748	-.00(.86)	-1.83-2.33
Desire for Romantic Relationship	748	3.45(1.20)	1-5
Motivation to Engage in Sex	679	3.15(.79)	1-5
Teenage Pregnancy			
Yes	102	13.6%	
No	646	86.4%	

The final assumption, independence of errors, was presumed to be violated in this model because cluster sampling by school was used to select participants into the study. To determine if this assumption was violated, a "null model" mixed multilevel logistic regression hierarchical model was conducted on the dependent variable with "school" entered as a random control variable and no predictors. The random effect of school was significant for teenage pregnancy in the full sample ($\tau = 25.11$, $SE = .08$, $p < .01$), indicating the nesting variable needs to be included as a control. For the sample of adolescent females with step fathers, the random effect of school was also significant for teenage pregnancy ($\tau = 15.79$, $SE = .12$, $p < .001$). Thus, mixed model logistic regression was used in subsequent analyses.

Hypothesis Testing

A series of mixed multilevel logistic regression analyses were employed to test the research hypotheses. The generalized linear logistic regression model was utilized because of the dichotomous outcome variable; multilevel modeling was employed because of the demonstrated violation of the independence of error assumption that occurred due to the nesting of adolescents within schools. A logit link function was used to model the log likelihood of the outcome teenage pregnancy with the various predictors.

In addressing the research questions, separate hierarchical models were employed for nonresident biological father and step father because only a subset of the adolescents had step fathers.

Hypothesis One. Within the group of adolescent females with nonresident biological fathers, after controlling for timing of father absence, sociodemographic variables (age, race,

IQ, SES, number of siblings) and other known risk factors for pregnancy including religiosity, abstinence pledging, maternal monitoring, and perceived closeness to mother:

(a) FDRQ will predict teenage pregnancy. Specifically, adolescents with more FDRQ will be less likely to experience a teenage pregnancy than adolescent females with less FDRQ.

(b) Adolescent females' need for intimacy will predict teenage pregnancy. Specifically, those females with a higher desire for a romantic relationship and higher level of sexual motivation will be more likely to experience a teenage pregnancy than adolescents with lower levels of need for intimacy.

(c) Need for intimacy will mediate the relationship between FDRQ and the likelihood of teenage pregnancy.

Results of Hypothesis One (a): Does FDRQ predict teenage pregnancy?

The regression model for the full sample of adolescent females was entered as follows:

Step 1: The null model controlling for the contextual variable (school)

Step 2: The next model controlling for the demographic variables

Step 3: The final model including nonresident biological father involvement

Results indicated a random effect of the contextual variable (school) was significant for teenage pregnancy ($\tau = 1.98$, $SE = .08$, $p < .01$). The variance associated with the intercept is .26. This suggests that some of the variance in pregnancy outcomes is a function of the school students attend.

In step two, only the demographic control variables were entered into the model (age, race, IQ, number of siblings, abstinence pledge, SES, religiosity, perceived closeness to

mom, maternal supervision, and timing of father absence). Increases in age, IQ, and SES were all significantly related to a decrease in odds of a teenage pregnancy. In addition, the presence of maternal supervision at bedtime was related to a decrease in the likelihood of becoming pregnant. The SPSS program does not provide fit indices for nonlinear generalized hierarchical models. However, adding the control variables reduced the variance coefficient of the intercept from .26 in the null model to .20 indicating the model with the control variables explained a portion of the between school variance associated with teen pregnancy.

Finally, step three included the FDRQ predictor. For parsimony, the discussion will be focused on the final model. After controlling for demographics and variables indicated as relevant by life-course adversity theory, FDRQ did significantly predict teenage pregnancy (t_2= 3.97, p < .05). Including FDRQ also explained additional variance in teen pregnancy associated with the contextual variable (variance coefficient = .19). However, the results were contrary in direction to what was hypothesized: For every one unit increase in FDRQ (better/more), there was 1.16 increase in the odds ratio of likelihood of becoming pregnant. Note that the inclusion of FDRQ did not change the significance testing for any Model 1 variables (see Table 6 for further details).

Table 6

Summary of Generalized Multilevel Mixed Modeling for FDRQ Predicting Teenage Pregnancy for the Entire Sample

Variable	Null Model (N=2548 participants, 136 schools)	Model 1 Control Variables (N=2548 participants, 136 schools) b e	Model 2 Predictor (N=2547 participants, 136 schools) b e
Constant (intercept)	1.98**	.12	.59
Age		1.26**	1.28**
African-American		1.2	1.42
Hispanic		1.14	1.11
Other Race		.91	.94
IQ		1.01**	.1.01*
Number of Siblings		1.02	1.01
Abstinence Pledge		.84	.84
Mother's Education Level (SES)		1.36**	1.37**
Religion		.97	.96
Perceived Closeness to Mom		1.13	1.12
Maternal Supervision			
Morning		.96	.84
After school		1.00	.96
Bedtime		1.17*	1.17*
Timing of Father Absence		1.05	1.12
Biological FDRQ			1.18*

Note. * p<.05, ** p<.001, >1 represents an increase in odds ratio and <1 represents a decrease in odds ratio

Exploratory Analyses. Because FDRQ did not predict pregnancy in the simple correlation analysis and predicted in the regression analysis in the opposite direction anticipated after controlling for a host of other variables, I conducted a series of follow up analyses to determine the issue. First, to try to achieve more clarity, all the control variables that were not related to the outcome variable (in simple correlations) were dropped from the

model. This means that only age, IQ, SES (mother's education), and race were retained.

After entering only these controls, there was still an unexpected significant positive

relationship between FDRQ and pregnancy (better/more FDRQ predicted an increase in the

likelihood of experiencing a teen pregnancy). Given that the simple correlation between

FDRQ and teen pregnancy was not significant and was an inverse relationship, this suggested

a possible suppression effect (Cohen, Cohen, West, & Aiken, 2003; Tabachnick & Fidell,

2007) from one or more of the control variables. To examine this, a series of models were

run dropping one of the significant control variables at a time and leaving the remaining three

controls in place. Results across three of the four models were the same, with FDRQ

increasing the odds of pregnancy. However, this effect was not present when age was

eliminated from the model, suggesting age was a suppressor, and in this case a negative

suppressor. The positive relationship between FDRQ and teen pregnancy was only present

when controlling for age. Note, from the correlation table, that the simple relationship

between age and pregnancy was also in the opposite direction that I expected with increases

in age being related to decreases in pregnancy. The magnitude of the FDRQ prediction of

teen pregnancy was enhanced in the opposite direction in the presence of the suppressor

variable, age, such that adolescents with better FDRQ were more likely to experience a

teenage pregnancy. Given that these contradictory results were only present when age was in

the model and, even then, the p-value was quite large ($p=.46$) given the large sample size I

determined that there is not sufficient evidence to declare the relationship is significantly

different from zero.

In an attempt to clarify these results, there were two additional steps taken: (1) age at

first menarche was examined and (2) the interaction between age and FDRQ was included

after the control variables as an additional step in the model before adding FDRQ. Because pregnancy depends on a female being able to reproduce, I examined age at first menarche to control for the possible confound. In reviewing the simple correlations, age at first menarche was not significantly related to any of the other variables in this study (except for Hispanic). Thus, it did not warrant including age at first menarche in any other analyses. I also added the interaction between age and FDRQ to the model as an additional control variable, because of the inverse relationship between the two variables. However, the interaction was not significantly related to teen pregnancy in the model ($p=.33$). Further, it did not change the outcome of the relationship between FDRQ and teen pregnancy in the final model. Thus, the interaction between age and FDRQ was not included in the reported final model.

Results of Hypotheses One (b) and (c): Does need for intimacy predict teenage pregnancy? Does need for intimacy mediate the relationship between FDRQ and teenage pregnancy?

To test mediation, I planned to follow Baron and Kenny's (1986) specifications for testing mediation in regression and used the transformation method (MacKinnon & Dwyer, 1993) to make it appropriate for testing mediation with a dichotomous outcome. However, the prerequisites for mediation were not met. A regression model and model of mediation would have been conducted on the subsample of adolescents who had both motivation to engage in sexual activity scores and desire for romantic relationship scores, which reduced the n to 2290, because the motivation to engage in sex questions were not asked of teens younger than age 15 at Wave I. However, within this sample, the correlation between pregnancy and both proposed need for intimacy mediators were not significant (motivation to engage in sex, $r = -.05$, $p>.01$; desire for romantic relationship $r = -.02$, $p>.01$). This, plus the

lack of relationship between the IV (FDRQ) and the DV made the testing for mediation untenable.

Hypothesis Two. Within the group of adolescent females with nonresident biological fathers and a resident stepfather, after controlling for timing of father absence, sociodemographic variables (age, race, IQ, SES, number of siblings) and other known risk factors for pregnancy including religiosity, abstinence pledging, maternal monitoring, and perceived closeness to mother:

(a) SFDRQ will predict teenage pregnancy. Specifically, among adolescents who have a stepfather present in the home, those with more SFDRQ will be less likely to experience a teenage pregnancy than adolescent females with less SFDRQ (it is expected that this relationship will not be as strong as the relationship for biological fathers).

(b) Adolescent females' need for intimacy will predict teenage pregnancy. Specifically, those females with a higher desire for a romantic relationship and higher level of sexual motivation will be more likely to experience a teenage pregnancy than adolescents with lower levels of need for intimacy.

(c) Need for intimacy will mediate the relationship between SFDRQ and the likelihood of teenage pregnancy.

Results of Hypothesis Two (a): Does SFDRQ predict teenage pregnancy (is it different from FDRQ)?

For adolescent females with nonresident biological fathers who reported having a stepfather residing in their home, separate analyses were employed to determine if SFDRQ predicted teenage pregnancy.

The regression model for the stepfather was entered as follows:

Step 1: The null model included the contextual variable school

Step 2: The model included the demographic control variables

Step 3: The model included the FDRQ

Step 4: The model included both FDRQ and SFDRQ variables

The null model was significant for teenage pregnancy ($\tau = 15.79$, $SE = .12$, $p < .001$). The variance coefficient was .20.

The demographic control variables were entered (age, race, IQ, number of siblings, abstinence pledge, SES, religion, perceived closeness to mother, maternal supervision, and timing of father absence). Increased age and SES were related to a decrease in odds of having a teenage pregnancy. Number of siblings was also related to teenage pregnancy, in that the more siblings an adolescent female reported having, the more likely she was to experience a teen pregnancy. The inclusion of the control variables did not explain any additional variance in teen pregnancy associated with the nested variable, school (.21).

In the next model, FDRQ predictor was included and was not significant ($p > .05$) and did not explain additional between school variance in teen pregnancy, and in the final model, the SFDRQ predictor was added. The results indicated for adolescent females with a stepfather, SFDRQ (or FDRQ) did not significantly predict teenage pregnancy, $t_1 = 0.15$, $p > .05$ and did not explain additional between school variance in teen pregnancy (.20). (See Table 7 for further details.)

Even though the model for the subset of adolescent females with a resident stepfather was not significant, given that the simple correlation between age and teen pregnancy was an inverse relationship in this sample and age was identified to be a suppressor variable in the

regression model for the full sample, I tested the model without controlling for age (Cohen, et al., 2003; Tabachnick & Fidell, 2007). Results did not change, as the model was still not significant.

Table 7

Summary of Generalized Multilevel Mixed Modeling for FDRQ Predicting Teenage Pregnancy for the Sample of Adolescent Females with a Resident Stepfather (N=748 participants, 131 schools).

Variable	Null Model	Model 1 Control Variables b e	Model 2 FDRQ Predictor b e	Model 3 FDRQ & SFDRQ Predictors
Constant (intercept)	1.85**	.74	.84	.52
Age		1.23*	1.23**	1.25**
African-American		.97	.98	1.16
Hispanic		.84	.85	1.54
Other Race		.59	.60	.98
IQ		1.01	1.01	1.01
Number of Siblings		.82*	.82*	.80**
Abstinence Pledge		.71	.72	.76
Mother's Education Level (SES)		1.3*	1.3*	1.30*
Religion		1.04	1.04	1.03
Perceived Closeness to Mom		1.21	1.19	1.19
Maternal Supervision				
Morning		1.05	1.05	1.06
After school		1.01	1.01	.91
Bedtime		1.27	1.27	1.26
Timing of Father Absence		.82	.90	.90
Biological FDRQ			1.22	1.22
Resident Stepfather FDRQ				1.07

Note. * p<.05, ** p<.001, >1 represents an increase in odds ratio and <1 represents a decrease in odds ratio

Results of Hypotheses Two (b) and (c): Does need for intimacy predict teenage pregnancy for the adolescent females with a resident stepfather? Does need for intimacy mediate the relationship between SFDRQ and teenage pregnancy?

A regression model and model of mediation would have been conducted on the subsample of adolescents who had both motivation to engage in sexual activity scores and desire for romantic relationship scores, which reduced the n to 679 because the motivation to engage in sex questions were not asked of teens younger than age 15 at Wave I. However, within this subset of females in the sample who had a resident stepfather, the correlation between pregnancy and both proposed need for intimacy mediators were not significant (motivation to engage in sex, $r = -.05$, $p > .01$; desire for romantic relationship $r = -.03$, $p > .01$). This, plus the lack of relationship between the IV (SFDRQ) and the DV made the testing for mediation unwarranted.

CHAPTER 5

DISCUSSION

The purpose of this study was to further our understanding of the factors that increase teenage girl's pregnancy outcomes when they come from families where their biological father is absent. Many studies on this topic presume that the absence of a biological father leads to increased teenage pregnancy because of the socioeconomic disadvantage and other life-course adversity issues children from single-mother homes often face (Belsky et al., 1991; Coley & Chase-Lansdale, 1998; Fergusson & Woodward, 2000; Kalil & Kunz, 1999; Robbins et al., 1985; Scaramella et al., 1998). Although the link between having an absent father and teenage pregnancy has been found consistently, the mechanisms explaining the link have not been adequately addressed. This absence is notable because it does not help explain the variation in outcomes among adolescent females with absent biological fathers. One apparent oversight in this research is its limited focus on father presence versus absence; this conceptualization does not attend to the qualitative dimensions of the father-daughter relationship in the context of teenage pregnancy.

Two major questions were addressed in this research: (a) To what extent can variability in teenage pregnancy outcomes among adolescent females with nonresidential biological fathers based on the father-daughter relationship (measured by quality and quantity of the relationship they have with their fathers) be explained, and (b) Does an adolescent's need for intimacy, as measured by motivation to engage in sex and desire for a romantic relationship, mediate the relationship between father-daughter relationship quality

and teen pregnancy? These same questions were also examined with respect to stepfathers for those females with an absent biological father who had a resident stepfather.

Nonresident Biological Father-Daughter Relationship and Teenage Pregnancy

Hypothesis one (a) posited that among the group of adolescent females with absent fathers, after controlling for timing of father absence, sociodemographic variables (age, race, IQ, SES, number of siblings), and other known risk factors for pregnancy including religiosity, abstinence pledging, maternal monitoring, timing of father absence, and perceived closeness to mother, the quantity and the quality of the relationship with the biological father (FDRQ) will predict teenage pregnancy. Specifically, adolescents who have more contact with their fathers and those with better quality relationships with their father will be less likely to experience a teenage pregnancy than adolescent females with poorer quality father-daughter relationships. This hypothesis was not supported. Further, there was no empirical distinction between the measures of perceived closeness to one's nonresident biological father and the amount of contact and engagement in activities with him. In the following paragraphs I first discuss the lack of empirical separation among the various indices of father-daughter relationships and then turn to a discussion of potential explanations for the lack of support for my hypothesis.

Measurement of Father-Daughter Relationship Quality (FDRQ). The need to consider the multidimensionality of father involvement was strongly emphasized in a recent meta-analysis by Kirby (2007). Consistent with this recommendation and other research in the field (Booth et al., 2010; Harper & Fine, 2006; Manning & Lamb, 2003; Pleck, 2007), I originally conceptualized father-daughter relationship quality as having three dimensions (amount of contact, engagement in activities, and perceived closeness). However, the

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empirical results from my study suggested that the three different measures of the father-daughter relationship all captured a single construct. There are several possible explanations for this apparent contradiction between what has been advocated for in the literature and what I found in this sample.

First, most of the studies that support a multidimensional measure of father-daughter relationships have been based on samples where the father lived at home (Aldous & Mulligan, 2002; Flouri, 2008; Howard, Lefever, Borkowski, & Whitman, 2006) or were in studies that compared residential biological father-daughter relationships to absent father-daughter relationships (Cabrera & Mitchell, 2009). For example, Cabrera and Mitchell found five-factors when examining their father engagement scale (i.e., subscales such as socialization, physical play, and caregiving were identified). However, their factor structure was determined using a combined sample of adolescents with and without biological fathers in the home making it impossible to reach conclusions about how the constructs might separate among the population of youth without biological fathers in the home. In addition, their measure did not include items to tap "relationship closeness" so it is unknown if that construct would have emerged as an independent factor.

Finding multiple dimensions to the father-daughter relationship in studies where the father lives in the home but only a single factor in this study of adolescents with nonresident fathers may be because contact with one's biological father does not necessarily imply anything about the quality of the father-daughter relationship if he lives with his daughter, whereas contact from a nonresident father indicates commitment and thus represents a higher quality relationship. Indeed, Carlson (2006) found that father involvement partially mediated the relationship between well-being and family structure (i.e., absence of father from home).

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In short, it may be that when a father does not reside in the home, the contact with him and involvement with him happens in the context of a close relationship.

A second explanation for the unidimensionality of FDRQ observed in these data is that other studies have chosen to include multiple dimensions of FDRQ despite evidence of strong collinearity among them. For example, King and Sobolewski (2006) found a very high correlation between father-child contact and father-child relationship quality ($r=.74$, $p<.001$) in their study using a nationally representative sample, the National Survey of Families and Households (NSFH) but kept both predictors as separate measures.

Still other studies that have used multiple measures to capture various aspects of the father-daughter relationship have failed to provide evidence that would allow the reader to evaluate the extent to which the constructs are separate (Booth et al., 2010; King, 2006; Manning & Lamb, 2003; Yuan & Hamilton, 2006). For example, Berg (2003) found an interaction effect of contact with nonresident father and perceived closeness to nonresident father on self-esteem, but did not provide the correlation between contact and closeness. Most closely related to the current research was a study by Yuan and Hamilton (2006) using Add Health data and three measures of father involvement (engagement in activities, closeness, and conflict within the relationship) two of which I adopted for this research. Again, the authors provided no evidence that the measures were or were not measuring separate constructs. In sum, across the literature, there is not strong evidence for the differentiation of these constructs.

Lack of Support for Hypothesis One. Recall that when controlling for age, FDRQ was positively related to teenage pregnancy, a complete reversal of what was expected. Results from exploratory analyses confirmed age had a suppressor effect on the

FDRQ/Pregnancy relationship; the univariate relations between FDRQ and teen pregnancy were not significant and once age was removed from the regression, FDRQ did not predict pregnancy.

The culprit in this suppression was age which was surprisingly inversely related to pregnancy with younger teens more likely to get pregnant than older teens. Upon reflection, it seemed possible that while older teens may be more likely to have sex than younger teens, they also were probably more likely to use contraception. The brain, particularly the frontal lobes, is still developing in adolescence, and frontal lobe development has been linked with impulsivity (Stuss, Picton, & Alexander, 2001). Adolescence is a period of transition from childhood to adulthood and during this time there is remodeling of the brain, which is associated with high impulsivity (Spear, 2000; Walker, Walder, & Reynolds, 2001). So it makes sense that younger females engaging in sex are likely even more impulsive than older females engaging in sex and are less likely to protect themselves via condom use and the use of other contraceptives. Contraceptive use thus might have been an important additional predictor in this model.

Additional exploratory analyses were conducted to determine if the inverse relationship between age and pregnancy might have been a function of contraceptive use. Recall that age at Wave I was negatively related to teen pregnancy at Wave III (r=-.12, p<.01). These analyses revealed that age at Wave I was in fact positively correlated with having had sex at Wave III (r=.25, p < .01), such that the younger the females were when they entered the study, the less likely they were to have had sex at the Wave III follow-up. Finally, FDRQ at Wave I was inversely related to "had sex" at Wave III (r = -.09; p < .01). So, older females were more likely to have sex than younger females, but younger females

were more likely to get pregnant than older females. The FDRQ was inversely related to teen pregnancy (not statistically significant) and "had sex" (significant). Given my hypothesis about FDRQ and need for intimacy, I should perhaps have focused on sexual activity and condom use as outcome variables rather than pregnancy per se.

Another unexpected finding was the lack of association between the timing of father absence and pregnancy. Prior research by Ellis and colleagues (2003) found that age at the time of the father's departure was related to teen pregnancy, with those whose fathers left at age 5 or earlier more likely to be get pregnant than those whose fathers left after age 6. There were several differences between that study and the current one that might explain these differences. First, the majority (61%) of the adolescent females in the current sample had a father who left prior to their sixth birthday, compared to only 33% of the sample in Ellis and colleagues' study. Moreover, the larger part of their sample included adolescent females whose fathers did not leave until after the daughter's 13th birthday, meaning that the older adolescent group in their study may have had the father in the home for most of their lives.

Resident Stepfather-Daughter Relationship and Teenage Pregnancy

It was hypothesized that within the group of adolescent females with absent fathers who reported having a residential stepfather-like figure, SFDRQ would predict teenage pregnancy after controlling for timing of father absence, sociodemographic variables (age, race, IQ, SES number of siblings), and other known risk factors for pregnancy including, religiosity, abstinence pledging, maternal monitoring, timing of father absence, and perceived closeness to mother. Specifically, among adolescents who have a stepfather present in the home, those with better quality stepfather-daughter relationships (i.e., more perceived

closeness with step father, higher levels of involvement and engagement in activities) would be less likely to experience a teenage pregnancy than adolescent females with poorer stepfather-daughter relationships. It was expected that biological FDRQ would predict teen pregnancy and that the SFDRQ would not be as strong as a predictor as FDRQ. However, contrary to my hypothesis, my results indicated that among adolescent females with a residential stepfather, neither biological FDRQ nor stepfather FDRQ significantly predicted teenage pregnancy.

To help make sense of these findings, another set of exploratory analyses were conducted using this subset of adolescent females with resident step-fathers. Recall again that in this sub-sample, age at Wave I was again negatively related to teen pregnancy at Wave III (r=-.10, p<.01). As was true for the larger sample, age at Wave I was positively correlated with having had sex at Wave III (r=.23, p < .01), and SFDRQ at Wave I was inversely related to "had sex" at Wave III (r = -.09; p < .05). So, again, older females were more likely to have sex than younger females, but younger females were more likely to get pregnant than older females. Finally, those with higher SFDRQ were less likely to have sex. Again, these findings suggest perhaps I should have examined sexual activity as a proximal (mediating) dependent variable.

Need for Intimacy and Teenage Pregnancy

Based on theories of "father-hunger", I anticipated that girls with lower quality FDRQ and/or SFDRQ would express a greater need for intimacy as measured by a higher desire for a romantic relationship and higher level of sexual motivation, and that increased levels of these variables would be related to increased rates of teenage pregnancy. Specifically, I hypothesized that within the group of adolescent females with absent fathers, after

controlling for timing of father absence, sociodemographic variables (age, race, IQ, SES number of siblings), and other known risk factors for pregnancy including religiosity, abstinence pledging, maternal monitoring, timing of father absence, and perceived closeness to mother, need for intimacy would mediate the relationship between FDRQ and teenage pregnancy. The results indicated that need for intimacy, as measured by either variable, was not related to teenage pregnancy. Further, because neither of the need for intimacy variables was related to teenage pregnancy, they could not be mediators of the relationship between FDRQ and teenage pregnancy. Thus, the hypothesis that need for intimacy as measured by motivation to engage in sex and desire for a romantic relationship predicts teenage pregnancy for adolescent females with resident stepfathers and mediate the relationship between FDRQ and teen pregnancy was also not supported.

Although the need for intimacy variables were not related to teen pregnancy, they were related to FDRQ and SFDRQ. Motivation to engage in sex was inversely related to FDRQ, but not SFDRQ. Recall motivation to engage in sex was coded to where higher numbers represented more motivation. Thus, higher FDRQ was associated with lower levels of motivation to engage in sex. However, in exploratory analyses, it was discovered that although the correlation between FDRQ and motivation to engage in sex was significant, FDRQ did not significantly predict motivation to engage in sex after controlling for the nested variable and the rest of the controls.

A desire for a romantic relationship was related to SFDRQ, but not FDRQ. Adolescents with better quality SFDRQ also reported less desire for a romantic relationship within the next year which is consistent with what would be expected. This finding suggests adolescent females who enjoy better quality relationships with their stepfathers are less likely

to desire a romantic relationship, consistent with the notion that a higher quality stepfather-daughter relationship fills some intimacy related needs.

Summary

Clearly, the data from this study suggest that, FDRQ, SFRQ and need for intimacy offer little in the quest to build a more comprehensive model of teenage pregnancy among females raised without a biological father. However, the pattern of relationships among some of the other variables (age, sexual activity, FDRQ) indicates that relationships with fathers may have a role in some other processes that are precursors to pregnancy, such as sexual activity.

Strengths and Limitations of the Study

According to Kirby (2007), there are over 500 risk and protective factors related to teenage pregnancy, and many studies have been criticized for focusing too much attention on any one factor (Palkovitz, 2002). A major strength of this study was its inclusion of many of the previously demonstrated risk factors as controls in the models. For example, many developmental theories (attachment theory, Identity Theory, etc.) would posit that the relationship with one's mother could possibly buffer some of the negative impact of having an absent father. Harper and Fine (2006) found nonresident father involvement and relationship quality to be significantly related to adolescent well-being (overall quality of life). However, they did not control for maternal parenting variables, which they recognized as a possible limitation and recommended the mother-daughter relationship be considered when examining the father-daughter relationship in future studies. Unlike Ellis et al (2003), in this study perceived closeness to mother was controlled for in addition to the socio-demographic risks factors. Note, however, that closeness to mother was only significantly

related to desire for a romantic relationship and was not found to be related to teenage pregnancy. It is important to highlight the adolescent females in this study generally reported high levels of perceived closeness to mother, and there was a restriction of range on this variable. This ceiling effect for perceived closeness to mother has been observed in other studies employing Add Health data and is a limitation of the study (King, 2006; Yuan & Hamilton, 2006).

The current study was based on secondary data analysis (SDA) of self-reported survey data from an archival longitudinal data set. There are many benefits to SDA, which include saving time and money. They typically afford large sample sizes, providing researchers the power to implement sophisticated statistical analyses which can account for nested contextual effects (Castle, 2003; Kiecolt & Nathan, 1985). However, the use of archival data also presents limitations in measurement and sampling that must be considered. First, as a researcher, I had to measure constructs using the available data rather than being able to construct my "ideal" measure. For example, I operationalized variables such as "need for intimacy" from the available measures and based on previous studies that have examined intimacy in adolescents (Fortenberry et al., 2002; Tschann et al., 2002). In addition, SES was operationalized based on mother's education and did not account for variations in income which would predict access to health care and thus contraceptives. Although several studies have used mother's education as a proxy for SES (Barber & Mueller, 2011; Bornstein & Bradley, 2003; Mistry, Biesanz, Chien, Howes, & Benner, 2008), a more robust indicator might have been a more robust control.

An additional measurement limitation was the need to rely on a single item to assess the construct of "desire for a romantic relationship", which made it impossible to know why

the adolescent females may have rated their desire for a romantic relationship high or low. For example, the adolescent female may have reported to desire a romantic relationship to fulfill some need for intimacy, as hypothesized in this study. However, she may also have simply desired the relationship for other reasons such as peer pressure or how it may impact her image.

Although this study drew from a national sample, it was not nationally representative as this sample had an underrepresentation of minorities. Having these groups underrepresented is potentially problematic given that these groups are (a) more likely to have absent fathers (Blackwell, 2010; Kost et al., 2010) and (b) more likely to experience a teenage pregnancy (Ventura, Curtin, Abma, & Henshaw, 2012). Approximately 10% of females in the United States will experience a teen pregnancy, and it is estimated that 4% of white females, 12% of black females, and 13% of Hispanic females will experience a teenage pregnancy (Kost et al., 2010). In this sample, 12% of the adolescent females reported experiencing a teenage pregnancy.

The study is also limited by its reliance on self-reported data. Inherent to self-reported data are possible response biases, such as social desirability. Specifically, teenage pregnancy during adolescence is a sensitive topic that may be underreported. Due to the sensitive nature, all pregnancy questions were self-administered using a computer-assisted self-interview (CASI) and earphones with pre-recorded questions, which should diminish these concerns as well as limit interviewer or parental influence. In addition, although the longitudinal nature of the data suggests a cause and effect nature of the prediction variables and the outcome variable of teenage pregnancy, because this is not a true experimental

design, causality cannot be claimed. I attempted to identify causal factors by the use of strong controls, controlling for factors known to predict teenage pregnancy.

Recall that the aim of this study was to examine factors that predict pregnancy for adolescent females who grew up in families without a biological father, and this target population was selected because of their increased risk for teen pregnancy. The present sample may not represent all adolescent females with absent fathers, as the sample only included females who had a known living nonresident biological father. Thus, some females may have been raised without biological fathers present in the home, but were not represented in this sample if they never knew their father or if he were no longer living. Further, for the in-home interviews, adolescents and a parent were required to participate. Although most of the parent respondents in the overall Add Health sample were mothers, those from single-mother households may have been less likely to participate given work obligations and other economic struggles. Finally, only adolescent females who participated in both Wave I and Wave III data collection were included.

Implications of Findings and Suggestions for Future Research

This is the first within group study to consider risk and protective factors for teenage pregnancy among adolescent females with absent fathers, and the first study to consider the father-daughter relationship and not just father absence in relationship to teen pregnancy. Overall the findings suggest that the quality of the father-daughter relationship and step-father daughter relationship does not explain variability in teenage pregnancy outcomes for females raised in homes without their biological father. This emphasizes the importance of continued examination of this population to try and determine what risk and protective

factors do exist given that single-parent households are more and more prevalent (Blackwell, 2010; Dunn, 2004).

Neither FDRQ nor SFDRQ predicted teenage pregnancy. However, FDRQ and SFDRQ were related to whether or not participants had sex prior to Wave III data collection. Thus, high quality relationships with their fathers could protect adolescent females from potentially experiencing a teenage pregnancy because they may be less likely to have sex. Further, poor quality relationships may make adolescent females more susceptible to teenage pregnancy, because they are more likely to engage in sex. In light of the inverse relationship between age and teen pregnancy, sexual education and proper use of contraceptives may be particularly important for females from absent father homes, especially if they have a less than optimal relationship with their nonresident biological father (and/or stepfather if applicable).

This study has implications for researchers as well. The present study found that amount of contact and engagement in activities with father combined with adolescents' perceived closeness to their father loaded on to one factor, which accounted for most of the variance in FDRQ. This could be important for researchers, as it balances the need to include multiple measures of the father-daughter relationship construct without overburdening participants (Schoppe-Sullivan, McBride, & Ho, 2004). Researchers need to examine if the factor structure is the same for those with and without a biological father in the home. In addition, they should determine if the unidimensional construct of FDRQ found in their father-absent home still holds true today when technology enables immediate and intimate communication that does not require in-person contact, a change between the time these data were collected (1994) and now. For example, according to the United States Census Bureau

(2010), only 18% of households reported using internet at home in 1997 whereas more than 78% report having home access in 2012. In 1994, 16 million Americans subscribed to cellular phone services, and in 2012 there were over 321 million cell phone subscriptions in the U.S. with many of those being multi-phone subscriptions (U.S. Census Bureau, 2012). In summary, most contact that nonresident fathers had with their children was probably in person or via landlines in homes that would not have afforded privacy and immediacy in contact in the same way that having constant access to a computer and/or cell phone does now. Thus, future researcher should consider this when asking about contact and parental involvement.

Research could consider additional sexual risk behaviors as outcome variables rather than pregnancy. Considering additional outcome variables would be particularly useful if the purpose is to examine the idea that poorer father-daughter relationships leads to an increased need for intimacy which is manifested via sexual risk behaviors. Some outcome variables to consider would be age of first sexual encounter, number of sex partners, etc. There may also be other variables that would better capture need for intimacy, and these should be considered in future research as well. There may be additional variables (aside from perceived closeness, amount of contact, and engagement in activities) that better capture relationship quality with the father, such as trust, openness, and caregiving.

As this study does not provide evidence in support of a relationship between FDRQ and teen pregnancy in this population, considering other possible predictors of teenage pregnancy among adolescent females with absent fathers is warranted. Asking about mother's dating behavior, public displays of affection with partners, etc. are possibilities when considering Bandura's (2003) social cognitive theory. For example, researchers could

determine if the likelihood of teenage pregnancy increases as mother's dating behavior or public displays of affection with dating partners increases. Research among adolescents, female and male, has indicated that measures of adolescents' sexual beliefs, values, attitudes, and intentions are strongly related to teenage pregnancy (Kirby, 2007). Future research should include measures of sexual beliefs, values, attitudes, and intentions as possible predictors of teenage pregnancy in this population.

This study attempted to address one factor that may help protect females from experiencing a teenage pregnancy, and that is the relationship with her nonresidential biological father (and resident stepfather when applicable). In much of the research on adolescent pregnancy, researchers had mistakenly been studying father-daughter relationship by simply examining the opposite, father absence. This study, along with others, offers evidence that the absence of a father within a home does not equate with the absence of a relationship as most of the adolescents in this sample reported close relationships with their fathers. This is especially important today as the number of single-parent households is only increasing (Blackwell, 2010).

APPENDIX A

Table of Variables Used in Study: How They Were Measured, Coded, and Corresponding
Variable Names in Add Health Data Set

Variable in Present Study	Measured	Coding	Variable Name in Add Health
Dependent Variable (Outcome)			
Teenage Pregnancy	Pregnant between the ages of 15-19 and prior to high school graduation	0=no 1=yes	Created by researcher (If pregnant, due date minus 9 months = date of conception, date of conception < date of high school graduation.)
	Have you ever been pregnant? Be sure to include if you are currently pregnant and any past pregnancy that ended in an abortion, stillbirth, miscarriage, or a live birth after which the baby died.	0 no 1yes 6 refused 7 legitimate skip 8 don't know	H1FP7
	What is the expected due date (month)?		H4PG2M
	What is the expected due date (year)		H4PG2Y
	In what month (and year) did you receive your high school diploma?		H3ED13M
	In what (month and) year did you receive your high school diploma?		H3ED13Y
Predictor Variables			
Nonresident Biological	Average z-scores: 1) Perceived	Higher numbers represent more involvement	Created by researcher

Father-Daughter Relationship (FDRQ)	Closeness to nonresident father 2) Engagement in Activities 3) Amount of Contact		
Stepfather-Daughter Relationship quality (SFDRQ)	Average z-scores: 1) Perceived closeness to stepfather 2) Engagement in Activities	Higher numbers represent more involvement	Created by researcher
	Perceived Closeness to father: How close do you feel to your biological father (stepfather)?	1=not close at all, 2=not very close, 3=somewhat close, 4=quite close, and 5=extremely close *Higher numbers represent more closeness	H1NF14 (nonresident biological father) H1WP13 (stepfather)
	Engagement in Activities: Which of the following things have you done with your biological father (stepfather) in the past four weeks? 1) Gone shopping 2)played a sport 3) attended a religious activity 4) discussed the adolescents life 5) went to a movie 6) discussed personal problems 7)talked about school grades 8) worked on a school project and 9) talked about other things the adolescent was doing in school.	Dichotomous Yes/No Summed the number of activities so that higher numbers represent more engagement in activities	Nonresident Biological : H1NF12A, H1NF12B, H1NF12C, H1NF12D, H1NF12E, H1NF12F, H1NF12H, H1NF12I, H1NF12J Stepfather H1WP18A, H1WP18B, H1WP18C, H1WP18D, H1WP18E, H1WP18F, H1WP18H, H1WP18I, H1WP18J
	Amount of Contact with	0 = not at all, 1 = once or	H1NF10 and

	nonresident biological father: In the last 12 months how often have you stayed overnight with him? In the last 12 months, about how often have you talked to him in person or on the telephone, or received a letter from him?	twice, 2 = several times, 3 = about once a month, 4 = about once a week, 5 = more than once a week *Higher numbers represent more contact	H1NF10
Motivation to Engage in Sex	1) "If you had sexual intercourse, your friends would respect you more 2) If you had sexual intercourse, your partner would lose respect for you 3) If you had sexual intercourse, afterward, you would feel guilty 4) If you had sexual intercourse, it would upset your mother 5) If you had sexual intercourse, it would give you a great deal of physical pleasure 6) If you had sexual intercourse, it would relax you 7) If you had sexual intercourse, it would make you more attractive to men and 8) If you had sexual intercourse, you would feel less lonely.	1 = strongly agree, 2 = agree, 3 = neither agree nor disagree, 4 = disagree, 5 = strongly disagree - Reverse coded items 2, 3, and 4 so that all items were in the same direction - higher numbers represent more motivation to engage in sex	H1MO8, H1MO2, H1MO3, H1MO4, H1MO5, H1MO6, H1MO7, H1MO8
Desire for Romantic Relationship	How much would you like to have a romantic relationship in the next year?	1=not at all, 2 = very little, 3 = somewhat, 4 = quite a bit, 5 = very much	H1ID6
Control Variables			
Age	When is your birth date?	Month and year	H1GI1M and H1GI1Y

Race	1)Are you of Hispanic or Latino origin? 2)What is your race? white 3)What is your race? black or African American 4)What is your race? American Indian or Native American 5)What is your race? Asian or Pacific Islander 6) is your race? other	H1GI4 (Hispanic or Latino origin)=1 then race=1 H1GI6b (African American, Non-Hispanic)=1 then race=2 H1GI6D (Asian, Non-Hispanic)=1 then race=3 H1GI6C (Native American, Non-Hispanic) =1 then race=4 H1GI6E (Other, Non-Hispanic) =1 then race=5 H1GI6A (White, Non-Hispanic)=1 then race=6	H1GI4, H1GI6A, H1GI6B, H1GI6C, H1GI6D, H1GI6E
IQ	At the beginning of the interview, respondents were given the Add Health Picture Vocabulary Test (AHPVT), a computerized, abridged version of the Peabody Picture Vocabulary Test—Revised.	There are 87 items on the AHPVT and raw scores have been standardized by age.	score on AH_PVT
Number of Siblings	How many children have your biological parents had together?	1 =1, 2 = 2, 3 = 3, 4 = 4, 5 = 5, 6 = 6, 7 =7, 8 = 8, 9 =9, 10 = 10, 11 = 11, 12 = 12, 13 = 13, 14 = 14, 15 = 15	H1HR14
Abstinence Pledge	Have you taken a public or written pledge to remain a virgin until marriage?	Yes/No	H1ID5
Timing of father Absence	How old were you when you last lived with him?	For those who have never lived with their father, the years since they have lived with him will correspond to their age. Thus, timing of father absence will be included as a continuous variable as a control variable, where higher numbers reflect longer lived without him.	H1NF8

		*recoded into 0-5 years old = 0 "early absence" and 6-13 = 1 "late absence"	

Mother's Level of Education (SES)	How far in school did she (your mother) go?	1 eighth grade or less
		2 more than eighth grade, but did not graduate from high school
		3 went to a business, trade, or vocational school instead of high
		school 4 high school graduate
		5 completed a GED
		6 went to a business, trade, or vocational school after high school
		7 went to college, but did not graduate
		8 graduated from a college or university
		9 professional training beyond a four-year college or university
		10 She never went to school.
		11 She went to school, but R doesn't know what level.
		12 R doesn't know if she went to school.
		
		Collapsed into four categories:
		    Less than High School
		    High School Degree
		    Some Beyond High School
		    Higher Education Degree
			H1RM1

Religiosity	Average of two variables Public Religiosity: In the past 12 months, how often did you attend religious services? Private Religiosity: How important is religion to you?	Measured on a rating scale (1 = once a week or more, 2=once a month or more, but less than once a week, 3=less than once a month, 4=never). Scores will be recoded so that 0 is never and higher scores reflect more attendance or more public religiosity. 1 =very important, 2 = Fairly important, 3 = fairly unimportant, 4 = not important at all Scores recoded so that higher numbers reflect more importance	H1RE3 and H1RE4
Perceived Closeness to Mother	How close do you feel to your biological mother?	1=not close at all, 2=not very close, 3=somewhat close, 4=quite close, and 5=extremely close Higher number represent more closeness	H1NM14

Maternal Supervision:
  a) morning before school
  b) after school
  c) bedtime
	How often the participant's mother is home in the morning before school, after school, and in the evening.
	
	1) How often is she at home when you leave for school?
	2) How often is she at home when you return from school?
	3) How often is she at home when you go to bed?
		1 = always, 2 = most of the time, 3 = some of the time, 4 = almost never, 5 = never
		
		*Recoded so that higher numbers reflect more supervision.
			H1RM11, H1RM12, and H1RM13

APPENDIX B

Table of Multicollinearity Information for Predictor Variables

Variable	Tolerance	VIF	α
Full Sample			
FDRQ	.99	1.01	.85
Motivation to Engage in Sex	.98	1.02	.69
Desire for Romantic Relationship	.93	1.08	
Subsample with Resident Stepfathers			
FDRQ	.98	1.02	.87
SFDRQ	.97	1.03	.66
Motivation to Engage in Sex	.98	1.02	.65
Desire for Romantic Relationship	.91	1.10	

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VITA

Amber Marie Hinton-Dampf was born on August 31, 1983, in Jefferson City, Missouri. She was educated in St. Martin's Parochial (private) school and graduated from Helias High School with honors in 2001. She received a Regents and Board of Governor's Scholarship and an Achievement Award in Psychology and Counselor Education to Central Missouri State University, Missouri, from which she graduated, magna cum laude, in 2005. She was a double major and earned a Bachelor of Science degree in Psychology and Criminal Justice.

After graduating from the University of Central Missouri (formerly Central Missouri State University), Amber was accepted into a Master's program in psychology at the University of Central Missouri (UCM).

In 2006 before completing her Master's program at UCM, Amber was accepted into the Clinical Psychology Doctoral Program at the University of Missouri-Kansas City (UMKC) and received her Master of Arts degree in December 2010 from UMKC. She has worked as a research assistant studying areas of interest including close relationships, sexuality, and sexual risk behaviors. Amber has contributed to peer-reviewed publications and has been awarded grants and fellowships. She received an award through the UMKC Women's Council to fund her thesis project. The School of Graduate Studies named Amber one of the McNair Doctoral Fellows for the 2010-2012 academic years, providing her with tuition remission and a stipend.

Amber received clinical training at the Kansas City Free Health Clinic, The Guidance Center in Leavenworth Kansas, the Center for Behavioral Medicine, the Kansas City Center for Anxiety Treatment, and completed her internship at the Dwight D. Eisenhower VA

Medical Center in Leavenworth Kansas. Additionally, Amber has taught various

undergraduate courses such as Psychology of Women and statistics. She received the

Psychology Students Yearly Choice for Honors (PSYCH) Teaching Excellence Award

(2011-2012), as well as the Graduate Teaching Assistant Superior Teaching Award (2011-

2012). Amber is a member of the Midwestern Psychological Association and the American

Psychological Association. Upon completion of her Ph.D., she plans to provide

psychotherapy and behavioral modification therapy in a hospital setting as well as continue

teaching at the university level. Amber has been accepted to the psychology postdoctoral

residency program at the Kansas City VA Medical Center, which she will begin in August

2013.