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Adopted Adolescents' Heterosexual Relationship Formation and Sexual Behaviors

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ADOPTED ADOLESCENTS' HETEROSEXUAL RELATIONSHIP FORMATION AND SEXUAL BEHAVIORS

by

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ABSTRACT

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Adolescents' perceptions and behaviors about romantic heterosexual relationships and sexual intercourse were compared among adolescents living with adoptive, biological, and stepparents. Data come from The National Longitudinal Study of Adolescent Health (Add Health). In 1995, over 20,000 adolescents living throughout the United States completed a 90-minute in-home interview that asked numerous questions about romantic relationships and sexual behaviors. Add Health used a multi-stage cluster design to collect a random sample representative of adolescents attending U.S. schools.

Results showed that several demographic characteristics (gender, age, race/ethnicity, parent's education, and number of parents in the household) were associated with adolescents' perceptions and behaviors regarding romantic relationships and sexual intercourse. Descriptive mean comparisons not controlling for any demographic characteristics showed more similarities than differences between adopted

and nonadopted adolescents' heterosexual relationship formation and sexual behaviors. A second set of descriptive mean comparisons, controlling for the influences of gender and number of parents in the home, showed more differences than similarities between adopted and nonadopted adolescents living in single-parent families. Adopted females reported many more experiences of rape and/or incest than nonadopted females living in two-parent and single-parent families.

Multivariate regression analyses controlling for five demographic characteristics found more similarities than differences between adopted and nonadopted adolescents. Most differences that were found were small in magnitude. Adopted males reported more idealism when asked to describe their ideal romantic relationships and more sexual activity when asked to describe their actual romantic relationships than nonadopted males. Adopted females were nearly three-and-a-half times more likely than biological females, and nearly two-and-a-half times more likely than stepfamily females to report forced sexual intercourse. Adopted females also reported more negative perceptions about the consequences associated with sexual intercourse than nonadopted females.

Findings about mediating concepts theorized to be the link between adopted adolescents' experiences and resultant outcomes were inconclusive. Findings overall showed that adopted and nonadopted adolescents' heterosexual relationship formation and sexual behaviors were more similar than different. Differences that were found were most frequent among single-parent families and most substantial between adopted and nonadopted females' reports of forced sexual intercourse.

(137 pages)

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CHAPTER I

INTRODUCTION

Adolescents experience rapid growth and development in many areas: hormones drive physical changes, abstract thinking evolves, and new meanings surface in social relationships. Many developmental changes are related in some way to adolescents' emerging curiosities in cross sex social interactions. Romantic desires, sexual feelings, and interests in interpersonal connection, that begin in adolescence, result in marriage for about 90% of all adults in the U.S. (Waite, 1995). Given the extensive responsibilities and meanings attached to the roles of marriage and family relationships (e.g., socializing the next generation, providing adult companionship, supporting society's norms), it is important to understand what factors are related to adolescents' normative heterosexual development.

The purpose of this study is to explore adopted adolescents' heterosexual relationship formation and sexual behaviors. The terms "heterosexual relationship formation and sexual behaviors" refer to emerging perceptions and behaviors among adolescents: perceptions and behaviors about dating, expressing love, sexual intercourse, and pregnancy. This study draws on a stress and coping theory of adoption adjustment that explains why adoption might increase the risk for a variety of negative outcomes (Brodzinsky, 1990; Brodzinsky, Smith, & Brodzinsky, 1998). Is adoption associated with risky sexual behavior? And do the circumstances associated with adoption influence interpersonal dependency or detachment when forming romantic relationships? By examining sexual behaviors and heterosexual relationships during adolescence, this exploratory study aims to provide new understanding about an area not previously

examined in the field of adoption and well-being.

This study focuses on adoption and adolescent romantic relationships, but this specific focus belies a much larger picture of adoption. Many people and circumstances are involved in, and influenced by adoption processes. Adoption was historically viewed as a positive solution for the difficult social problems experienced by birth parents, their relinquished children, and adoptive parents: Stresses could be relieved among birth parents who could not raise their own children; homelessness and insecurity could be reduced among children placed in stable homes; and the longing for children could be met among infertile couples seeking children.

It has been estimated that 9.9 million women in the past 30 years had ever considered adoption and 31% of them had actually adopted a child (Freundlich, 1998). In 1997 there were more than five million adoptees in the United States, over one million children lived in adopted families, and nearly one million adults were seeking to adopt (Center for Adoption Research and Policy, 1997). While the actual number of children that need homes at any given time cannot be known, in 1995 about two percent of unmarried women at any age placed their child for adoption (Child Trends, 1995). Throughout the 1990's there were about 120,000 children adopted each year (National Adoption Information Clearinghouse, 2001). It was recently estimated that the majority of Americans (about 60%) were personally affected (i.e., were themselves or had a family member or close friend involved with adoption or relinquishment) by adoption (Evan B. Donaldson Institute, 1997).

It is commonly expected that once adopted children enter their adoptive homes

they and their parents simultaneously embrace desires for strong family bonds and a normal family life. Research has shown that many, if not most, adoptive families realize these kinds of normative expectations (Benson, Sharma, & Roehlkepartain, 1994; Borders, Black, & Pasley, 1998; Finley, 1999). Research has also shown however, that many adoptive families experience unexpected problems beyond those ordinarily associated with normal family and individual development (Brodzinsky et al., 1998; Ingersoll, 1997; Wierzbicki, 1993). Demographic data and large-scale studies of adoption disruption and stability show that some adopted children have extensive adjustment problems. Adoption disruption refers to the decision of adoptive parents to permanently remove the child (ren) from their home: usually because of problem behaviors like stealing, vandalism, aggression and sexual acting out (Berry, 1997; Smith & Howard, 1991).

Adoption disruptions occurring before or after the court finalizes the adoption petition range from 3% to 53% depending on the type of adoption and methods of calculation (Stolley, 1993). Older age at the time of adoption is one of the most salient disruption factors. About 1% of infant adoptions, 5% of four year olds, 10% of seven year olds, 15% of nine year olds, 25% of 13 year olds, and 47% of 16 year old adoption placements disrupt (Barth & Berry, 1988; Boyne, Denby, Kettenring, & Wheeler, 1984). Across all adoptions, disruption estimates range between 10% to 20% (Barth & Berry; Groze & Rosenberg, 1998). Special needs adoptions are more likely to disrupt than other adoptions and the risk further increases when children experience multiple placements and spend extended periods of time in foster care (Groze, 1986; Stolley, 1993).

Another significant, but less visible group of adoptive families are those that do not disrupt but still experience extensive turmoil. There is no empirical consensus that adopted children are much more likely to experience severe maladjustment than nonadoptees, but a growing body of literature is finding evidence that adoptees are over-represented at the negative extremes of problem-behaviors (Haugaard, 1998; Miller, Fan, Christensen, Grotevant, & Van Dulmen, 2000a; Sharma, McGue, & Benson, 1998). Thus, a subgroup of intact adopted families appear to experience difficulties beyond those normally associated with parenting, childhood, and adolescence. Examinations of adoption disruption and turmoil show some increased risk for atypical instability among adopted families.

Theoretical Framework

As a newborn infant, or at some later point, the legal custody of about 2% of all children in the United States transfers from birth parents to adoptive parents (Stolley, 1993). Many of these children begin to understand what "adoption" means in later childhood around the age of seven years (Brodzinsky, 1990). Children often interpret adoption initially with an overwhelming sense of happiness because they were "chosen." Only in later childhood and adolescence do many adoptees begin to understand and psychologically experience the losses incurred when they were relinquished by their birthparents. Thus, the premise of this study is built on Brodzinsky's (1990) and Brodzinsky and colleagues' (1998) theoretical model underlining the adopted adolescent's appraisal of loss, their coping strategies, and the associated factors likely to

affect these internal processes: genetics, early adverse experiences, individual characteristics, adoptive family closeness, and goodness of fit between adopted children and adoptive parents. This theory of "children's adjustment to adoption" provides an explanation why adopted adolescents might experience greater difficulties in romantic relationships than would nonadopted adolescents.

Brodzinsky's Stress and Coping Theory

The idea that adoption may be a stressful experience runs counter to the perception that adoption is a positive solution to the problems faced by all parties in the adoption triad (i.e., birth parents, the children, and adoptive parents). According to Brodzinsky et al. (1998), a central assumption in stress and coping theory is that, "adoption is inherently associated with a variety of loss- and stigma-related experiences and is potentially stressful for children" (p. 18). In support of this view he outlines several losses experienced by adopted children which are thought to contribute to stress. Adoptees lose their birth parents and extended birth family. These blood-related losses in turn lead to a loss of status, and losses of ethnic, racial, and genealogical ties. He also believes that adoptees lose feelings of stability in the adoptive family once they are old enough to understand that adoption means "someone gave me away." A loss of identity in the adolescent years is also thought to be related to losing biological ties.

While the intensity of losses may be greater among adoptees whose older age placements break established attachment relationships, infant adoptees are also thought to suffer significant losses. Adopted children who never knew their biological parents only begin to understand the full implications of being adopted as their awareness and

cognition develops the capacity to grasp more complicated and abstract ideas in late childhood and early adolescence (Brodzinsky, 1990). More subtle than the overt losses experienced by children adopted after infancy, infant adoptees' experience of loss may be less traumatic and only contribute to stress indirectly when other individual or family problems are present. Brodzinsky believes that the losses associated with adoption contribute to perceptions of incompleteness, alienation, disconnection, abandonment, and rejection.

If an adopted child/adolescent views his or her adoption as a meaningful event– but also as one involving loss and/or stigma– then stress and coping theory predicts that a pattern of negative emotions associated with stress (e.g., confusion, sadness, anger, shame, embarrassment, anxiety) is likely to be experienced (Brodzinsky et al., 1998). Once the child has appraised adoption as a stressful situation, various coping strategies may be considered and one or more eventually activated. Brodzinsky et al. outlines two general styles of coping: direct attempts to resolve stress, and indirect strategies seeking to avoid stress. Coping directly with adoption-related stress could entail redefining the meaning or importance of adoption (cognitive-behavior problem solving) or seeking support and resources from other people (assistance seeking). Indirect or avoidance stress management strategies include attempts to minimize the stressor or to put it out of one's mind (cognitive avoidance), or to physically distance oneself from the stressor (behavioral avoidance).

Appraisal processes represent the first pivotal concept in stress and coping theory that attempt to explain why some adopted children experience stressful outcomes while

others do not. Cognitive appraisal of adoption losses refers to the idea that, "For some children, adoption is appraised in a rather benign or positive way that produces little distress, whereas for other children, being adopted is associated with feelings of confusion, sadness, anger, embarrassment, and shame" (Brodzinsky et al., 1998, p. 18). The second pivotal concept in this theory follows behind the first: Among those children who appraise adoption as stressful, some develop direct and effective stress management patterns while others develop less effective techniques, such as avoidance. Figure 1 depicts Brodzinsky's model of stress and coping adjustment which visually locates the conceptual relations between a child's cognitive appraisal, coping strategies, and several other salient variables thought to influence the appraisal and coping processes.

Brodzinsky et al. (1998) outlined three groups of independent variables that potentially influence the adopted child's cognitive appraisal and coping efforts. These independent variables are considered to be important resources for the child's development and they are shown along the left side of Figure 1. They believe the variables carrying the strongest influences on a child's cognitive appraisal are individual factors like cognitive level, personality, temperament, self-esteem, sense of mastery and control, and relationship security. Around the age of 5 to 7 years the child can begin to cognitively grasp the multiple meanings of adoption. A child with a difficult temperament, self-esteem problems, and relationship insecurity is predicted to appraise being adopted in more negative ways than a child without these problems (Brodzinsky et al.).

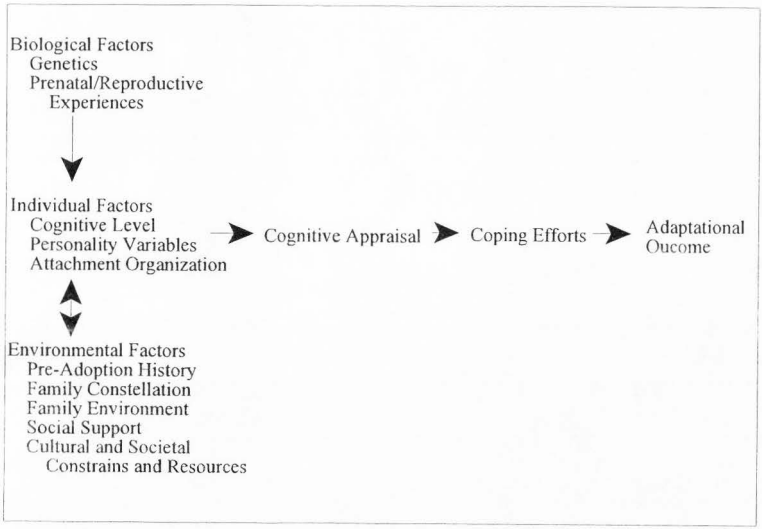

Figure 1. A stress and coping model of adoption adjustment (Brodzinsky et al., 1998).

The stress and coping model of adoption also recognizes contextual variables that indirectly influence a child's adoption adjustment through their impacts on the developing self-system and the cognitive appraisal process. These indirect influences come from genetics, prenatal and reproductive experiences, and numerous environmental factors in and around the child's homes before and after adoption. Thus, children born to parents who use illegal substances, or parents who suffer from biological forms of psychopathology, would be considered at greater risk to experience stressful problems.

Children who experience multiple placements and/or abuse before or after adoption would also be expected to suffer from adjustment problems. Social support in their families, socioeconomic status, and neighborhood contexts are also posited to influence the child's cognitive appraisal of adoption.

While the stress and coping theory of adoption is a relatively new theory, some support for its concepts has been reported. Smith and Brodzinsky (1994) found that the majority of adopted children between 6 and 17 years of age in their sample reported stressful feelings and thoughts about being adopted. Children with negative and ambivalent feelings about adoption were more likely to employ cognitive and behavioral avoidant coping strategies while children who reported intrusive thoughts about adoption were more likely to use direct and problem-solving coping strategies. In a second study, Smith and Brodzinsky (2002) found that adopted children who experienced greater negative affect over the loss of their birth parents had higher depression and lower self-esteem, when compared to adoptees experiencing less negative affect about losing their biological parents. Adopted children who used more behavioral avoidant coping also had higher anxiety and more externalizing problems (e.g., aggression, acting out, etc.) than adoptees with more direct styles of coping.

Purpose Statement and Specific Hypotheses

In 2000 the National Institutes of Health (NIH) determined that the need for current information on the health and well-being among adopted adolescents merited funding a three year research project to be conducted jointly at Utah State University and

the University of Minnesota. The present study addresses one part of the proposed research about adopted adolescents' well-being. Of the four specific aims originally proposed to NIH about adoptees' adjustment, the present study concentrates on examining the third aim which inquires about adopted adolescent's romantic relationship formation and sexual behaviors.

Because of the health and family related implications of adolescents' heterosexual interactions, this study explores and describes several features related to romantic relationship formation and sexual behaviors. In addition, examining Brodzinsky and colleagues' (1998) concepts about adolescents' appraisals of stress and coping styles should extend understanding of adoption adjustment. There are four null hypotheses driving the study:

1. There are no substantive adolescent relationship formation and sexual behavior differences within each of five demographic control variables (i.e., gender, age, race, parent's education, and number of parents in the household).

2. There are no substantive or statistically significant differences between adopted and nonadopted adolescents' reports of relationship formation and sexual behaviors whether or not demographic characteristics are controlled.

3. Adopted and nonadopted adolescents' self-acceptance appraisal processes do not distinguish statistically significant differences in relationship formation and sexual behaviors.

4. Adopted and nonadopted adolescents' direct coping styles are not associated with positive outcomes, compared to adolescents who use indirect coping styles.

CHAPTER II

LITERATURE REVIEW

Adjustment to adoption is the focus of the present study with a special emphasis on adolescent heterosexual relationship formation and sexual behaviors. Since no studies have previously analyzed adopted adolescents' relationship formation and sexual behaviors specifically, the bulk of this literature review concentrates on overall adoption adjustment. First however, a brief review of the demographic influences of gender, family structure, and socioeconomic status (SES) on adolescents' intimate relationships and sexual behaviors will be presented because demographic characteristics, unaccounted for, could confound comparisons between adopted and nonadopted youth.

Demographic Characteristics Linked with Adolescent Sexual Behavior

Analyses in the present study will be conducted separately for males and females because gender differences influence romantic relationship formation and sexual behaviors. During puberty young adolescent males begin producing the hormones testosterone and androsterone which among other things induce the development of thick muscles, body hair, and a deeper voice. Young female adolescents begin producing the hormones of estrogen and progesterone which induce the development of soft skin, a high voice, and breasts. Sex hormones and related genetic differences between males and females influence sexual feelings, and behaviors. For example, research has shown that men tend to overperceive sexual intent on the part of women, and that men pursue

and initiate sexual activity more than women (Erber & Erber, 2001). Some researchers also believe that males and females are socialized differently from birth (Kunkel & Burleson, 1998), which may lead males to develop masculine and aggressive traits, and females to develop feminine and passive traits.

In addition to gender, family structure and SES are also associated with romantic relationships and sexual behaviors. In a comprehensive review of the family-related influences on adolescent pregnancy risk, Miller, Benson, and Galbraith (2001) summarized dozens of studies conducted post-1980 that focused on the effects of neighborhood disorganization, socioeconomic status, or family structure. They concluded that research consistently linked poor and dangerous neighborhoods, low SES (reflected in parents' annual income, occupation, or educational attainment), and marital dissolution (single parenthood or remarriage) with increased risk of adolescent pregnancy, early onset of sexual intercourse, and inconsistent contraceptive use. Poor neighborhoods, low SES, and single parenthood are variables that share some common variance: disentangling each variable's unique contribution to teen pregnancy risk has not yet been accomplished.

Santelli, Lowry, Brener, and Robin (2000) found in a nationally representative sample however, that greater SES (reflected by higher parental education) and living in a two parent family were both independently associated with adolescents who had never engaged in sexual intercourse. Thus, some of the explained variance in sexual behavior is likely to be unique to only family structure and only SES. Additionally, in attempting to explain the demographic trends in teen sexual intercourse activity and pregnancy rates

from 1980 to 1995, Manlove, Mariner, and Romano (2000) found evidence that the negative effects of a high parental divorce rate on teen fertility were somewhat offset by positive influences in some families, most notably from high maternal education.

Because demographic characteristics are associated with romantic relationships and sexual behaviors, gender, family structure and SES will be statistically controlled in the present study to eliminate their confounding influences on the comparisons between adopted and nonadopted adolescents' romantic relationships and sexual behaviors. In addition, some studies in the adoption adjustment field have also controlled for and found associations with demographic characteristics.

Adopted Adults' Personal Relationships

While no studies have previously analyzed adopted adolescents' relationship formation and sexual behaviors specifically, two have examined relationship issues among adults who had been adopted. These studies about relationship issues among adopted adults will be presented next, followed by studies investigating some aspect of adoption-related adjustment. While the present study focuses on adolescents, the literature base about adopted adolescents is small. Therefore, studies about adoption adjustment will be reviewed without exclusive regard to the participants' ages.

Borders, Penny, and Portnoy (2000) surveyed 102 adopted adults 35-55 years of age, and 76 of their nonadopted adult friends. They assessed several concepts related to psychosocial well-being and level of functioning. Using Bartholomew and Horowtiz's (1991) adult attachment scale, adoptees' adult friends were much more likely to report

secure attachment styles and less likely to report insecure styles than adopted adults. Seventy four percent of nonadopted friends and 42% of adoptees were classified secure, while13% of friends and 36% of adoptees were classified fearful/avoidant.

Friends were also more likely than adoptees to feel connected to friends and family. Searching for biological parents mediated the perceptions of connection to family and friends, however. In other words, adopted adults who had not searched for information about their biological parents felt the same level of social support from family members and close friends as did the friends. Only adopted adults who had searched for information about their biological parents were significantly less likely to feel social support from family and friends. This particular finding appears to parallel Brodzinsky and colleagues' (1998) idea that some adoptees appraise adoption in stressful ways while others do not: Adopted adults who felt compelled to search also felt less social support from family and peers than adopted adults who did not search.

Levels of intimacy and marital satisfaction were not significantly different between adopted adults' and nonadopted friends (Borders et al., 2000). Many adopted adults were more sensitive to rejection than friends, but this relation was not statistically significant. This study also found the adopted group of adults had significantly greater variability, compared to friends, on all but one of the measures of psychosocial adjustment. Because mean scores were either comparable or favored friends, greater variability implied that many adopted adults' adjustment was similar to friends' functioning, but also that some portion of adoptees did not compare as favorably.

In a similar study of adult adoptees' adjustment, Feigelman (1997) analyzed data

from the National Longitudinal Study of Youth (NLSY), which in 1979 interviewed adolescents between 14-21 years of age. Nine years later in 1988 NLSY collected family structure data that included questions about adoption. Feigelman compared adopted and nonadopted adults who had been raised till age 18 in intact two-parent families with adults who had been raised in all other types of family living arrangements. He found adoptees in their late twenties and early thirties reported more instances of cohabitation before marriage (51% vs. 38%) than adults raised in two parent biological families. Adopted females also reported lower levels of marital satisfaction than adults raised in all other family configurations.

Feigelman found that adults raised in other family structures reported more pregnancies and childbirths than adopted adults and adults raised in intact two-parent families. Higher proportions of adopted adults were married or had been married, as well as marrying at older ages, than adults from the other two comparison groups. More adopted adults' first childbirths occurred significantly later in marriage than adults in the other two groups.

Adoptees' Psychological and Behavioral Adjustment

While relationship formation and sexual behaviors have not been frequently investigated, numerous studies during the past few decades have examined adoptees' psychological and behavioral outcomes. In the only meta-analysis of the adoption adjustment field, Wierzbicki (1993) reviewed 66 published studies that examined the psychological and behavior adjustment of adopted children. He concluded that adoptees had higher levels of maladjustment, externalizing disorders, and academic problems than

nonadopted children. This meta-analysis reported a mean within-study effect size of .72, indicating more adjustment problems among adopted individuals. Among studies using clinical samples the mean effect size was even larger (d=1.38). Traditionally, these kinds of effect magnitudes are considered to reflect medium and large practical effects.

In a well organized review of much of the research conducted during recent decades, Haugaard (1998) divided adoption adjustment studies into four general categories: (1) studies examining the proportion of adopted children and adults in inpatient and outpatient mental health settings, (2) studies examining whether any specific behavioral or emotional disorders were more common among adopted than nonadopted patients in mental health facilities, (3) cross-sectional studies not using clinical samples to estimate behavioral or emotional disorders among adoptees, and (4) longitudinal studies of the development of adopted and nonadopted children.

He found numerous studies consistently showed higher proportions of adopted children and adults in inpatient and outpatient mental health settings. Compared to proportions of adoptees in the general population, which is about 2% (Haugaard, 1998), proportions of adoptees in inpatient or outpatient populations ranged from 4% to 22%. Haugaard noted that several studies found smaller proportions of infant adoptions in mental health settings, relative to children adopted at older ages. Studies also showed higher proportions of adoptees in inpatient than outpatient settings: about a two to one ratio. He concluded that this category of studies not only supported the hypothesis that adoption increases one's risk for the development of adjustment problems, but that adoption may be a risk factor for the types of severe problems that result in commitment

to an inpatient facility.

Among the clinical studies that sought to ascertain if adopted patients were more likely than nonadopted patients to develop specific disorders, Haugaard concluded that no consistent patterns existed between the diagnoses of the two groups of patients. The only diagnosis that had an indication of a possible pattern was conduct disorder among adopted females, but two of the more sophisticated studies did not address gender differences: more evidence is needed before making conclusions about diagnosis trends (Haugaard, 1998). This conclusion is much different than the one reached by Ingersoll (1997), who reviewed other studies not reviewed by Haugaard that examined specific psychological disorders and adoptees' clinical diagnoses. Ingersoll concluded that there was consistent and relatively strong evidence showing adopted children were several times more likely to be diagnosed with "externalizing disorders" like attention deficit hyperactivity disorder (ADHD), oppositional defiant disorder (ODD), or conduct disorder (CD). Most of the studies reviewed by Haugaard examined internalizing or mood disorders like depression, or anxiety. In fact, both reviews reported findings of less internalizing disorders among adopted patients than researchers initially expected.

Haugaard's third category of studies examined adoption adjustment in the general population. Results from these studies were mixed: either no differences were found, or differences favored nonadopted children and adolescents. Studies that did find differences in psychiatric disorders (i.e., uncommunicative, hyperactivity, aggression, and delinquency) among large groups of nonclinical children, qualified their results by indicating that mean differences were small and only a minority of adopted children

appeared to have serious problems. In the fourth category (longitudinal studies), adopted boys who had been reassessed around eleven years of age showed more antisocial and adjustment problems than nonadopted boys. All of the longitudinal studies found modest adjustment difficulties among adopted children and adolescents, but different ages appeared to coincide with different degrees of maladjustment: early adolescence being one time when differences were more apparent, especially for boys.

Haugaard concluded that the only category of studies that showed consistent and meaningful results was studies of the proportions of adoptees in inpatient and outpatient treatment programs. As previously mentioned however, Ingersoll (1997) concluded adoptees were more likely to have externalizing disorders than nonadoptees (Haugaard's second categorization). Since the strongest evidence about problematic adoption adjustment comes from studies based on clinical samples, questions have been raised about generalizing from clinical samples to the entire population of adopted children and adults.

Both Haugaard (1998) and Ingersoll (1997) addressed the representative concern about clinical samples because adoptive parents obviously play a significant role in seeking assistance and thus referring children to mental health treatment facilities. Adoptive parents may be more used to dealing with professional agencies, and they earn higher incomes on average than nonadopted parents. In addition, overt acting-out behaviors are easy to identify compared to internalizing symptomology. Warren (1992) and Miller et al. (2000b) found that adopted children were over represented in inpatient and outpatient treatment settings because adoptive parents did refer their children to

mental health facilities more than nonadopted parents, and also because adoptees had more problems than nonadoptees.

Taking into account the reviews of mostly older research on adoption adjustment, by Wierzbicki (1993), Haugaard (1998), and Ingersol (1997), conclusions point to a moderately higher risk of problematic adjustment among adopted children compared to nonadopted children. Besides discussing adoptive parent referral bias, Haugaard attempted to reconcile the different magnitudes of association found between clinical and nonclinical studies by theorizing about potential differences between the population distributions of adopted and nonadopted individuals. He proposed two main distributional possibilities, and was unsure whether to conclude if adoption presented a modest risk to all adopted children, or if a subpopulation of adoptees experienced more substantial difficulties. Both of these scenarios could account for the small to moderate mean differences found in many adoption studies.

Adoption Adjustment Findings in the Past Five Years

The methodological norm of adoption studies during the 60s, 70s, and 80s, was to examine adoption adjustment using clinical samples. Recently, researchers have addressed the methodological need to focus on sampling adopted individuals who more accurately represent the population of adoptees outside clinical settings (Feigelman, Bachrach, Chandra, & Wilson, 1998). The evidence from recent and nonclinical samples tends to corroborate earlier findings that adoption may be a moderate risk factor for maladjustment, particularly in regard to externalizing kinds of problems.

Simmel, Brooks, Barth, and Hinshaw (2001) studied 808 adopted youth mostly between 8-18 years of age in a population based survey: the California Long-Range Adoption Study. Two standardized instruments queried adoptive parents about externalizing behavior symptoms and levels of current functioning in their children. Compared to the normal rates of ADHD diagnoses in school-age children that typically range from 3% to 7%, Simmel et al. found that 30% of the adoptees in their sample were scored above-threshold for externalizing symptomology consistent with diagnoses of ADHD and/or ODD. These externalizing symptoms among adopted children were significantly associated with prenatal exposure to drugs and alcohol, as well as inadequate prenatal care. Prenatal exposure to alcohol increased the risk of externalizing symptoms among adoptees by more than four fold. Externalizing symptoms among adoptees were also associated with residing in foster homes and experiencing abuse or neglect prior to adoption.

In their review, Peters, Atkins, and McKay (1999) concluded that future research needed to explore the pathways leading to externalizing problems among adopted and nonadopted children by examining family processes that could explain the moderately higher risk evidenced among adoptees. In line with this idea, Priel, Melamed-Hass, Besser, and Kantor (2000) compared maternal perceptions among families with biological or adopted children. Mothers assessed their children's behavioral adjustment according to a standardized measure of externalizing and internalizing symptoms. Mothers were also interviewed to assess their own perceptions of the maternal role (i.e., role meanings and role performance), and their perceptions about the focal child (i.e.,

positivity and uniqueness, as well as being a source of enjoyment). Results showed that adopted children had significantly higher levels of externalizing problems related to delinquency and aggression than nonadopted children. Adopted mothers' perceptions were also significantly different than nonadoptive mothers. Adopted mothers had higher scores of positivity about their child, but lower scores about their maternal role performance and meaning than nonadopted mothers. Adopted mothers' reports of externalizing problems among their children were associated with their perceptions of self and child. The researchers concluded that adoptive mothers may be vulnerable to feelings of inadequacy and overcompensate with unrealistic expectations of themselves which may cause stress in adoptive family relationships.

Using an entirely different conceptualization and methodology, Ge et al. (1996) studied the adoptive and birth parents of children placed for adoption at birth. They found a significant association between birth parents' psychiatric disorders and adoptees' externalizing problems, but different than Priel et al. (2000), they found that children's behavior problems had genetic associations which evoked stressful responses in their adoptive mothers, which, in turn, fostered cycles of distressed family interactions leading to further maladjustment. While Priel et al. and Ge et al. explain adoptee problem behaviors from two different perspectives of family social processes, both approaches make intuitive sense. That is, adoptive mothers may experience feelings of maternal inadequacy, and adopted children's genetic predispositions both may increase family stress levels.

Another study, by Grotevant et al. (in press), examined the influences of family

relationship processes on adopted adolescents' externalizing behaviors by using a national sample of adopted adolescents collected in 1995. Their largest effect sizes (medium magnitude) showed adopted adolescents were more likely than nonadopted adolescents to lie to parents and engage in physical fights. Mothers of adopted adolescents with higher levels of externalizing problems engaged in more discussions about ethical behavior than adoptive mothers of adolescents with fewer problems. In addition, nonadoptive mothers with adolescents experiencing high externalizing problems did not engage in discussions about ethical behavior, but instead their social interactions showed greater distance and separation. Grotevant et al. noted that statistically significant differences were too small to draw conclusions about meaningful differences between adopted and nonadopted family processes.

Sharma et al. (1998) used a sample of 715 adoptive families to compare adopted and nonadopted siblings' self-reports of externalizing and internalizing problems. They found small to medium effect sizes that favored nonadopted siblings. Adopted children reported more school and delinquency problems, more substance use, and more antisocial behavior. They also found however, that some prosocial outcomes favored adopted children: effect sizes indicated fewer social problems and less inclination to withdraw socially among adopted siblings. Sharma et al. also compared outcome distributions and found adopted siblings were about three times as likely as nonadopted siblings to reside in the extreme negative ends (tails) on licit drug use and total problems. Using a large national sample of 90,000 adolescents, Miller et al. (2000a) replicated Sharma et al. results, showing greater maladjustment among adopted than nonadopted adolescents,

especially at the distribution tails.

Using a nationally representative sample of adolescents between the ages of 12 and 19, Slap, Goodman, and Bin Huang (2001) compared suicide risk among 214 adolescents living with adoptive mothers and 6363 adolescents living with biological mothers. Before controlling for any other variables, descriptive statistics showed adopted adolescents were about 2.5 times more likely to report attempted suicide at least once during the past year than nonadopted adolescents (7.6% vs. 3.1%). After controlling for other individual, family and contextual factors, logistic regression analysis showed adoptees were still twice as likely as nonadoptees to attempt suicide in the past year (odds = 1.98). In addition, attempters were 3.5 times more likely to be depressed, twice as likely to be female, smoke, have low self-image, and behave delinquently and aggressively. Those reporting suicide attempts had levels of family closeness that were nearly two times lower than nonattempters. The authors concluded that, after controlling for other salient variables in the large national sample, adoption appeared to be a risk factor for attempted suicide.

As previously discussed, adoptees have been much more likely than nonadopted individuals to receive mental health treatment. Miller et al. (2000b) examined this issue using two large data sets from the National Longitudinal Study of Adolescent Health. Adolescents were surveyed in school and then, later on, interviewed in their homes. Results showed that after controlling for demographic characteristics and the extent of individual problems, adopted adolescents were still about twice as likely as nonadopted adolescents to receive mental health counseling: adoptive status still remained a

significant predictor, indicating an apparent adoptive parent referral bias. Miller et al. concluded that higher rates of adoptee problems, and parent referral bias, both contributed to the disproportionate levels of adopted adolescents who received professional help.

In another study (Borders et al. 2000) of adoptee adjustment, survey packets were mailed to 157 adopted adults with ties to the Children's Home Society of North Carolina: an adoption and foster care agency providing support to families. Within each of the 157 packets was another survey packet which Borders et al. asked the adopted adults to give to a nonadopted friend who was similar in gender, age, marital status, race/ethnicity, and career. These friends approximated a matching sample, which the researchers compared to the adopted group. Results showed that adult adoptees between 35-55 years of age reported similar levels of life satisfaction, life purpose, and substance abuse as the nonadopted adult friends. Significantly more adopted adults than friends however, reported stronger feelings of regret in general, and problems related to interpersonal connections, depression, and self-esteem. Adopted adults who had spent time and energy searching for information about their birth parents were more likely than nonsearchers to report adjustment difficulties: search status mediated several of the assessed outcomes.

Feigelman (1997) analyzed data collected by the National Longitudinal Study of Youth (NLSY), which began collecting health-related and demographic data from 12,686 youth 14-21 years of age in 1979. Nine years later (1988), and for the first time, NLSY respondents were asked about childhood residence patterns that included questions about adoptive status. Feigelman used the 1979 and 1988 waves to compare several outcomes

among three groups during their youth and then again during young adulthood. His comparison groups were 101 adoptees raised till age 18 by their adoptive nonrelated parents, 6, 258 individuals raised till age 18 by both biological parents, and 3,949 young persons raised in all other types of "attenuated" families.

Results from 1979 showed that adoptees and those raised in all other types of disrupted families were significantly more likely than adolescents raised by both biological parents to engage in delinquency, youth crime, and alcohol and drug use. Nine years later in 1988, the group of young adults that had been raised in all other types of disrupted families still compared unfavorably to young adults raised by both biological parents: Their educational attainment, job statuses, and levels of marital stability lagged behind. The adopted group in 1988 however, compared more favorably than the 1979 comparisons with the young adults raised by both biological parents: Adoptees had similar educational attainment, job status, asset accumulations, and marital stability. Young adult adoptees in 1988 did, however, report significantly more instances of cohabitation prior to marriage than the young adults raised by both biological parents. Adopted females in 1988 also reported lower marital satisfaction than their counterparts raised by two biological parents. These latter findings are particularly salient for the present research, which seeks to compare heterosexual relationship development among adopted and nonadopted adolescents.

Synthesis

The broadest conclusion that can be drawn from the adoption adjustment

literature is that adoption appears to be a moderate risk factor for maladjustment, at least among some adoptees, during adolescence. The only meta-analysis of adoption adjustment research (Wierzbicki, 1993), concluded that adopted individuals had higher levels of maladjustment, externalizing disorders, and academic problems than nonadoptees. Studies that employed clinical samples found large effect sizes on average while studies using nonclinical samples typically found small-to-medium-sized effects. Comprehensive literature reviews (Brodzinsky, 1987; Haugaard, 1998; Ingersol, 1997; Peters et al., 1999) have reached similar conclusions about adoptees' risk for maladjustment: albeit placing different emphasis on the size and consistency of risk.

Researchers in the field have recognized the limitations of clinical samples when making generalizations to the majority of adopted individuals' well-being, and have responded by using samples more representative of the majority of adopted individuals. Empirical research during the past five years has typically employed large samples, often drawn randomly from the U.S. population (Feigelman, 1997; Grotevant et al., in press; Miller et al., 2000a, 2000b; Slap et al., 2001). Most of these studies found that adoption was associated with a small or medium risk for a variety of adjustment problems, often related to some kind of externalizing behaviors.

Even though few studies have addressed adjustment in the interpersonal and sexual domains, the limited evidence that is currently available (Borders et al., 2000; Feigelman, 1997) suggests that adoptees may experience some difficulties here as well. Thus, the present study addresses a current gap existing in the field of adoption adjustment. In addition, this study advances the field by going beyond the use of clinical

samples to examine relationship formation and sexual behaviors in a large nationally representative sample of adolescents.

CHAPTER III

METHODS

Data

The National Longitudinal Study of Adolescent Health (Add Health) collected a vast amount of health-related data from a random probability sample that offers the potential to further the scientific knowledge base about adolescents' health and well-being. Add Health focused on assessing the individual, interpersonal, and contextual factors that help explain the causes of adolescent health and health-related behaviors (Bearman, Jones, & Udry, 1997). A nationally representative sample of male and female adolescents in Grades 7 through 12 was selected in1994-1995. All high schools in the United States, with an 11th grade and at least 30 students in the school, constituted the primary sampling frame: Eighty high schools agreed to participate in the study. Data were collected from adolescents, parents, and school administrators. Systematic sampling methods and implicit stratification were used to maximize the sample's representativeness of U.S. schools with respect to region of country, urbanicity, school type, ethnicity, and school size.

Add Health Design

High schools were selected with a probability proportional to size and seventy-nine percent of those contacted agreed to participate. When a school refused, another school matching the stratification criteria was approached. Once a high school was

recruited, its feeder schools with a seventh grade were identified. Feeder schools were selected with a probability proportional to the number of students it sent to the high school. Thus, Add Health included a total of 134 different schools in its main sample. Schools varied in size from less than 100 students to more than 3,000 students. During one class period on only one day during the 1994-95 school year, students completed a self administered questionnaire in class. Since there was no makeup day for students not present on the day of administration, about 80% of all enrolled students (over 90,000) completed the in-school administration (Bearman et al., 1997).

From a list of the students who completed the in-school questionnaire and students on school rosters who did not complete an in-school questionnaire, a random sample of 16,000 adolescents was selected for a 90-minute in-home interview. About 220 students from each school pair (high school and feeder school), regardless of size, were selected to form this sample. Add Health calls this the "core" Wave I in-home sample to distinguish it from the "grand" sample which contains a number of oversamples originally identified from responses to the in-school survey. Wave I in-home interviews were conducted between April and December 1995, and were completed by 80% of those selected to participate (final core sample $N = 12, 105$). The over-sampled adolescents included in Wave I in-home interviews belonged to one of four different kinds of groups: (1) race/ethnic minorities, (2) 16 schools where every adolescent was interviewed, (3) adolescents with limb disabilities, (4) and sibling pairs (Bearman et al., 1997). The Wave I in-home grand sample included 20,745 adolescents; post-stratification weighting allows grand sample totals to serve as estimates of population totals (Tourangeau & Shin,

1998). Applying weights in analyses increases the sample's representativeness by proportionately underweighting the oversampled groups.

A computer-assisted personal interview was conducted for the sections of the in-home interview containing sensitive questions (including the information about romantic relationships and sexual behaviors). The respondent listened to pre-recorded questions through earphones and entered their answers directly into the laptop computer (audio-CASI). This technology minimizes potential interviewer and parental effects on responses (Bearman et al., 1997; Turner et al., 1998). One parent of each adolescent was invited to complete a survey: when two parents were available mothers were selected (parent sample $N = 17, 125$: 83%).

Comparison Groups

A straight forward between-group comparison approach underlies the conceptual purpose and statistical procedures of the present study. The central comparison of interest is between adopted and nonadopted adolescents. In light of Feigelman's (1997) findings and arguments about the confounding influence of family structure, however, the nonadopted group was split to form two nonadopted comparison groups. So, the adopted comparison group was comprised of families with one or two parent(s) not related to the adolescent. The two nonadopted comparison groups included either families with one and two biological parent(s), or all other family configurations (e.g., stepparents, step/adoptive parents, or foster parents). Data about the characteristics of the three comparison groups came from the Wave 1 in-home interview grand sample.

Adoptive status was reported during the in-home interview when adolescents were asked to list the names of everyone living in the household. For each name the interviewer then asked, "What is [this person's] relationship to you?" If the adolescent answered that the person named was his/her "father," "mother's husband," "mother," or "father's wife," the interviewer showed the adolescent a card with six different definitions of parent-child relationships and asked the adolescent to select the definition that described their relationship.

"Adoptive father" was defined: "He is not your biological father, and he is not married to or living with your biological parent, but he has legally adopted you." If a respondent specified both adoptive father and adoptive mother, or only adoptive father (mother not present) or only adoptive mother (father not present), the respondent was classified as adopted. Adolescents were not directly asked in the in-home interview if they had been adopted--instead the inference was made based on who lived in the respondent's home. To ensure the accuracy of these inferences, Miller et al. (2001) used three separate Add Health data sets to triangulate on the consistency of adoption status reports.

As Tables 1 and 2 show in the columns under the headings "Adopt," 528 (262 males + 266 females) adopted adolescents were living with one or two adoptive parents. These adolescents chose the definition of adoptive parent when the interviewer displayed the card describing parent-types. Tables 1 and 2 present further descriptive information about sample size, adolescents' average age, race/ethnicity, and parents' education broken down by gender, number of parents in the home, and adoptive status.

Table 1

Weighted Demographic Characteristics of Female Adolescents Living with One or Two Parents in Adoptive, Biological, and Step/Other Families

	Two parents			Single parent	
	Adopt	Bio	Step	Adopt	Bio
N	196	4845	1007	70	2847
Age at interview ($\bar{x}$)	15.73	15.78	15.85	16.68	15.86
Race/Ethnicity (%)					
White (non Latino)	72.84	73.39	73.51	58.95	56.41
Black (non Latino)	6.81	9.30	12.29	26.78	28.36
Latino	10.94	11.76	12.02	12.54	12.27
Other (non Latino)	9.42	5.55	2.18	1.73	2.96
Parent Education (%)					
Less than high school	8.62	8.91	6.06	18.93	17.10
High school grad	26.20	26.23	26.76	28.84	33.82
Some college	20.24	27.22	37.26	36.20	29.77
College grad	16.19	20.18	17.80	2.90	11.87
Graduate training	28.74	17.46	12.12	13.13	7.44

As Tables 1 and 2 show in the columns under the headings "Bio," 15, 100 (7408 males +7692 females) nonadopted adolescents were living with biological parents. These adolescents chose the biological definition of parent when the interviewer displayed the card describing different kinds of parent-child relationships. The biological father description reads, "He is the man who got your biological mother pregnant." There were 2,069 (1062 males + 1007 females) nonadopted adolescents who reported

Table 2

Weighted Demographic Characteristics of Male Adolescents Living with One or Two Parents in Adoptive, Biological, and Step/Other Families

	Two parents			Single parent	
	Adopt	Bio	Step	Adopt	Bio
N	188	4827	1062	74	2581
Age at interview ($\bar{x}$)	16.01	15.95	15.99	16.27	15.99
Race/Ethnicity (%)					
White (non Latino)	68.86	74.53	72.05	53.87	55.16
Black (non Latino)	7.01	7.78	13.52	30.97	27.55
Latino	12.91	11.52	10.64	8.71	13.65
Other (non Latino)	11.21	6.16	3.79	6.51	3.63
Parent Education (%)					
Less than high school	21.52	9.22	5.61	11.48	18.07
High school grad	8.66	24.57	30.05	18.70	30.31
Some college	26.60	29.21	36.47	34.28	31.30
College grad	21.37	20.08	17.14	24.37	13.32
Graduate training	21.85	16.92	10.73	11.17	7.00

living in step and other family configurations, as shown in Tables 1and 2 under the column headings of "Step." This group of adolescents selected several different definitions of parent-child relationships. The most frequent selection was "stepparent." The stepfather description reads, "He is not your biological father, but he is (or has been) married to or living with your biological parent."

Measurement

Because of the exploratory nature of the present study, a wide and inclusive assessment of relationship formation and sexual behaviors was preferred. Therefore, many outcome variables were statistically explored and described in order to present the most complete picture of relationship formation and sexual behaviors possible. Besides the focus on outcomes, a few theoretically salient adoption-related mediating variables also are presented.

Relationship Formation and Sexual Outcomes

Add Health asked adolescents about their romantic relationship partners and the specific romantic perceptions and behaviors associated with each partner. Romantic partners were identified for the Wave I in-home sample through the following method. Add Health first asked, "In the last 18 months -- since {MONTH, YEAR} -- have you had a special romantic relationship with anyone?" If the respondent answered "yes," the initials of these partners were recorded to be referenced by the CASI instrument. It was indicated to the respondent that the initials would be erased from the computer at the end of the section. If more than three partners were identified, the respondent was asked to reduce the list to three.

If the respondent answered "no" that they had not had a special romantic relationship with anyone, they were skipped to another section that asked, (1) "In the last 18 months, did you ever hold hands with someone who was not a member of your family?" (2) "In the last 18 months, did you ever kiss someone on the mouth who was not a member of your family" (3) "In the last 18 months, did you ever tell someone who was

not a member of your family that you liked or loved them?" and (4) "Did you do these things with the same person?" If they answered "yes" to all four questions, the reference person was considered a romantic partner. If the respondent indicated that more than one person qualified under this definition, they were asked to give the initials of the person they felt closest to now. These relationships were called "liked relationships" to distinguish them from the self-identified romantic relationships.

Once romantic relationship involvement was identified through either method, a series of questions were asked about the characteristics of partners and events in the relationship. Respondents who reported a romantic relationship had the opportunity to report about three relationships. In contrast, respondents who had a liked relationship could only report on one. In addition to asking about events in romantic relationships, Add Health asked adolescents numerous other questions about sexual intercourse and pregnancy in general.

Table 3 presents details for each constructed relationship formation and sexual outcome variable as well as reliability coefficients. Variable construction first involved separating the relationship formation items from the sexual items. Then each group of items was factor analyzed separately. Cronbach's alpha coefficient was then used to estimate the reliability of those items organized into unique factors by the factor analysis procedure. Reliability coefficients in Table 3 show that internal consistency for each of the constructed outcome variables (factors) is satisfactory (.60 or larger). Four outcomes in the bottom panel of Table 3, plus the last variable presented in the middle panel of Table 3, were outcome variables based on single items.

Table 3

Dependent Variable Measures and Reliability Coefficients

Relationship formation perceptions and behaviors	
Ideal love	($\bar{x}$, two items, α.86) I would tell my partner that I loved him/her; My partner would tell me...
Ideal gift giving	($\bar{x}$, two items, α.76) I would give my partner a present; My partner would give me...
Actual love	($\bar{x}$, two items, α.86) I told my partner that I loved him/her; My partner told me...
Represented as couple	($\bar{x}$, three items, α.68) I would tell other people we were a couple; I told other people...; We held hands
Serious dating	($\bar{x}$, four items, α.71) We exchanged presents; I met my partner's parents; We went out together alone
Sexual perceptions and behaviors	
Idealized sex	($\bar{x}$, three items, α.71) We would talk about contraception or STI's; We would touch each other under our clothing or with no clothes on; We would have sexual intercourse
Actual sex	($\bar{x}$, four items, α.82) We talked about contraception or STI's; We touched each other under our clothing or with no clothes on; We had sexual intercourse; We touched each other's genitals
Intercourse good	($\bar{x}$, five items, α.77) If you had sexual intercourse, your friends would respect you more; ..., it would give you a great deal of physical pleasure; ..., it would relax you; ..., it would make you more attractive to the opposite sex; ..., you would feel less lonely
Intercourse bad	($\bar{x}$, three items, α.67) If you had sexual intercourse, your partner would lose respect for you;..., you would feel guilty; ..., it would upset {MOTHER}
Pregnancy bad	($\bar{x}$, four items, α.77) Getting (someone) pregnant at this time in your life is one of the worst things that could happen to you; It would not be that bad if... (item reversed); ...it would be embarrassing for your family; ...it would be embarrassing for you
Pregnancy difficult	($\bar{x}$, four items, α.60) if you got (someone) pregnant, you would have to quit school; ..., you might marry the wrong person, just to get married; ..., you would be forced to grow up to fast; ..., you would have to (help her) decide whether or not to have the baby, and that would be stressful difficult
Age at first sex	In what month and year did you have sexual intercourse for the very first time?
Dichotomous outcomes	
Ever had sex	Have you ever had sexual intercourse? When we say sexual intercourse, we mean when a male inserts his penis into a female's vagina.
Baby w/o marriage	Regardless of whether you have ever had a child, would you consider having a child in the future as an unmarried person?
Nonromantic sex	Not counting the people you have described as romantic relationships, have you ever had a sexual relationship with anyone?
Forced intercourse	Were you ever physically forced to have sexual intercourse against your will? Note: Males were asked a different question so forced sex only applied to females.

Sample sizes varied substantially among some of the outcome variables presented in Table 3 because some relationship formation and sexual behavior questions frequently did not apply to many adolescents. The Add Health survey was organized so that questions that did not apply were not unnecessarily asked. Thus, Add Health coded these cases as "legitimate skips" rather than "missing data." Adolescents who did not report a "romantic" or "liked" relationship during the past 18 months were not asked subsequent questions about relationship activities. In addition, if an adolescent reported no sexual intercourse experience they were not asked about age at first intercourse, or about experiencing forced sexual intercourse.

Adoption-Related Mediating Variables

The central assumption in Brodzinsky's (1998) theory is that adoption involves stress producing losses. The first key concept in determining an adopted child's adjustment, according to Brodzinsky, is how the child appraises losses incurred through adoption: either in a benign or stressful way. If appraisal of adoption-related losses produces stress, a second key concept comes into play: direct or indirect coping styles invoked by the child. Theoretically, adoptees can adjust positively to the losses incurred from adoption at either the time of appraisal or during the process of coping with stresses. Maladjustment on the other hand, is thought to result only after the appraisals of loss result in stresses, which are then followed by inadequate coping styles.

In the present study a few Add Health items were used as proxy variables for the hypothesized appraisal processes and coping styles because no questions specifically addressed stress and coping among adoptees. Table 4 provides descriptions and

Table 4

Cognitive Appraisal Mediating Variables, Reliability Coefficients, Ranges and Means

Self-appraisal perceptions	
Self-acceptance ($\bar{x}$, three items, α.74)	You like yourself just the way you are; You feel socially accepted; You feel loved and wanted
Stress Management Coping Styles	
Active coping ($\bar{x}$, two items, α.66)	When you have a problem to solve, one of the first things you do is get as many facts about the problem as possible; when you are attempting to find a solution to a problem, you usually try to think of as many different ways to approach the problem as possible
Avoidance coping (one item)	You usually go out of your way to avoid having to deal with problems in your life

		Males				
		Two parents			Single parent	
		Adopt	Bio	Step	Adopt	Bio
Self-acceptance	3-15	13.08	12.76	12.55	12.75	12.56
Active coping	2-10	8.07	7.73	7.75	7.73	7.71
Avoidance coping	1-5	2.87	2.83	3.14	3.27	3.28

		Females				
		Two parents			Single parent	
		Adopt	Bio	Step	Adopt	Bio
Self-acceptance	3-15	12.05	12.17	11.99	11.18	12.01
Active coping	2-10	7.39	7.77	7.69	7.75	7.76
Avoidance coping	1-5	2.16	2.02	2.05	2.30	2.21

reliability coefficients of the proxy variables. The constructed proxy of appraisal processes taps only one significant aspect of appraising losses: how losses might impact perceptions of self-acceptance. Since adoption is not specifically addressed in the items themselves, this proxy variable is limited in its ability to reflect the intended construct because many other factors besides adoption undoubtably affect perceptions of self-acceptance. The proxy for coping styles, however, appears to capture more of the intended concept than the appraisal proxy. While adoption is still not referred to in regard to coping styles, questions were specific about direct and indirect styles of problem-solving, which is a salient theoretical point distinguishing effective from ineffective stress coping strategies. Neither of the proxy variables fully captures Brodzinsky's concepts, but they both approximate significant emphases contained within his theoretical constructs and are a good first step.

Data Analysis Plan

Analyses proceeded in two logical steps. First, comparisons within demographics (gender, age, race, parent education, and number of parents) showed if associations existed between any of five demographic characteristics and the relationship formation and sexual behaviors (hypothesis #1). Depending on the relationships found in the first hypothesis, subsequent descriptive analyses were grouped according to the moderating effects of gender and/or the number of parents living in the home.

Second, adopted and nonadopted adolescents' relationship formation and sexual behaviors were initially compared by calculating a standardized mean difference (effect

size) score. Next, multivariate regression analyses with influential demographic characteristics as controls, compared more precisely between adopted and nonadopted adolescents' heterosexual relationship formation and sexual behaviors. Regression analyses either reported unstandardized regression coefficients accompanied by *R*-square values (effect sizes), or odds ratios, depending on the continuous or dichotomous nature of the outcome variable (hypothesis #2).

Multivariate analyses also were used to test the statistical significance of mediating mechanisms theorized as the processes that lead to adoption-related outcomes. Multivariate analyses compared appraisal processes and coping styles of the adopted and nonadopted groups (hypothesis #3-4). Sample weights were applied in the analysis of Add Health's grand sample of 20,745 adolescents. Statistical significance for all tests was set at $P < .05$.

CHAPTER IV

RESULTS

Tables 6-15 in the appendix present descriptive analyses of adolescents' relationship formation and sexual behaviors that employed the standardized mean difference (SMD) summary statistic. This SMD effect size summary statistic estimates the practical effects, or magnitude of difference between two means. It is independent of statistical significance testing. Cohen (1988) suggested that the magnitude of SMDs in the social and behavioral sciences can be interpreted as small (.20), medium (.50), or large (.80). In addition, Cohen explained that either group's standard deviation could be used in calculations of effect size unless one group's variation was clearly restricted. The terms "SMD" and "effect size" (ES) will be used interchangeably throughout this Results section. SMD comparisons provided a preliminary description of the relations that existed between the relationship formation and sexual behavior outcome variables, several salient control variables, and the sole independent variable, adoption.

To estimate a more comprehensive picture of the relations between the outcomes, controls, and independent variable, analyses presented in Tables 17-32, located in the appendix, used multivariate regression modeling. A four-stage hierarchical modeling strategy was designed to estimate the incremental effects of adoption status. The second and third modeled steps added important demographic characteristics while the fourth step added salient theoretical constructs related to adoption adjustment. This hierarchical modeling strategy employed multivariate linear regression for 12 continuous outcomes, and logistic regression was used for several dichotomous outcomes.

Descriptive Analyses

Outcomes and Moderators (Tables 6-11)

Tables 6-11 show effect sizes for the relationship formation and sexual behavior outcomes within each moderator (control) variable thought to influence the outcomes. Table 6 presents outcome means by gender. The top panel in Table 6 shows that male's and female's relationship formation perceptions and behaviors were similar: no SMDs reached the magnitude of a small effect size (i.e., .20). The middle and bottom panels show some substantive differences between males' and females' sexual perceptions and behaviors. Adolescent females were much less likely than males to report positive feelings and perceptions about engaging in sexual intercourse (ES = -.97). Similarly, females were less likely (ES = -.24) than males to desire sexual behaviors in their "ideal romantic relationship," and more likely (ES = .34) to report negative consequences regarding adolescent sexual intercourse.

In contrast to gender differences in perceptions of sexual activity, there was no substantial gender difference in the percentage that reported actual sexual behaviors and experiences (ES = .03). Males, however, did report an earlier average age at first intercourse than females (males mean = 14.31 years, females mean = 15.11 years; ES = .44).

Tables 7 and 8 present some medium-sized moderating effects of age and race/ethnicity on relationship formation and sexual behavior. Table 7 shows the influence of chronological age on relationship formation and sexual behavior during adolescence, while Table 8 compares outcomes by race/ethnicity. The top panel in Table

7 shows that older teens reported more serious dating behaviors (ES = -.44 + -.30 = -.74). Most substantial, are differences in sexual perceptions and behaviors between early and late adolescents, as shown in the two bottom panels of Table 7. For example, adolescents 12-14 years of age were much less likely (ES = -.76) than 15-17 year olds to desire sexual behaviors, who in turn were less likely (ES = -.43) than 18-20 year olds. Cumulatively then, the effect size between 12-14 and 18-20 year olds was very large (ES = -.76 + -.43 = -1.19).

Table 8 presents the relationship formation and sexual behavior outcome variables among non-Latino Whites, non-Latino Blacks, and Latinos. The two columns on the far right of Table 8 show effect sizes between Whites and Blacks (ES a), and between Whites and Latinos (ES b). The top panel in Table 8 shows that Whites were more likely (ES = .27) than Blacks to represent themselves publicly as "a couple." Most of the substantial differences in sexual perceptions and behaviors in the two bottom panels were reported between White and Black adolescents. Overall, Black adolescents reported mean scores that calculated to effect sizes about medium in strength, indicating more positive perceptions of adolescent sex and pregnancy than Whites. Blacks were also more likely to engage in risky sexual behavior than Whites. Whites were more likely (ES = .44) than Latinos to view teen pregnancy as bad, and less likely (ES = -.21) than Latinos to consider having a baby outside marriage.

Table 9 compares relationship formation and sexual behaviors between adolescents living in two-parent and single-parent families. The middle panel in Table 9 shows that adolescents in two-parent families held less favorable attitudes about adolescent sexual intercourse and pregnancy than adolescents in single-parent families.

Likewise, the bottom panel shows higher sexual activity and younger average age at first intercourse among adolescents in single-parent families than those in two-parent families. Effect sizes in the middle and bottom panels of Table 9 ranged between small-to-medium in strength.

Table 10 presents SMDs among adolescents grouped according to their parents' educational attainment. The first column on the far right side of Table 10 (ES a) shows the SMD between adolescents living with parents who had not received educational training beyond high school and adolescents with parents who had attended some college but had not graduated. Only one SMD was greater than .20 in this column: Adolescents who lived with parents that had some college experience viewed teenage pregnancy more negatively (ES = -.28). The second column on the far right side of Table 10 (ES b) shows the SMD between adolescents with parents who had attended some college, but did not graduate, and adolescents with parents who graduated from college or who had received graduate training. Three SMDs in this column reached the level considered to be a small effect: Adolescents living with parents that had at least graduated from college were more likely than their counterparts to see teenage pregnancy as a negative experience (ES = -.31) with undesirable consequences (ES = -.20).

The most substantial effect sizes associated with parent education in Table 10 were between adolescents living with parents who had high school degrees or less and adolescents living with parents who had four-year college degrees or more. Between these two groups there were eight SMDs that were small-to-medium in strength. Most notably, adolescents living with parents who had high school degrees or less were less likely (ES = -.28) than adolescents living with parents who had attended some college to

view teenage pregnancy negatively, who in turn were less likely (ES = -.31) than adolescents living with parents who had graduated from college or more to view teenage pregnancy negatively: Cumulatively then, the effect size between the least and most educated parent groups was medium-to-large in strength (ES = -.28 + -.31 = -.59). Overall, adolescents whose parents had the highest education levels were most likely to hold the strongest negative perceptions of teen sexual intercourse and pregnancy.

Table 11 presents the first level of descriptive comparisons between adopted and nonadopted adolescent groups' relationship formation and sexual behaviors. The first column on the far right side of Table 11 (ES a) shows the SMD between adopted adolescents living with one or two adoptive parents and nonadopted adolescents living with one or two biological parents. Four SMDs reached the magnitude of .20 or higher in this first column: Adopted adolescents were more likely than nonadopted adolescents to verbalize expressions of love (ES = .22), represent themselves in public as "a couple" (ES = .20), and engage in serious dating behaviors (ES = .22). They were also more likely to report forced sexual intercourse (ES = .37).

The column on the far right side of Table 11 (ES b) presents the SMD between adopted adolescents living with one or two adoptive parents and nonadopted adolescents living in a variety of two-parent family configurations: step, step/adoptive, or foster parents, or another type of legal guardian. Five effect sizes in this column reached the magnitude of .20 or higher. Regarding their "ideal romantic relationship," adopted adolescents were less likely than nonadopted adolescents to desire sexual intercourse (ES = .-36). Adopted adolescents were more likely than nonadopted adolescents to view sexual intercourse (ES = .35) and pregnancy (ES = .38) negatively. A lower percentage

of adoptees had engaged in sexual intercourse (ES = -.23) than nonadoptees, but a higher percentage of adoptees reported forced sexual intercourse (ES =.20).

Outcomes by Gender and Family Structure (Tables 12-15)

Tables 12-15 present the second level of descriptive analyses comparing adopted and nonadopted adolescents. These effect size comparisons are presented within gender and family structure groupings. Table 12 shows descriptive mean comparisons among adolescent males who lived in two-parent families. The first column on the far right side of Table 12 (ES a) shows the effect sizes between group means for adopted adolescents living with two adopted parents and nonadopted adolescents living with two biological parents. Three effect sizes reached the magnitude of .20 or larger: Adopted males were more likely than nonadopted males to offer and receive verbal expressions of love (ES = .23), and to represent themselves publicly as a couple (ES = .27). Within specified romantic relationships, adopted males were more likely than nonadopted males to engage in foreplay and sexual intercourse (ES = .32). In contrast, adopted males were less likely than nonadoptees to desire foreplay and sexual intercourse when asked to select behaviors representative of their ideal romantic relationships (ES = -.19).

The column on the far right side of Table 12 (ES b) compares group means for adopted males who lived in two-parent families with nonadopted males who lived with two-parent step or other two-parent families. Five effect sizes in this column reached .20 or larger: Adopted males were more likely than nonadopted males to represent themselves publicly as a couple (ES = .36), and more likely to engage in serious dating behaviors (ES = .26). Adopted males were less likely than nonadoptees to desire

foreplay and sexual intercourse when describing their ideal romantic relationships (ES = -.36), but again were more likely to have engaged in this behavior when describing their actual romantic relationships (ES = .14). Adoptees held stronger negative views about teenage pregnancy than nonadoptees (ES = .28), and experienced first sexual intercourse at older ages (ES = .37).

Table 13 compares group means among adolescent females who lived in two-parent families. The first column on the far right side of Table 13 (ES a) shows the SMD between adopted females living with two adopted parents and nonadopted females living with two biological parents. Three effect sizes reached the magnitude of .20 or larger: Adopted females as a group were less likely than nonadopted females to desire foreplay and sexual intercourse (ES = -.25) when describing their ideal romantic relationships. However, on average, adopted females experienced their first sexual intercourse at younger ages than nonadoptees (ES = -.32), and were much more likely to report experiences of forced sexual intercourse (ES = .92).

The column on the far right side of Table 13 (ES b) compares group means for adopted females who lived in two-parent families with nonadopted females who lived in two-parent step or other two-parent families. Eight effect sizes in this column reached .20 or larger: Female adoptees were less likely than nonadoptees to desire gift giving and gift receiving within the context of their "ideal romantic relationships" (ES = -.22). Adoptees were less likely than nonadoptees to desire foreplay and sexual intercourse in their "ideal romantic relationships" (ES = -.42), and to have engaged in this behavior in their actual romantic relationships (ES = -.34). Adopted females perceived stronger negative consequences to result from teen sexual intercourse (ES = .24), and from teen

pregnancy (ES = .20) than did nonadopted females. Adoptees were less likely than nonadoptees to have ever experienced sexual intercourse overall (ES = -.24), and, more specifically, were less likely to have experienced nonromantic sexual intercourse (ES = -.22). Adopted females were, however, much more likely than nonadopted females to report experiences of forced sexual intercourse (ES = .68).

Tables 14 and 15 present descriptive statistics for single-parent families. Adopted/nonadopted effect sizes in these two tables are different in some ways when compared to the effect sizes found among single-parent families: Effect sizes tended to be larger and directions of association were sometimes reversed. Table 14 presents group mean comparisons between adopted males who lived in single-parent adopted families and nonadopted males who lived in single-parent biological families. Nine effect sizes in Table 14 reached the magnitude of .20 or larger: Adopted males who lived in single-parent families were more likely than their nonadopted counterparts to desire verbal expressions of love when describing their ideal romantic relationships (ES = .38), and were more likely to have verbally expressed love in their actual romantic relationships (ES = .48). Adoptees were more likely to desire gift giving and gift receiving than nonadoptees (ES = .37). Adoptees were more likely to desire foreplay and sexual intercourse when describing their ideal romantic relationships (ES = .32), and more likely to have engaged in these behaviors in their actual romantic relationships (ES = .43). Adopted males in single-parent families reported stronger negative perceptions about teenage pregnancy than nonadoptees (ES = .28), but less negative perceptions about the consequences associated with teen pregnancy (ES = -.25). Adopted males

reported younger ages at first intercourse than nonadoptees (ES = -.26), and a greater acceptance of childbirth outside marriage (ES = .32).

Table 15 compares group means between adopted females who lived in single-parent adopted families with nonadopted females who lived in single-parent biological families. Nine effect sizes in Table 15 reached the magnitude of .20 or larger: Adopted females who lived in single-parent families were more likely to have verbally expressed love in their actual romantic relationships (ES = .32), and were engaged in serious dating behaviors more frequently than nonadopted females (ES = .51). Adopted females were less likely than nonadoptees to desire foreplay and sexual intercourse when describing their ideal romantic relationships (ES = .-25), but were more likely to have engaged in these behaviors in their actual romantic relationships (ES = .24). Adopted females in single-parent families were more likely than nonadoptees in single-parent families to report sexual intercourse experience (ES = .36), an older age at first intercourse (ES = .31), greater acceptance of childbirth outside marriage (ES = .20), nonromantic sexual intercourse experience (ES = .32), and forced sexual intercourse experience (ES = .38).

To summarize the first overall stage of analysis, descriptive results showed that the five demographic characteristics in Tables 6-10 (gender, age, race, number of parents, and parent's education) were associated with at least some aspects of adolescents' heterosexual relationship formation and sexual behaviors, suggesting that these characteristics needed to be controlled in multivariate analyses. Table 11 showed four effect sizes above .20 between adopted and biological adolescents, and five between adoptees and nonadoptees in step families before any control variables were introduced.

Tables 12-15 compared adoptees and nonadoptees after controlling gender and number of parents in the household. Among two-parent families, three effect sizes above .20 were found between adopted and biological males, and five between adopted and step family males. Effect sizes above .20 for females in two-parent families indicated three differences between adopted and biological and eight between adopted and step families. Tables 14 and 15 each showed nine effect sizes above .20 for male and female adoptees living in single-parent families compared to male and female biological adolescents in single-parent families. Most effect sizes were larger in single-parent than two-parent families, and several outcomes had different directions in single-parent than in two-parent adopted families.

Multivariate Regression Modeling

To increase the precision of comparisons between adopted and nonadopted adolescents' heterosexual relationship formation and sexual behaviors, a four-stage hierarchical multivariate regression model was designed to estimate the total effect of adoptive status first. Then, demographic characteristics were accounted for in steps two and three, and salient theoretical constructs were added in the fourth and final model. Sixteen heterosexual relationship formation and sexual behavior outcome variables were analyzed using this four-stage modeling strategy: 12 outcomes presented in Tables 17-28 were continuous (multivariate linear regression) and four outcomes presented in Tables 29-32 were dichotomous (logistic regression).

Several preparatory steps were taken prior to conducting the final multivariate analyses to increase the likelihood of making valid statistical estimates from Add Health

data. The same adolescents were selected and included for each outcome variable regressed over the four-stage model so that missing data would not alter sample size when new variables were added into the model. Otherwise, conclusions might have changed as a result of shrinking sample size at each additional step when new variables entered the regression model.

Add Health used a multi-stage clustered design to select adolescent participants. This sampling design reduced the likelihood that observations were independent and equally distributed. This can result in biased underestimates of the standard error term which can decrease the accuracy of statistical tests of significance. This common problem with large population-based sample surveys must be addressed during data analysis by statistically adjusting for this unique sampling design. Commonly used statistical software packages (i.e., SAS, SPSS) do not have routines for making these kind of sampling design adjustments. Thus, specially-designed statistical software (STATA) was used in the present multivariate analyses to adjust the standard error term for the effects of Add Health's multi-stage cluster design so that sampling biases would be minimized when conducting statistical tests of significance.

A second unique feature of Add Heath's sampling design concerned the purposive over-sampling of some race/ethnic groups and some special genetic populations (i.e., twins, physically disabled, etc.). About 8,000 adolescents in Add Health's 20,745 total in-home sample were oversampled participants. A grand sample weighting variable was designed by Add Health statisticians to adjust for oversampling, so that the entire in-home sample (grand sample) would be representative of adolescents attending schools in the United States. This weighting variable was used in the present analyses so that

oversampled adolescents would be proportionately underweighted to provide an accurate representation of the adolescent population attending U.S. schools.

In addition to addressing these sampling design issues, correlation coefficients among the independent variables in the present analysis were calculated to assess the degree of multicolinearity. As seen in Table 16, no correlations approached the magnitude of .40, which is a conservative interpretation of "highly correlated," when multicolinearity could become a problem related to model specification and interpretation of regression coefficients.

Relationship Formation Perceptions and Behaviors (Tables 17-21)

Tables 17-21 present results of adolescents' heterosexual relationship formation perceptions and behaviors. On the left sides of these tables are three groups of predictors, including adoption status, demographic characteristics, and theoretical mediators. The demographic characteristics will be referred to, through the remainder of this results section, as "controls." While prediction was an ancillary piece of the hierarchical modeling design, the central analytical intent of this exploratory study was to control (hold constant) salient demographic characteristics and theoretical constructs thought to be associated with the outcomes, so that adopted/nonadopted differences in the outcomes might be better understood. These three groups of control variables were entered into each regression analysis in four hierarchical modeling steps.

Model one in Table 17 shows the associations with a desire for giving and receiving verbal expressions of love in an ideal romantic relationship when only adolescents living with adoptive, biological, and step/other parents were regressed.

Model two controls for age and race, while model three adds controls for parent education and the number of parents in the home. The fourth and final model adds three theoretical constructs based on Brodzinsky and colleagues' (1998) adoption adjustment theory of stress and coping. Table 17 includes the coding values of each independent variable to indicate their respective ranges throughout the multivariate regression analyses.

Of central import when interpreting these multivariate analyses was the adoptive status coefficients located in the top panel of each table, and how/if these coefficients changed when a new set of variables entered the model. Thus, interpreting the demographic and theoretical coefficients was necessary when the adoptive status coefficients increased or decreased substantially with regard to their relative magnitude. The adoptive status variable was coded into two dummy variables so the group of adopted teens represented zero (reference group) while the biological and step groups were each separately coded as one.

Adoptive status coefficients for females, located in the top left of Table 17, show no differences in the desires for verbal expressions of love in an ideal romantic relationship between adoptees and adolescents in step families. Similarly for females raised by biological parents, when age, race, parent education, and single parenthood are controlled, all insignificant differences disappeared (model 1 = -.03; model 3 = .00). Coefficients for adopted males, however, had a consistent direction and magnitude that were statistically significant even when all other variables were controlled. Though small in magnitude, coefficients indicated that adopted males had a greater tendency than males in biological and step families (model 4 = -.13) to report desires for giving and

receiving verbal expressions of love in their ideal romantic relationships. Table 18 presents regression coefficients of adolescents' idealized perceptions of gift giving and gift receiving in an ideal romantic relationship. No coefficients related to adolescents' adoptive status were statistically or substantively significant in Table 18.

Table 19 presents the same outcome variable from Table 17 except the context was shifted from the adolescents' ideal verbal expressions of love in an idealized romantic relationship to their actual verbal expressions of love in their actual romantic relationships during the past 18 months. Similarly to Table 17, Table 19 shows that more adopted than nonadopted males reported receiving and giving more verbal expressions of love during the past 18 months in their actual romantic relationships. These differences were statistically significant, but the amount of explained variance in the outcome was small (R-square = .01). Adoption status regression coefficients for females in Table 19 were not statistically significant which was consistent with females' coefficients in Table 16.

Table 20 presents results about the perceptions and behaviors of acting like a couple in public. Regression coefficients in the top right corner of Table 20 were statistically significant, indicating that adopted males were more likely than males in biological and step families to report acting like a couple when in public. After controlling for other variables, coefficients in model four (-.18, -.22) were largely unchanged as compared to previous models. The magnitude of these adoptive status differences were small, as the R-squared coefficient showed. For females there were no statistically significant differences among the adoptive status groups.

Table 21 presents results about dating behaviors typically considered indicators of an advancing romantic relationship. Model one for females in Table 21 shows a statistically significant difference between females in adopted families and females in biological families (-.35): Adopted females were more likely to report serious dating behaviors in their romantic relationships. After controlling for the adolescents' age and race in model two however, the same regression coefficient had diminished in magnitude and was no longer statistically significant (-.24). The second panel of regression coefficients in Table 21 shows that for each additional year of age, adolescent females' scores on "serious dating behaviors" increased by an average of .24. In addition, the second panel of coefficients show that Black and Latino females were statistically significantly less likely than White females to report these serious dating behaviors in their romantic relationships. Model two explained ten percent of the variance in females' serious dating behaviors. Adoptive status coefficients for males in Table 21 were not statistically significant.

For the outcomes related to heterosexual relationship formation perceptions and behaviors, presented in Tables 17-21, a few discernable patterns emerged. In three tables, adoptive status coefficients were statistically significant between adopted and nonadopted males. Regression coefficients for adolescent males were also unchanged after controlling for demographic characteristics and theoretical constructs. In terms of practical significance, adopted/nonadopted males' differences were small in magnitude. For adolescent females there was only one statistically significant difference among the adoptive status groups, and that relation was attenuated by age and race.

Sexual Perceptions and Behaviors
(Tables 22-28)

Tables 22-28 focus on adolescents' perceptions and behaviors regarding sexual intercourse and teen pregnancy. Table 22 presents regression coefficients for the outcome variable assessing adolescents' idealized levels of sexual activity within their idealized romantic relationships. The top left panel in Table 22 shows statistically significant differences for the female adoptive status group in all four models: When asked to describe sexual behaviors characteristic of their ideal romantic relationship, adopted females as a group reported less idealized sexual activity than nonadopted females. Differences were larger between adopted and step (model four = .50), than between adopted and biological (model four = .35).

Control variables in models two (age and race) and four (theoretical mediators) amplified the initial female adopted/biological coefficient from .24 to .35. Differences between the adoptive status groups explained 1% of the variance in "sexual behaviors in an ideal romantic relationship," while age and race explained about 19%. For each additional year of age, adolescent females' average score on "sexual behaviors in an ideal romantic relationship" increased by .29 which was statistically significant at the .05 level. Latino and especially other (mostly Asian) females reported statistically significant lower scores on idealized sex than White females. As shown in the bottom panel of Table 22, when females scores in "self-acceptance appraisal" increased by one unit, scores in idealized sex decreased statistically significantly by -.04.

Model one for males in Table 22 shows a statistically significant difference in idealized sex between males living in adopted families and males living in step families (.34). After controlling for age and race however, the coefficient decreased to .25 and

was no longer statistically significant. Males' increasing age was associated with increasing scores on sex in idealized relationships. Being a Black or Latino male relative to being a White male, also was related to having higher scores on sex in ideal romantic relationships.

Conceptually the outcome variables in Tables 22 and 23 were identical, except that Table 22 presented results for adolescents' perceptions of idealized sexual activity, while Table 23 presented results for adolescents' actual sexual behaviors in their actual romantic relationships during the past 18 months. Coefficients were not directly comparable across tables however, because one outcome was composed of three items while the other used four. Nonetheless, changes in the directions and magnitudes of the adoptive status coefficients between Tables 22 and 23 were noteworthy. All adoptive status regression coefficients for males in Table 23 were reversed from those shown in Table 22. In other words, adopted males reported more sexual behaviors in their recent romantic relationships than nonadopted males (Table 23), but adopted males reported less idealized sexual activity (Table 22). In Table 23, differences were statistically significant between adopted and biological males. Controlling for age and race in model two attenuated part of the difference (-.41), while adding parent education and single parenthood in model three increased the difference (-.45).

Similarly, adoptive status coefficients changed for some female groups when comparing their reports of ideal and actual sexual behavior. In Table 23 there were no statistically significant differences between adopted and biological females, but there were in Table 22. That is, adopted females reported less idealization of sexual activity than females in biological families, but in their actual romantic relationships adopted

females were not statistically significantly different in terms of having experienced sexual behaviors. In Table 23 models two, three, and four changed the direction and magnitude of the model one coefficient between adopted and biological females. For the coefficients between adopted and step females however, Tables 22 and 23 were more similar than different: After all other variables had been controlled, coefficients were nearly identical in models four of Tables 22 (.50) and 23 (.48).

Table 24 presents results for the outcome variable assessing adolescents' perceptions that sexual intercourse has positive social and personal consequences. There were no statistically significant differences at the .05 level among the adoptive status groups in Table 24. However, the magnitudes of the adoptive status coefficients were altered in opposing directions for females and males when other control variables were added. Most notably, when single parenthood was entered in model three, differences between adopted and nonadopted females increased, while differences between adopted and nonadopted males decreased.

The bottom panel in Table 24 shows the theoretical constructs altered the adoptive status coefficients further by increasing the gender differences. As females' scores in self-acceptance appraisal increased by one unit, scores on "perceptions that sex had positive consequences" decreased by -.15. As females' scores on "active coping strategy" increased by one unit, scores on "perceptions that sex had positive consequences" decreased by -.17. And as females' scores on "avoidance coping strategy" increased by one unit, scores on "perceptions that sex had positive consequences" increased by .28. The theoretical mediators operated in similar ways for males, but males' adoptive status coefficients were attenuated while females' increased.

Were the changes in adoptive status coefficients, induced by model four in Table 24, statistically significant? This question needed to be answered to determine whether adoptees' appraisals and coping efforts influenced outcomes differently than nonadoptees. The regression coefficient between the adopted and biological female groups in model three was .26, but in model four it increased to .36: Adopted females' self-acceptance appraisals and coping styles were decreasing/mediating their perceptions that sexual intercourse had positive consequences relative to the mediating influence among biological females. Was it a statistically significant change at the .05 level?

A *t*-statistic was calculated to test the statistical significance of change between .26 and .36: t = (.36 minus .26) divided by .41 (which was the standard error in model four). Thus, t = .24, which is not close to the value of 1.65, or the level needed for a one-tailed test of statistical significance at the .05 level of probability. No, the apparent change due to mediating processes evidenced between model three and model four was not statistically significant.

Compared to Table 24, the outcome presented in Table 25 measured the other end of the continuum: the extent to which adolescent sexual intercourse was perceived to have negative consequences. Adoptive status regression coefficients in Table 25 show Adopted females were more likely than nonadopted females to report that sexual intercourse had negative consequences: differences were statistically significant only between females raised in adopted and step families. After controlling for single-parent families, adopted/step differences were attenuated for females (-.85), but still statistically significant. For males, a statistically significant difference was found between males living in adopted and step families prior to controlling any other variables (-.77):

Adoptees were more likely to report that negative consequences were associated with sexual intercourse. After controlling for age, race and single-parent families, however, the difference had decreased (-.58) and was no longer statistically significant.

Tables 26 and 27 present results about adolescents' perceptions of teen pregnancy. Regression coefficients in Table 26 show differences in adolescents' negative perceptions of teen pregnancy. Females' adoptive status coefficients were statistically significant between females living in adopted and step families: Adopted females were more likely to report greater negative perceptions of teen pregnancy (-1.03). After controlling for age and race however, the difference was no longer statistically significant. When parent's education and single-parent families were controlled in model three, females' adoptive status coefficients changed substantially, but still were not statistically significant.

For males, coefficients in Table 26 were statistically significant in models one and two between the adopted and step family groups (model 1= -1.65, model 2 = -1.33). While age and race diminished the magnitude of the coefficient, it was parent's education level and single-parent families in model three that had the strongest attenuating effects (-.73). For every one unit increase in parent's education, males' scores on "negative perceptions of teen pregnancy" increased by .64. And as shown in the bottom panel of Table 26, as adolescents' active coping strategies increased so did negative perceptions of teen pregnancy, but differences in the adoptive status coefficients resulting from an active coping style were minimal.

Parents' education levels and single-parent families in model three exert very similar influences in Tables 26 and 27. When these two variables entered the regression

models, adoptees' negative perceptions of teen pregnancy were consistently attenuated relative to nonadoptees' perceptions. No adoptive status coefficients were statistically significant in Table 27. Age, race, parent's education, and single parenthood were all important predictors of "the perception that teen pregnancy had negative consequences." In the bottom panel of Table 27 both an active and avoidant style of coping with stressful situations was positively associated with "the perception that teen pregnancy had negative consequences."

Table 28 presents regression coefficients based on predicting an adolescent's age at their first sexual intercourse experience. Table 28 is different from all other regression tables because adolescents' current age was not included as a control variable in model two, due to the high correlation that age shares with the outcome in Table 28. Regression analyses were run with and without the age control and many coefficients substantially changed when the age control was included. Thus, it was omitted from Table 28. No adoptive status coefficients were statistically significant in Table 28.

Due to the easily understood outcome presented in Table 28, all of the coefficients are readily interpreted as average group differences in age in years at first sexual intercourse. For example, in model one adopted females reported an earlier age at first sexual intercourse than biological (.32 years) and step (.20 years) females. In model four however, after other variables were being controlled, biological females as a group were on average only .05 years older than adoptees at first sexual intercourse, and step females were now -.19 years younger. The largest difference in Table 28 is shown in the second model for males: Black males as a group reported an average age at first sexual intercourse 2.05 years younger than White males. Controlling for race in model two did

attenuate the males' adoptive status coefficients shown in model one. In turn, single-parent families and parents' education levels in model three moderately attenuated males' race group differences from model two. The bottom panel of Table 28 shows that as males' and females' active coping strategies increased so did their ages at first sexual intercourse.

The results presented in Tables 22-28 indicated that there were more overall similarities than differences between adopted and nonadopted adolescents' sexual perceptions and behaviors; where differences were found their respective magnitudes were small. Differences showed that adoptees did report greater discontinuities between idealized sexual perceptions and actual sexual behaviors than nonadoptees. Adoptees generally reported stronger negative perceptions about sexual behaviors but greater sexual activity in recent romantic relationships. Regarding perceptions of teen pregnancy, parent's education levels and the number of parents in the home had differing influences between adoptees and nonadoptees.

Dichotomous Outcomes (Tables 28-31)

Odds ratios from logistic regression analyses are presented in Tables 29-32. Odds ratios in Table 29 indicate the likelihood that adolescents' had ever experienced sexual intercourse. Adoptive status odds ratios in model one were statistically significant between females living in adopted families and females living in biological families (.64). In other words, before controlling any other variables, adopted females as a group were 56% (1/.64 = 1.56) more likely to report sexual intercourse experience than biological females. When age and race were entered in model two however, the odds ratio was no longer statistically significant. In model four, females' adoptive status odds

ratios indicated that adoptees were now 37% more likely than biological, and 64% less likely than step females to report ever having sexual intercourse. The control variables in models two, three, and four attenuated the difference between adopted and biological groups while increasing the difference between the adopted and step family groups.

Adoptive status odds ratios for males in Table 29 show a statistically significant difference between the adopted and step family groups. Like females' odds ratios however, controlling for age and race attenuated the difference enough so that the association was no longer statistically significant. In model one adolescents in step families were 66% (odds ratio = 1.66) more likely than adopted males to report ever having sexual intercourse, but in model two they were 54% (odds ratio = 1.54) more likely. Controlling for parent's education and single-parent families increased the difference between adopted and biological males (from .94 to .81) while decreasing the difference between adopted and step males (from 1.54 to 1.36).

Odds ratios in Table 30 show the likelihoods that adolescents' would ever consider having a child outside marriage. No odds ratios among the adoptive status groups were statistically significant. Females' model four odds ratios show adopted females were more likely than biological (32%) and step (16%) females to ever consider having a child outside marriage. Males' model four odds ratios show that adopted males were more likely than biological (45%) and less likely than step (4%) males to ever consider having a child outside marriage. The bottom panel in Table 30 shows that higher scores on "self-acceptance appraisal" and "active coping strategy" were associated with decreased likelihood of ever considering childbirth outside marriage.

Table 31 presents odds ratios estimating the likelihood that adolescents had ever engaged in sexual intercourse with nonromantic partners. There were no statistical differences among the adoptive status groups. However, odds ratios show that adopted females and males were more likely than biological teens (females' model four = 30%, males' model four = 19%) to have engaged in sexual intercourse with nonromantic partners but were less likely than teens in step families (females' model four = 57%, males' model four = 24%). The bottom panel in Table 31 shows that as females' and males' scores on "active coping strategy" increased, the likelihood of ever engaging in sexual intercourse with nonromantic partners decreased.

Table 32 presents odds ratios estimating the likelihood that female adolescents had ever experienced forced sexual intercourse against their will. Adoptive status odds ratios in Table 32 were statistically significant and practical differences between adopted and nonadopted females were substantial. In model one adopted females were three times more likely to report forced sexual intercourse than females in biological families (1 divided by .33 = 3.03), and 75% (1 divided by .57 = 1.75) more likely than females in step families. After controlling for parents' education and single-parent families in model three, adopted/nonadopted differences increased. Odds ratios in model four show adopted females were almost three and half times (3.45 = .29) more likely to report forced sexual intercourse than biological females and almost two and a half times (2.38 = .42) more likely than step females. The bottom panel in Table 32 shows that for every one unit increase in "self-acceptance appraisal" females' likelihood of having experienced forced sexual intercourse decreased by 20%: direction of effects should

logically be reversed, however. Males were not asked in the interview if they had ever experienced forced sexual intercourse (see Table 32).

The dichotomous outcomes presented in Tables 29-32 show in part that the adopted group of females experienced forced sexual intercourse against their will much more frequently than nonadopted females. Parent's education levels and the number of parents in the home substantially influenced adopted females' risk for experiencing forced sexual intercourse compared to nonadopted females' risk. Adoptees were more likely than the biological group, and less likely to than the step family group, to ever have experienced sexual intercourse with a romantic or nonromantic partner.

CHAPTER V

DISCUSSION

Because no empirical research had explored adopted adolescents' heterosexual relationship formation and sexual behaviors, it was unclear from the beginning of this research project whether to expect differences between adopted and nonadopted adolescents. Previous studies had found that adoptees reported more behavioral and psychological problems than nonadoptees. The content domain of romantic relationships and sexual behaviors, however, was a qualitatively different outcome domain compared to behavioral or psychological problems. Romantic relationships and sexual behaviors were personally meaningful topics that were highly value-laden. Exploring this content domain would not neatly lend itself to interpretations about "comparison levels of problems" unlike other studies of adoption adjustment examining delinquency, suicide ideation, or depression. Nonetheless, ambiguity and complexity were inadequate reasons to ignore such a meaningful and important dimension of adolescents' health.

Findings from the present study may not fit neatly with previous research about adopted adolescents' behavioral or psychological adjustment, but the present research results do establish a baseline about a new content domain in the study of adopted adolescents' adjustment. Overall, results provided support for three conclusions about comparisons between adopted and nonadopted adolescents' heterosexual relationship formation and sexual behaviors. First, more similarities than differences were found between adopted and nonadopted adolescents' romantic relationships and sexual behaviors. Second, adopted females were much more likely than nonadopted females to report experiences of forced sexual intercourse. Third, adopted males were a little more

likely than nonadopted males to report idealistic relationship formation behaviors, but within their recent romantic relationships, to report higher levels of sexual activity.

Table 5 summarizes the statistically significant findings of the many multiple regression analyses by showing the directions of association. A plus (+) sign indicates statistically significant higher scores, while a minus (-) sign indicates statistically significant lower scores. Where no sign is shown, no statistically significant difference was found. The first overall conclusion that can be drawn from Table 5 is that there were more similarities than differences between adopted and nonadopted adolescents' romantic relationships and sexual behaviors: There is more empty space than positive or negative signs. Thus, adopted adolescents' overall adjustment, with regard to their romantic relationships and sexual behaviors, appears to be similar to adolescents living with biological and step/other parents. In general, this finding parallels previous research that found most adoptees' outcomes were similar to nonadoptees (Benson et al., 1994; Borders et al., 1998; Finley, 1999).

Differences between adopted and nonadopted adolescents were found among certain subgroups. The bottom of Table 5 shows that adopted females were more likely than nonadopted females to report forced sexual intercourse. Table 5 only indicates directions of association, and does not indicate the magnitudes of difference, but the actual analyses showed adopted females were two-and-a-half to three-and-a-half times more likely than nonadopted females to report forced sexual intercourse. This finding parallels previous research that found some adopted adolescents were at increased risk for a variety of negative outcomes (Simmel et al., 2001; Priel et al., 2000; Sharma et al., 1998; Slap et al., 2001; Miller et al., 2000b). Unlike some previous

Table 5

Overall Conclusions About Differences Between Adopted and Biological, and Adopted and Step/Other Adolescents' Heterosexual Relationship Formation and Sexual Behaviors

	Females			Males		
	Adopt	Bio	Step	Adopt	Bio	Step
Relationship formation perceptions and behaviors						
Ideal love				+	-	-
Ideal gift giving						
Actual love				+	-	-
Represented as couple				+	-	-
Serious dating						
Sexual perceptions and behaviors						
Idealized sex	-	+	+			
Actual sex	-		+	+	-	
Intercourse good						
Intercourse bad	-		+			
Pregnancy bad						
Pregnancy difficult						
Age at first sex						
Dichotomous outcomes						
Ever had sex						
Baby w/o marriage						
Nonromantic sex						
Forced intercourse	+	-	-			

Note. + represents statistically significant higher score, while - represents statistically significant lower score in multiple regression analyses

research examining problem behaviors however, conclusions about the present finding can only be interpreted one way: Adopted females were the victims of this particular negative experience rather than the perpetrators.

The third main conclusion that can be drawn from the present study is that, compared to their nonadopted counterparts, adopted males reported more idealistic perceptions and behaviors about romantic relationship formation, but more sexual activity in their actual romantic relationships. The top panel in Table 5 shows adopted males were more likely than nonadopted males to want, and to have, romantic relationships that expressed love verbally and communicated to others that they were a couple. The middle panel in Table 5 shows that adopted males reported more sexually active behavior in their actual romantic relationships than biological males. While these findings were statistically significant, their magnitudes were small. Thus, these kinds of differences about perceptions and behaviors probably reflect characteristics shared among only a minority of adopted males, relative to nonadopted males.

Table 5 summarizes the main conclusions that were drawn from the present study; More detailed findings about each of the study's hypotheses are discussed next. Care should be taken when interpreting the implications of these findings about adopted adolescents. Values related to romantic relationships and sexual intercourse are diverse. These kinds of romantic and sexual perceptions and behaviors carry a positive valence for some individuals and a negative valence for others. Thus, interpreting the meaning of the value-laden findings in this study should be done on an individual or couple basis. Prospective adoptive parents should view the implications of this study as only one piece of information about adoption and adopted adolescents.

Hypothesis #1

"There are no substantive adolescent relationship formation and sexual behavior differences within each demographic control variable (i.e., gender, age, race, parent's education, and number of parents in the household)."

The first hypothesis was designed to describe the associations, if any existed, between several important demographic characteristics and 16 relationship formation and sexual behavior outcomes. If substantial relations were found, then holding these "other" influential factors constant (controlling them) would be appropriate to increase the precision of comparisons between adopted and nonadopted adolescents.

The null hypothesis regarding gender differences was rejected for several relationship formation and sexual behavior variables, but was not rejected for many other outcomes. Females as a group were originally expected to report less sexual activity and stronger negative perceptions about adolescent sexual activity than males. Findings indicated that females, on average, did report stronger negative perceptions of sexual activity and an older age at first intercourse than males, but similar proportions of females and males reported sexual activity. Therefore, gender needed to be controlled when adopted and nonadopted adolescents were compared.

Adolescents' age was expected to have a clear and strong association with relationship formation and sexual behaviors. Generally, as age increased, perceptions and behaviors related to forming intimate relationships and sexual intercourse were expected to become more favorable. The null hypothesis regarding adolescents' age was rejected. All of the age associations were consistent with expectations, and most showed

substantial magnitudes. Because older age was associated with favorable perceptions and greater sexual activity levels, age was controlled in the multivariate analyses.

The null hypothesis about race/ethnic differences in relationship formation and sexual behaviors was rejected for many of the outcome variables. Several differences were found between the White and Black adolescent groups, and a few between Whites and Latinos. Whites reported stronger negative perceptions about sexual activity and less sexual activity than Blacks. Whites reported older ages at first intercourse and stronger negative perceptions about teen pregnancy than Blacks and Latinos. Thus, race was controlled in the multivariate analyses.

Fewer resources and less monitoring in single-parent than two-parent homes were thought to be associated with adolescents' relationship formation and sexual behaviors. Teens in single-parent families might hold more accepting attitudes about sexual activity and teen pregnancy, and report greater levels of sexual activity than teens in two-parent families. The null hypothesis regarding the influence associated with the number of parents in the home was rejected. Teens in single-parent households reported more positive perceptions of sexual intercourse and teen pregnancy, and higher levels of sexual activity than teens in two-parent households. This variable was included as a control.

Parents' educational attainment was thought to be associated with socioeconomic status and higher achievement in general. Having parents with higher education levels was therefore expected to delay adolescents' sexual activity, and to increase their negative perceptions of sexual intercourse and teen pregnancy because these things could negatively alter life trajectories. The null hypothesis about parents' education was rejected for many of the outcome variables in question. Adolescents living with parents

who had graduated from college or who had received graduate level training were less likely to report sexual intercourse activity and were more likely to report negative perceptions of teen pregnancy than teens living with parents that had not graduated from college.

All five demographic variables tested in the first hypothesis were, therefore, included and held constant (controlled) in the multiple regression analyses designed to compare adopted and nonadopted adolescents' relationship formation and sexual behaviors. Each of the demographic characteristics (gender, age, race, number of parents, and parents' education) was associated with at least some of the outcome variables. Controlling for these characteristics was therefore an important piece of the analytic strategy which increased the likelihood that adopted and nonadopted adolescents' heterosexual relationship formation and sexual behaviors would be properly understood.

Hypothesis #2

"There are no substantive or statistically significant differences between adopted and nonadopted adolescents' reports of relationship formation and sexual behaviors, whether demographic characteristics are controlled or not."

The second null hypothesis addressed the central question underlying the present study: Did adopted/nonadopted differences exist in the content domain of adolescents' romantic relationships and interactions? In other content areas small-to-medium adopted/nonadopted effect sizes have been found, showing adoptees had more ADHD and ODD (Simmel et al., 2001), delinquency and aggression (Priel et al., 2000), lying and

fighting (Grotevant et al., in press), antisocial behavior and school problems (Sharma et al., 1998), attempted suicide (Slap et al., 2001), and mental health counseling (Miller et al., 2000b). Does the same pattern of small-to-medium adoption effects hold for romantic relationships and sexual behaviors as well?

Results indicated that the picture of adopted and nonadopted adolescents' relationship formation and sexual behaviors varied somewhat and became more specified as demographic characteristics were controlled. Before any control variables were introduced, group-mean-comparisons showed more adopted/nonadopted similarities than differences. Small to medium-sized differences (effect sizes between .20 and .50) between adolescents in adopted and biological families were found on four of sixteen outcome variables, while five of sixteen outcomes were different between adoptees and nonadoptees in step families.

Specifically, differences between adoptees and nonadoptees in biological families were found on three relationship formation behaviors and forced sexual intercourse experience: Adoptees reported more verbal expressions of love, behaviors consistent with being "a couple," and serious dating behaviors. Adoptees also reported more experiences of forced sexual intercourse. Compared to nonadoptees living in stepfamilies and other family configurations, adoptees reported less idealized perceptions of sexual activity, more negative perceptions about the consequences of sexual intercourse and teen pregnancy, and less sexual intercourse experience overall, but more forced sexual intercourse experience.

The second level of descriptive analyses comparing adopted and nonadopted youth's relationship formation and sexual behaviors controlled two demographic

characteristics: gender, and the number of parents in the household. Findings showed the dichotomous control variable, that distinguished families with one or two parents, to have a tendency to cancel out differences between adopted and nonadopted adolescents. This tendency became observable when mean comparisons were separately analyzed within two-parent families and single-parent families: Findings between two-parent adopted and nonadopted families showed more similarities than differences in both males' and females' relationship formation and sexual behaviors, while in single-parent families males and females reported more adopted/nonadopted differences than similarities. In addition, the directions of association for several of the outcome variables were opposite between two-parent and single-parent families, which canceled adoption-related differences in both family configurations.

In two-parent families three small effect sizes were found between adopted and biological males, and five between adoptees and nonadoptees in step families. In contrast, adopted males living in single-parent families had more differences (9 of 15) with biological males in single-parent families than similarities. Effect sizes were also larger in single-parent families ranging between small and medium strength magnitudes. Five outcomes had different directions in two-parent families than in single-parent families.

A similar pattern was found among females. There were three differences between adopted and biological females living with two-parents, and eight substantive differences between adoptees and females in step families. These differences were mostly small in magnitude except that forced sexual intercourse ranged from medium-to-large in strength. Contrast this with findings among single-parents, which showed more

differences (9 of 16) than similarities between adopted and biological females. Three outcomes had different directions in two-parent families than in single-parent families.

Findings from these descriptive analyses raised a question about findings in the multiple regression analyses: Did findings from the descriptive analyses, broken down by gender and number of parents in the home, appear to match-up with statistically significant and insignificant differences between adopted and nonadopted adolescents in the multiple regression analyses? In other words, did consistencies between single-parent and two-parent families coincide with multiple regression statistically significant differences, and did inconsistencies between single-parent and two-parent families coincide with multiple regression statistically insignificant differences? If so, then two-parent and single-parent adopted families may share some similarities, but also some differences when comparisons are made against two-parent and single-parent biological families respectively.

Multiple regression analyses assessing adopted and nonadopted heterosexual relationship formation and sexual behaviors controlled five fundamental demographic characteristics and three salient psychological processes theorized as mediators between stressful life events and life outcomes. Adolescents' heterosexual relationship formation and sexual behaviors were influenced by all five demographic characteristics which required the most precise adopted and nonadopted comparisons to account for these influential characteristics.

Overall, the multiple regression analyses found more similarities than differences between adoptees and nonadoptees. Both male and female adopted/nonadopted differences coincided with the consistencies between two-parent and single-parent

families, while several insignificant differences in the multivariate analyses coincided with the inconsistent direction of effects found between two-parent and single-parent families. Regarding the second null hypothesis, which independently applied to 16 outcomes, the most frequent conclusion was "failed to reject." However, there were some particular aspects of adolescents' romantic relationships and sexual behaviors where adopted adolescents appeared to differ from nonadoptees, and the null hypotheses were rejected.

Adopted males' and adopted females' reports formed two different patterns of heterosexual relationship formation and sexual behaviors which occasionally distinguished them from their nonadopted male and female counterparts. Adopted females as a group reported a much higher rate of forced sexual intercourse experience than nonadopted females. It is plausible that this higher incidence of rape and/or incest among adopted females disproportionately influenced their perceptions and behaviors about romantic relationships and sexual intercourse. Consistencies with this perspective were evident in some of the female adoptees' outcome variables assessing romantic and sexual perceptions and behaviors.

After controlling five demographic characteristics, the most precise statistical analyses showed adopted females were about three and a half times (odds ratio = 3.45) as likely as females in biological families to report experiences of forced sexual intercourse, and about two and a half times (odds ratio = 2.38) as likely as females in step families: It was indeterminable whether these experiences precipitated the adoption. When describing their idealized romantic relationships, adopted females were less likely than nonadopted females to desire sexual intercourse, intimate touching, and discussions

about contraception. Adopted females also reported more expectations of guilt, loss of self respect, and parental disappointment when asked about the consequences of engaging in sexual intercourse.

Within the same multiple regression modeling design, adopted males' descriptions of their idealistic romantic relationship interactions, and their descriptions of their actual romantic relationship interactions during the 18 months prior to their in-home interview, showed more idealism than nonadopted males' relationships. When asked to describe their ideal romantic relationships, adopted males were more likely than nonadopted males to report that they would tell their girlfriends that they loved them, and that their girlfriends would in turn tell them they were loved. When asked to describe their actual romantic relationship interactions during the past 18 months, more adopted males than nonadopted males had told their girlfriends that they were loved, and their girlfriends in turn had told them they were loved. More adopted males than nonadopted males reported holding hands in their actual romantic relationships, and that they would tell and did tell "other people" that they and their girlfriends were "couples."

When asked to select specific sexual activities from a list, in order to describe this part of their ideal romantic relationships, adopted males were not different from nonadopted males in reporting that they would talk about contraception, and engage in intimate touching and sexual intercourse. However, later in the interview when adolescents were asked to describe the sexual interactions in their actual romantic relationships during the past 18 months, adopted males reported higher levels of sexual activity (i.e., contraception discussions, intimate touching, and sexual intercourse) than nonadopted males.

Hypotheses #3 and #4

Hypothesis #3: "Adopted and nonadopted adolescents' self-acceptance appraisal processes do not distinguish statistically significant differences in relationship formation and sexual behaviors." Hypothesis #4: "Adopted and nonadopted direct coping styles are equally associated with higher positive outcomes compared to adolescents who use indirect coping styles."

The final two hypotheses of the study were guided by a theoretical framework that sought to explain the interpersonal and social processes that were believed to be uniquely associated with adopted adolescents' adjustment. The central assumption in the Brodzinsky et al. (1998) stress and coping theory is that, "adoption is inherently associated with a variety of loss- and stigma-related experiences and is potentially stressful for children" (p. 18). For example, adoptees lose their birth parents and extended birth family. Losing blood relatives may lead to a loss of status, and losses of ethnic, racial, and genealogical ties. Adoptees are also thought to suffer losses in their feelings of stability in the adoptive family once they are old enough to understand that adoption means someone "gave them away." Brodzinsky et al. believe that the losses associated with adoption contribute to perceptions of incompleteness, alienation, disconnection, abandonment, and rejection.

If an adopted child/adolescent views his or her adoption as a meaningful event, and also as one involving loss and/or stigma, then stress and coping theory predicts that a pattern of negative emotions associated with stress (e.g., confusion, sadness, anger, shame, embarrassment, anxiety) is likely to be experienced (Brodzinsky et al., 1998).

Once the child has appraised adoption as a stressful situation, various coping strategies may be considered and one or more eventually activated. Brodzinsky et al. outlines two general styles of coping; direct attempts to resolve stress, and indirect strategies seeking to avoid stress. Coping directly with adoption-related stress could entail redefining the meaning or importance of adoption (cognitive-behavior problem solving) or seeking support and resources from other people (assistance seeking). Indirect or avoidance stress management strategies include attempts to minimize the stressor or to put it out of one's mind (cognitive avoidance), or to physically distance oneself from the stressor (behavioral avoidance).

Appraisal processes represent the first pivotal concept in stress and coping theory which attempts to explain why some adopted children experience stressful outcomes while others do not. Cognitive appraisal of adoption losses refers to the idea that, "For some children, adoption is appraised in a rather benign or positive way that produces little distress, whereas for other children, being adopted is associated with feelings of confusion, sadness, anger, embarrassment, and shame" (Brodzinsky et al., 1998, p. 18). The second pivotal concept in this theory follows behind the first: Among those children who appraise adoption as stressful, some develop direct and effective stress management patterns while others develop less effective techniques, such as avoidance. These two concepts, appraisals of adoption-related stress and coping efforts, underlie the third and fourth hypotheses respectively.

The final hierarchical regression model for each outcome variable in the present study added three variables (self-acceptance appraisal, and direct and indirect coping efforts) that represented the mediating concepts outlined by Brodzinsky et al. Ideally, the

tests of statistical significance about mediation would have been specific to the cognitive appraisals of adoption-related stress and adoptees' subsequent stress-coping strategies: then adopted/nonadopted comparisons would reflect the mediating impacts due to the stresses or coping associated specifically with adoption losses and subsequent adjustment. This was not possible because none of the Add Health questions asked adolescents about adoption experiences per se.

In fairness to Brodzinsky and colleagues' (1998) adoption stress and coping theory then, it should be clear that the questions selected from the Add Health interview to construct Brodzinsky et al.'s mediating mechanisms shared similarities in terms of cognitive appraisals of self, and coping with problems, but not in specific regard to adoption losses. Thus, the constructed mediators were deliberately construed as an approximation to represent the adoption adjustment stress and coping concepts. Since no Add Health questions asked about stresses related to adoption, the uniquely stressful influences thought to be linked with adoption could not be separated out from countless other potential causes of troubling stress.

While these hypothesized mediators were found to be associated with most of the outcomes, little evidence of adoption-related mediation was observed. Thus, in terms of the third and fourth null hypotheses about adoption-related mediation, the conclusion was "failed to reject" in every instance. These findings should be regarded as inconclusive, however. Brodzinsky and colleagues' mediating mechanisms in the present study not only were "rough approximations," but even so, some pattern of adoption-related mediation was infrequently detectable among adopted females.

For example, after controlling self-acceptance appraisal and coping styles, differences in the perceptions about the positive consequences of sexual intercourse increased negligibly between adopted and nonadopted females. In other words, female adoptees' self-acceptance appraisals and coping styles decreased their perceptions that sexual intercourse carried positive consequences relative to the influence that nonadopted females' self-acceptance appraisals and coping styles had on their perceptions about the positive consequences of sexual intercourse. In this instance, taking into account stress-related mediating processes suggested that adopted females' appraisals of themselves and their efforts to cope with problems uniquely decreased their positive perceptions of sexual intercourse relative to nonadopted females. This perceptible mediating influence was consistent with the most prominent finding in the present study: that a much higher proportion of adopted females experienced forced sexual intercourse. After experiencing forced sexual intercourse, consequences associated with intercourse are likely to appear less positive.

Concerning a larger view of the mediating mechanisms, beyond the focus on adoptees' adjustment, findings showed that most of the adolescents' relationship formation and sexual behaviors were associated with self-acceptance appraisal processes and stress-related coping styles. This finding applied to all adolescents regardless of adoption status. Depending on the nature of the specific outcome variable, the mediating variables either were mediators, reciprocators, or outcomes themselves. For example, it was logical that an active problem-coping style played, at least in part, a mediating role in adolescents' negative perceptions of teen pregnancy. For forced sexual intercourse

experience however, it made sense to conclude that low self-acceptance appraisal was as much a result as it was an antecedent.

Summary and Conclusions

Previous empirical research found small-to-medium effect sizes between adopted and nonadopted youth: Adoptees have typically compared less favorably with nonadoptees on a variety of behavior-related problems. The present exploratory study compared adopted and nonadopted heterosexual relationship formation and sexual behaviors. For most of the outcomes in two different sets of analyses, one descriptive and one bivariate, no substantive differences were found.

However, in a second descriptive analysis grouped according to two-parent and single-parent configurations, findings showed two patterns. First, in single-parent families more adopted/nonadopted differences than similarities were found: Differences generally in favor of nonadoptees were larger in single-parent than two-parent families. Second, consistent directions of effect between two-parent and single-parent adopted families coincided with statistically significant adopted/nonadopted differences in the multiple regression analyses, while inconsistent direction of effects between two-parent and single-parent adopted families on several outcomes coincided with statistically insignificant differences in the multivariate analyses. Thus, two-parent adoptive families shared some similarities and some differences with single-parent adoptive families when the comparison groups were two-parent and single-parent biological families respectively. Findings generally showed more variation in relationship formation and sexual behaviors within single-parent than two-parent families.

In the most precise analyses, controlling for five demographic characteristics, some differences were found between adopted and nonadopted adolescents' heterosexual relationship formation and sexual behaviors. Adopted females reported much more forced sexual intercourse experience than nonadopted females. Adopted females also desired less sexual intercourse, intimate touching, and discussions about contraception when describing their "ideal romantic relationships" than nonadopted females. More adopted males reported perceptions and behaviors within their idealistic and actual romantic relationships that reflected a more active relationship formation posture than nonadopted males.

Findings showed some relationship formation and sexual behavior patterns among both males and females and between the three comparison groups: adolescents living in adoptive, biological, or step families. Among two-parent families, adolescents in adoptive and biological families reported many similar patterns in relationship formation and sexual behaviors, while adolescents in step families reported more sexually active behavior and more accepting attitudes about teen pregnancy and sexual behavior. Between single-parent adopted and biological families many differences were found: The clearest pattern showed more adoptees were engaged in forming heterosexual romantic relationships, as indicated by their perceptions and behaviors. When analyses grouped adopted and biological single-parent families with adopted and biological two-parent families respectively, adolescents in step families were not so different in their relationship formation perceptions and behaviors. These findings paralleled Feigelman (1997), who found two-parent biological and adoptive families were more similar than different, while all other family configurations showed more differences.

Brodzinsky and colleagues' (1998) theoretical concepts about adoptees' stress-related adjustment did not receive confirmation in the present study. However, adolescents were not asked specific questions about their adoption experiences. Notwithstanding, adopted females' perceptions about the positive consequences of sexual intercourse were insignificantly attenuated by their self-acceptance appraisals and coping styles. The mediators were associated with most of the outcomes which supported their importance among all adolescents' relationship formation and sexual behaviors.

Limitations

Adolescents' heterosexual relationships and sexual behaviors are sensitive topics, not often discussed with adults. When they are discussed it is in private with selected peers. Add Health interviewers asked adolescents numerous questions about romantic and sexual perceptions and behaviors. While many adolescents' self-reports about personal topics may be constrained in the company of adult strangers, Add Health attempted to minimize the weaknesses inherent in self-report data by providing laptop computers with headphones so all questions about sensitive topics would be asked and answered privately. Turner et al. (1998) found that asking questions via laptops and headphones was associated with two to three times higher reporting rates of sensitive or illegal behaviors compared to rates reported in face to face interviews or paper and pencil survey techniques.

All data analyzed in the present study came from the first Add Health in-home interview. Cross-sectional data in the present study were not a major drawback because the purpose was to explore associations rather than identify cause and effect relations. The study was designed to describe general patterns and specific associations that may or

may not exist between adopted and nonadopted adolescents' heterosexual relationship formation and sexual behaviors.

In many ways the Add Health sample was the best national sample available for exploring adolescents' health, and specifically adopted adolescents' health. The Add Health sample is a large and recent nationally representative sample that asked thousands of health-related questions. Despite the broad strengths of Add Health data for adolescent adjustment research, the sample was limited because adoption was not the focus of the large data collection project. Questions about adoption stress, age of adoptive placement, and abuse or neglect experiences before and after adoption were not asked. And while the overall Add Health sample was representative of the adolescent population attending U.S. schools, the adopted subsample was not randomly selected. Fraternal and identical twins were purposively oversampled, and in doing so adopted siblings were also over-sampled to gain a shared-environment nongenetic in-home comparison group for behavior genetic research. Thus, the adopted sample was best classified as a nonprobability sample since sampling error cannot be estimated.

The present study compared large groups of adolescents according to their family configurations. This technique is limited because individual differences are hidden underneath the group's overall patterns. Adopted families do not necessarily share similarities just because they share the experience of adoption. For example, the differences within and between two-parent and single-parent adoptive and biological families are hidden when two-parent and single-parent families are grouped together. The limitations inherent in studying large groups then, supports the need for including all methodologies in adoption research.

Unlike previous adoption adjustment research, the present study was less focused on problem behaviors. While delinquency, substance abuse, and suicide are generally considered by society as undesirable (or unlawful) behaviors regardless of age, most heterosexual relationship formation and sexual behaviors are generally highly valued among the adult population. During adolescence however, there is much less consensus about what relationship formation and sexual behaviors are appropriate. Forced sexual intercourse experience, however, which was more common among adopted females in the present study, is one sexual experience that is widely considered unacceptable and illegal regardless of the victim's age.

Future Directions

Future adoption research should continue to use large nonclinical adopted samples (Feigelman et al., 1998). The methodological shortcomings of studying clinical samples of adoptees have been well documented. In addition, large national samples should start asking at least a few questions about adoption experience. For example, questions should ask adopted adolescents about adoption stress and coping behaviors: Brodzinsky and colleagues' (1998) theory of adoption stress and coping is the most prominent and widespread theory of adoption adjustment in the field. It is also important to know the age of the child when the adoptive placement was made, because older age at placement is associated with increasingly higher rates of adoption disruption and adoptive family turmoil.

Other questions need to ask adoptees about abuse and neglect experiences occurring prior to, or after the adoptive placement. While Add Health did ask a crucial question about forced sexual intercourse experience, adoptees were not asked if these or

other abusive experiences occurred before or after the adoptive placement. The present findings suggest that future studies of adoption adjustment might focus on forced sexual intercourse. Why are adopted females several times more likely to experience this trauma than nonadopted females, and what are the antecedents and outcomes of forced sexual intercourse for adopted females? Does forced sexual intercourse experience precede adoption, and contribute to disproportionate adoption family turmoil? Is older age at adoption placement linked both with forced sexual intercourse and adoption family turmoil?

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APPENDIX

Table 6

Weighted Group Means, Standard Deviations, and Effect Sizes of Continuous and Dichotomous Outcome Variables by Gender

		Male		Female		
		M	*SD*	*M*	*SD*	*ES*
Relationship Formation Perceptions and Behaviors						
Ideal Love	0-2	1.81	.54	1.74	.63	-.11
Ideal gift giving	0-2	1.79	.54	1.82	.53	.06
Actual Love	0-2	1.64	.73	1.59	.76	-.07
Represented as couple	0-3	2.61	.79	2.71	.68	.15
Serious Dating	0-4	3.01	1.26	2.95	1.29	-.05
Sexual Perceptions and Behaviors						
Idealized Sex	0-3	1.73	1.20	1.45	1.17	-.24
Actual Sex	0-4	2.05	1.60	2.10	1.62	.03
intercourse Good	5-25	15.36	3.36	12.23	3.24	-.97
Intercourse Bad	3-15	8.90	2.61	9.85	2.82	.34
Pregnancy Bad	4-20	15.69	3.64	15.87	3.66	.05
Pregnancy Difficult	4-20	13.16	3.20	12.66	3.43	-.15
Age at first Sex		14.31	2.86	15.11	1.85	.44
Dichotomous Outcomes						
% Ever had Sex		.40	.49	.37	.48	-.06
% Baby w/o Marriage		.19	.39	.25	.43	.14
% Nonromantic Sex		.29	.45	.22	.41	-.17
% Forced Intercourse		na	na	.20	.40	na

Effect Size (ES) = {Mean(F) - Mean(M)} ÷ SD(F)

Table 7

Weighted Group Means, Standard Deviations, and Effect Sizes of Continuous and Dichotomous Outcome Variables by Age Group

		12-14	15-17	18-20	15-17		
		M	*M*	*M*	*SD*	*ES a*	*ES b*
Relationship Formation Perceptions and Behaviors							
Ideal Love	0-2	1.69	1.79	1.84	.57	-.18	-.09
Ideal gift giving	0-2	1.76	1.82	1.83	.52	-.12	-.02
Actual Love	0-2	1.54	1.60	1.67	.75	-.08	-.09
Represented as couple	0-3	2.65	2.65	2.69	.74	.00	-.05
Serious Dating	0-4	2.42	2.97	3.34	1.25	-.44	-.30
Sexual Perceptions and Behaviors							
Idealized Sex	0-3	.82	1.69	2.18	1.15	-.76	-.43
Actual Sex	0-4	.90	2.06	2.81	1.57	-.74	-.48
Intercourse Good	5-25	na	13.67	14.18	3.69		-.14
Intercourse Bad	3-15	na	9.70	8.77	2.70		.34
Pregnancy Bad	4-20	na	16.14	15.16	3.45		.28
Pregnancy Difficult	4-20	na	13.09	12.63	3.28		.14
Age at first Sex		na	na	na	na	na	na
Dichotomous Outcomes							
% Ever had Sex		.12	.39	.64	.49	-.57	-.51
% Baby w/o Marriage		.14	.23	.29	.42	-.21	-.14
% Nonromantic Sex		.09	.27	.41	.44	-.41	-.32
% Forced Intercourse		.12	.12	.12	.32	.00	.00

ES a = {Mean(12-14) - Mean(15-17)} ÷ SD(15-17)

ES b = {Mean(15-17) - Mean(18-20)} ÷ SD(15-17)

Table 8

Weighted Group Means, Standard Deviations, and Effect Sizes of Continuous and Dichotomous Outcome Variables for Non-Latino Whites and Blacks, and Latinos

		NLW *M*	NLB *M*	L *M*	NLW *SD*	*ES a*	*ES b*
Relationship Formation Perceptions and Behaviors							
Ideal Love	0-2	1.79	1.73	1.80	.59	.10	-.02
Ideal gift giving	0-2	1.81	1.76	1.82	.53	.09	-.02
Actual Love	0-2	1.59	1.66	1.68	.77	-.09	-.12
Represented as couple	0-3	2.70	2.51	2.64	.70	.27	.09
Serious Dating	0-4	3.02	2.86	2.92	1.27	.13	.08
Sexual Perceptions and Behaviors							
Idealized Sex	0-3	1.55	1.79	1.62	1.21	-.20	-.06
Actual Sex	0-4	2.03	2.41	1.97	1.62	-.23	.04
Intercourse Good	5-25	13.78	14.19	13.75	3.53	-.12	.01
Intercourse Bad	3-15	9.48	8.71	9.33	2.74	.28	.05
Pregnancy Bad	4-20	16.31	14.09	14.81	3.42	.65	.44
Pregnancy Difficult	4-20	13.21	11.51	12.85	3.17	.54	.11
Age at first Sex		15.09	13.72	14.57	2.10	.65	.25
Dichotomous Outcomes							
% Ever had Sex		.35	.57	.37	.48	-.46	-.04
% Baby w/o Marriage		.19	.33	.27	.39	-.36	-.21
% Nonromantic Sex		.24	.38	.22	.43	-.33	.05
% Forced Intercourse		.11	.13	.11	.32	-.03	.00

ES a = {Mean(NLW) - Mean(NLB)} ÷ SD(NLW)

ES b = {Mean(NLW) - Mean(L)} ÷ SD(NLW)

Table 9

Weighted Group Means, Standard Deviations, and Effect Sizes of Continuous and Dichotomous Outcome Variables by the Number of Parents in the Household

		Two Parents		One Parent		
		M	*SD*	*M*	*SD*	*ES*
Relationship Formation Perceptions and Behaviors						
Ideal Love	0-2	1.78	.59	1.76	.61	.03
Ideal gift giving	0-2	1.82	.52	1.79	.55	.03
Actual Love	0-2	1.59	.77	1.62	.73	-.04
Represented as couple	0-3	2.68	.72	2.61	.80	.10
Serious Dating	0-4	2.99	1.27	2.90	1.30	.08
Sexual Perceptions and Behaviors						
Idealized Sex	0-3	1.49	1.19	1.72	1.17	-.19
Actual Sex	0-4	1.92	1.60	2.20	1.62	-.18
Intercourse Good	5-25	13.65	3.63	14.14	3.68	-.13
Intercourse Bad	3-15	9.80	2.66	8.76	2.69	.39
Pregnancy Bad	4-20	16.37	3.41	15.07	3.66	.38
Pregnancy Difficult	4-20	13.25	3.22	12.48	3.33	.24
Age at first Sex		15.03	2.31	14.35	2.46	.29
Dichotomous Outcomes						
% Ever had Sex		.32	.47	.47	.50	.32
% Baby w/o Marriage		.18	.39	.28	.45	-.26
% Nonromantic Sex		.21	.41	.32	.47	-.27
% Forced Intercourse		.10	.30	.12	.32	-.07

ES = {Mean(Two) - Mean(One)} ÷ SD(Two)

Table 10

Weighted Group Means, Standard Deviations, and Effect Sizes of Continuous and Dichotomous Outcome Variables by Parent's Education

		HS	COL	GRD	COL		
		M	*M*	*M*	*SD*	*ES a*	*ES b*
Relationship Formation Perceptions and Behaviors							
Ideal Love	0-2	1.79	1.79	1.74	.58	.00	.07
Ideal gift giving	0-2	1.79	1.81	1.83	.53	-.04	-.04
Actual Love	0-2	1.69	1.62	1.48	.74	.09	.19
Represented as couple	0-3	2.64	2.69	2.67	.71	-.07	.03
Serious Dating	0-4	2.97	3.01	2.95	1.26	-.03	.05
Sexual Perceptions and Behaviors							
Idealized Sex	0-3	1.64	1.59	1.49	1.20	.04	.08
Actual Sex	0-4	2.20	2.04	1.88	1.63	.10	.10
Intercourse Good	5-25	13.86	13.91	13.75	3.50	-.01	.05
Intercourse Bad	3-15	9.16	9.34	9.78	2.74	-.06	-.16
Pregnancy Bad	4-20	14.93	15.93	17.01	3.54	-.28	-.31
Pregnancy Difficult	4-20	12.53	12.93	13.57	3.26	-.12	-.20
Age at first Sex		14.49	14.71	15.11	2.40	-.09	-.17
Dichotomous Outcomes							
% Ever had Sex		.44	.38	.28	.49	.12	.20
% Baby w/o Marriage		.25	.21	.18	.41	.10	.07
% Nonromantic Sex		.29	.26	.18	.44	.07	.18
% Forced Intercourse		.12	.12	.09	.33	.00	.09

Note: HS = high school grad or less;
COL = some college;
GRD = college graduate or graduate school

ES a = {Mean(HS) - Mean(COL)} ÷ SD(COL)

ES b = {Mean(COL) - Mean(GRD)} ÷ SD(COL)

Table 11

Weighted Group Means, Standard Deviations, and Effect Sizes of Continuous and Dichotomous Outcome Variables by Family Types: Adopted, Biological, and Step/Other

		Adopt	Bio	Step	Bio		
		M	*M*	*M*	*SD*	*ES a*	*ES b*
Relationship Formation Perceptions and Behaviors							
Ideal Love	0-2	1.86	1.77	1.80	.60	.15	.10
Ideal gift giving	0-2	1.81	1.81	1.80	.53	.00	.02
Actual Love	0-2	1.76	1.59	1.70	.76	.22	.08
Represented as couple	0-3	2.79	2.65	2.70	.75	.20	.12
Serious Dating	0-4	3.24	2.96	3.05	1.28	.22	.15
Sexual Perceptions and Behaviors							
Idealized Sex	0-3	1.40	1.55	1.83	1.19	-.13	-.36
Actual Sex	0-4	2.29	1.99	2.42	1.61	.19	-.08
Intercourse Good	5-25	13.53	13.78	14.21	3.65	-.07	-.19
Intercourse Bad	3-15	9.61	9.51	8.65	2.71	.04	.35
Pregnancy Bad	4-20	16.11	16.01	14.77	3.54	.03	.38
Pregnancy Difficult	4-20	12.78	13.04	12.38	3.28	-.08	.12
Age at first Sex		14.63	14.77	14.47	2.39	-.06	.07
Dichotomous Outcomes							
% Ever had Sex		.42	.35	.53	.48	.15	-.23
% Baby w/o Marriage		.27	.21	.28	.41	.15	-.02
% Nonromantic Sex		.27	.24	.35	.42	.07	-.19
% Forced Intercourse		.21	.10	.15	.30	.37	.20

ES a = {Mean(Adopt) - Mean(Bio)} ÷ SD(Bio)

ES b = {Mean(Adopt) - Mean(Step)} ÷ SD(Step)

Table 12

Males' Weighted Group Means, Standard Deviations, and Effect Sizes of Outcomes by Two Parent Adopted, Biological, and Step/Other Families

		Adopt *M*	Bio *M*	Step *M*	Bio *SD*	*ES a*	*ES b*
Relationship Formation Perceptions and Behaviors							
Ideal Love	0-2	1.93	1.83	1.83	.53	.19	.19
Ideal gift giving	0-2	1.78	1.82	1.76	.52	-.08	.04
Actual Love	0-2	1.80	1.63	1.67	.74	.23	.19
Represented as couple	0-3	2.87	2.67	2.59	.74	.27	.36
Serious Dating	0-4	3.29	3.09	2.96	1.22	.16	.26
Sexual Perceptions and Behaviors							
Idealized Sex	0-3	1.35	1.58	1.79	1.20	-.19	-.36
Actual Sex	0-4	2.38	1.87	2.15	1.59	.32	.14
Intercourse Good	5-25	15.20	15.05	15.36	3.33	.05	-.05
Intercourse Bad	3-15	9.14	9.47	8.71	2.51	-.13	.16
Pregnancy Bad	4-20	16.64	16.47	15.64	3.34	.05	.28
Pregnancy Difficult	4-20	13.50	13.52	13.15	3.06	-.01	.11
Age at first Sex		15.35	14.92	14.36	2.63	.16	.37
Dichotomous Outcomes							
% Ever had Sex		.34	.31	.43	.46	.07	-.18
% Baby w/o Marriage		.15	.14	.20	.34	.03	-.13
% Nonromantic Sex		.25	.22	.31	.42	.07	-.13
% Forced Intercourse		na	na	na	na	na	na

ES a = {Mean(Adopt) - Mean(Bio)} ÷ SD(Bio)

ES b = {Mean(Adopt) - Mean(Step)} ÷ SD(Step)

Table 13

Females' Weighted Group Means, Standard Deviations, and Effect Sizes of Outcomes by Two Parent Adopted, Biological, and Step/Other Families

		Adopt *M*	Bio *M*	Step *M*	Bio *SD*	*ES a*	*ES b*
Relationship Formation Perceptions and Behaviors							
Ideal Love	0-2	1.75	1.73	1.75	.64	.03	.00
Ideal gift giving	0-2	1.73	1.83	1.84	.52	-.19	-.22
Actual Love	0-2	1.53	1.52	1.62	.82	.01	-.12
Represented as couple	0-3	2.76	2.70	2.76	.69	.09	.00
Serious Dating	0-4	3.09	2.92	2.91	1.31	.13	.14
Sexual Perceptions and Behaviors							
Idealized Sex	0-3	1.03	1.32	1.52	1.16	-.25	-.42
Actual Sex	0-4	1.55	1.86	2.12	1.59	-.19	-.34
Intercourse Good	5-25	11.90	12.01	12.22	3.22	-.03	-.10
Intercourse Bad	3-15	10.51	10.42	9.84	2.66	.03	.24
Pregnancy Bad	4-20	16.46	16.56	15.74	3.38	-.03	.20
Pregnancy Difficult	4-20	12.87	13.15	12.47	3.35	-.08	.12
Age at first Sex		14.80	15.36	15.09	1.73	-.32	-.15
Dichotomous Outcomes							
% Ever had Sex		.32	.28	.44	.45	.09	-.24
% Baby w/o Marriage		.26	.21	.24	.40	.13	.05
% Nonromantic Sex		.19	.16	.29	.37	.08	-.22
% Forced Intercourse		.49	.16	.21	.36	.92	.68

ES a = {Mean(Adopt) - Mean(Bio)} ÷ SD(Bio)

ES b = {Mean(Adopt) - Mean(Step)} ÷ SD(Step)

Table 14

Males' Weighted Group Means, Standard Deviations, and Effect Sizes of Continuous and Dichotomous Outcome Variables by Single Parent Adopted and Biological Families

		Adopted		Biological		
		M	*SD*	*M*	*SD*	*ES*
Relationship Formation Perceptions and Behaviors						
Ideal Love	0-2	1.99	.16	1.77	.58	.38
Ideal gift giving	0-2	1.97	.17	1.76	.57	.37
Actual Love	0-2	1.96	.29	1.60	.75	.48
Represented as couple	0-3	2.65	.75	2.51	.88	.16
Serious Dating	0-4	3.00	1.57	2.86	1.33	.11
Sexual Perceptions and Behaviors						
Idealized Sex	0-3	2.27	.92	1.90	1.16	.32
Actual Sex	0-4	2.82	1.34	2.14	1.60	.43
Intercourse Good	5-25	15.25	3.02	15.75	3.29	-.15
Intercourse Bad	3-15	8.68	2.46	8.24	2.49	.18
Pregnancy Bad	4-20	15.84	3.56	14.82	3.68	.28
Pregnancy Difficult	4-20	11.97	3.10	12.80	3.31	-.25
Age at first Sex		13.06	3.83	13.81	2.84	-.26
Dichotomous Outcomes						
% Ever had Sex		.54	.50	.49	.50	.10
% Baby w/o Marriage		.40	.49	.26	.44	.32
% Nonromantic Sex		.41	.49	.38	.48	.06
% Forced Intercourse		na	na	na	na	na

ES = {Mean(Adopt) - Mean(Bio)} ÷ SD(Bio)

Table 15

Females' Weighted Group Means, Standard Deviations, and Effect Sizes of Continuous and Dichotomous Outcome Variables by Single Parent Adopted and Biological Families

		Adopted		Biological		
		M	*SD*	*M*	*SD*	*ES*
Relationship Formation Perceptions and Behaviors						
Ideal Love	0-2	1.72	.70	1.75	.63	-.05
Ideal gift giving	0-2	1.84	.53	1.81	.54	.06
Actual Love	0-2	1.85	.44	1.62	.73	.32
Represented as couple	0-3	2.79	.61	2.69	.70	.14
Serious Dating	0-4	3.57	.81	2.92	1.28	.51
Sexual Perceptions and Behaviors						
Idealized Sex	0-3	1.26	1.15	1.55	1.16	-.25
Actual Sex	0-4	2.64	1.63	2.25	1.63	.24
Intercourse Good	5-25	12.04	3.72	12.45	3.27	-.13
Intercourse Bad	3-15	9.82	3.08	9.29	2.78	.19
Pregnancy Bad	4-20	14.64	4.05	15.32	3.62	-.19
Pregnancy Difficult	4-20	12.05	3.56	12.18	3.31	-.04
Age at first Sex		15.47	2.01	14.91	1.81	.31
Dichotomous Outcomes						
% Ever had Sex		.62	.49	.44	.50	.36
% Baby w/o Marriage		.39	.49	.30	.46	.20
% Nonromantic Sex		.40	.49	.26	.44	.32
% Forced Intercourse		.35	.48	.20	.40	.38

ES = {Mean(Adopt) - Mean(Bio)} ÷ SD(Bio)

Table 16

Correlation Coefficients Among Independent Variables: Assessing Multicolinearity

	1	2	3	4	5	6	7	8	9	10	11	12	13
Adoptive Status													
1 Adopted (reference group)													
2 Biological													
3 Step/Other													
Demographic Characteristics													
4 Age		-.09	.09										
5 White (reference group)													
6 Black		-.05	.05	.05									
7 Latino		.00	.00	.01									
8 Other		.01	-.01	.01									
9 Parent Education		.04	-.04	-.05		-.10	-.21	.04					
10 Single Parent		.22	-.23	.01		.24	.02	-.05	-.19				
Theoretical Mediators													
11 Self-Acceptance Appraisal		.04	-.04	-.09		.08	-.03	-.02	.04	-.04			
12 Active Coping Strategy		.00	.00	.08		.05	.00	.02	-.01	.00	.25		
13 Avoidant Coping Strategy		.00	.00	-.07		.09	.05	.01	-.13	.07	.02	.07	
	1	2	3	4	5	6	7	8	9	10	11	12	13

Note. empty cells = not applicable (na)

Table 17

Hierarchical Multiple Regression Models Estimating Unstandardized Regression Coefficients of Adolescents' Ideal Verbal Expression of Love Within Idealized Romantic Relationships

	Models For Females N = 8780				Models For Males N = 8506			
	1	2	3	4	1	2	3	4
Adoptive Status								
Adopted (reference group = 0)								
Biological = 1	-.03	-.01	.00	.00	-.14*	-.13*	-.13*	-.13*
Step/Other = 1	.00	.00	.00	.00	-.12*	-.11*	-.13*	-.13*
Demographic Characteristics								
Age 12-20		.04*	.04*	.04*		.02*	.02*	.02*
White (reference group = 0)								
Black =1		-.04*	-.07*	-.07*		-.08*	-.06*	-.06*
Latino =1		.00	-.02	-.02		.01	.01	.01
Other =1		-.04	-.06	-.06		-.01	-.02	-.01
Parent Education 1-5			-.02*	-.02*			-.01	-.01
Single Parent = 1 (Two = 0)			.01	.00			-.05*	-.05*
Theoretical Mediators								
Self-Acceptance Appraisal 3-15				.00				-.01
Active Coping Strategy 2-10				.00				.00
Avoidance Coping Strategy 1-5				.01				-.01
F	1.23	11.79*	8.81*	6.79*	21.13*	9.36*	7.01*	5.13*
R-square	.00	.01	.02	.02	.00	.01	.01	.01

* < .05

Table 18

Hierarchical Multiple Regression Models Estimating Unstandardized Regression Coefficients of Adolescents' Perceptions of Gift Giving and Gift Receiving Within Idealized Romantic Relationships

	Models For Females N = 8780				Models For Males N = 8506			
	1	2	3	4	1	2	3	4
Adoptive Status								
Adopted (reference group)								
Biological	.04	.05	.07	.07	-.04	-.03	-.03	-.02
Step/Other	.04	.04	.09	.08	-.06	-.05	-.08	-.07
Demographic Characteristics								
Age		.02*	.02*	.02*		.01*	.01*	.01*
White (reference group)								
Black		-.06*	-.06*	-.06*		-.05	-.04	-.04
Latino		-.03	-.01	-.01		.02	.05	.05
Other		-.02	-.02	-.01		.04	.05	.06*
Parent Education			.01	.01			.02*	.02*
Single Parent			.00	.00			-.04	-.04
Theoretical Mediators								
Self-Acceptance Appraisal				.00				.00
Active Coping Strategy				.00				.01
Avoidance Coping Strategy				-.01				-.02*
F	.24	5.09*	5.55*	4.26*	.66	2.40*	4.74*	3.81*
R-square	.00	.01	.01	.01	.00	.00	.01	.01

* < .05

Table 19

Hierarchical Multiple Regression Models Estimating Unstandardized Regression Coefficients of Adolescents' Verbal Expressions of Love During the Past Eighteen Months in Their Actual Romantic Relationships

	Models For Females N = 5581				Models For Males N = 5132			
	1	2	3	4	1	2	3	4
Adoptive Status								
Adopted (reference group)								
Biological	-.12	-.09	-.08	-.08	-.22*	-.22*	-.23*	-.22*
Step/Other	.02	.03	.01	.01	-.14*	-.14*	-.18*	-.17*
Demographic Characteristics								
Age		.04*	.04*	.04*		.01	.01	.01
White (reference group)								
Black		.14*	.08*	.08*		-.02	-.03	-.04
Latino		.08	-.01	-.01		.08*	.06*	.06*
Other		.09	.12	.11		.00	.01	.01
Parent Education			-.10*	-.10*			-.04*	-.04*
Single Parent			.04	.04			-.03	-.03
Theoretical Mediators								
Self-Acceptance Appraisal				-.01				.00
Active Coping Strategy				.02				.03*
Avoidance Coping Strategy				.01				.01
F	10.96*	9.41*	8.82*	6.68*	11.03*	5.19*	3.97*	4.18*
R-square	.01	.02	.04	.04	.00	.01	.01	.01

* < .05

Table 20

Hierarchical Multiple Regression Models Estimating Unstandardized Regression Coefficients of "a Couple"

	Models For Females N = 5581				Models For Males N = 5132			
	1	2	3	4	1	2	3	4
Adoptive Status								
Adopted (reference group)								
Biological	-.07	-.06	-.07	-.08	-.20*	-.21*	-.19*	-.18*
Step/Other	.01	.01	-.02	-.02	-.20*	-.19*	-.23*	-.22*
Demographic Characteristics								
Age		.02*	.02*	.02*		.01	.01	.01
White (reference group)								
Black		-.07*	-.08*	-.08*		-.33*	-.32*	-.31*
Latino		-.05	-.06	-.06		-.07	-.04	-.04
Other		-.02	.00	-.01		-.08	-.07	-.04
Parent Education			-.03	-.03			.04*	.04*
Single Parent			.00	.00			-.07*	-.07*
Theoretical Mediators								
Self-Acceptance Appraisal				.00				.01
Active Coping Strategy				.01				.00
Avoidance Coping Strategy				.01				-.02
F	5.43*	3.32*	2.29*	1.77	3.26*	11.35*	11.15*	8.50*
R-square	.00	.01	.01	.01	.00	.02	.03	.03

* < .05

Table 21

Hierarchical Multiple Regression Models Estimating Unstandardized Regression Coefficients of Serious Dating Behaviors

	Models For Females N = 5581				Models For Males N = 5132			
	1	2	3	4	1	2	3	4
Adoptive Status								
Adopted (reference group)								
Biological	-.35*	-.24	-.25	-.27	-.20	-.16	-.14	-.11
Step/Other	-.20	-.17	-.24	-.25	-.17	-.16	-.22	-.20
Demographic Characteristics								
Age		.24*	.25*	.24*		.15*	.15*	.16*
White (reference group)								
Black		-.16*	-.20*	-.20*		-.25*	-.18*	-.20*
Latino		-.26*	-.23*	-.23*		.00	.05	.05
Other		.02	-.02	-.02		-.18	-.16	-.15
Parent Education			-.02	-.03			.02	.02
Single Parent			.06	.06			-.15*	-.15*
Theoretical Mediators								
Self-Acceptance Appraisal				.01				.04*
Active Coping Strategy				.05*				.03
Avoidance Coping Strategy				-.03				.00
F	7.64*	58.30*	39.90*	33.47*	.53	23.63*	17.01*	13.57*
R-square	.00	.10	.10	.11	.00	.05	.05	.06

* < .05

Table 22

Hierarchical Multiple Regression Models Estimating Unstandardized Regression Coefficients of Adolescents' Idealized Sexual Behaviors in Idealized Romantic Relationships

	Models For Females N = 8780				Models For Males N = 8506			
	1	2	3	4	1	2	3	4
Adoptive Status								
Adopted (reference group)								
Biological	.24*	.33*	.33*	.35*	.05	.10	.07	.05
Step/Other	.51*	.46*	.49*	.50*	.34*	.25	.25	.22
Demographic Characteristics								
Age		.29*	.29*	.28*		.27*	.27*	.27*
White (reference group)								
Black		.02	-.04	-.01		.32*	.24*	.26*
Latino		-.10*	-.12*	-.11*		.15*	.11*	.11*
Other		-.30*	-.25*	-.26*		-.11	-.10	-.08
Parent Education			.00	.00			-.02	-.02
Single Parent			.21*	.21*			.26*	.26*
Theoretical Mediators								
Self-Acceptance Appraisal				-.04*				-.03*
Active Coping Strategy				-.01				.01
Avoidance Coping Strategy				.02				-.02
F	19.31*	148.97*	106.06*	85.49*	20.03*	87.64*	80.02*	65.04*
R-square	.01	.20	.20	.21	.01	.19	.19	.20

* < .05

Table 23

Hierarchical Multiple Regression Models Estimating Unstandardized Regression Coefficients of Adolescents' Sexual Behaviors During the Past Eighteen Months in Their Actual Romantic Relationship

	Models For Females N = 5581				Models For Males N = 5132			
	1	2	3	4	1	2	3	4
Adoptive Status								
Adopted (reference group)								
Biological	-.07	.10	.19	.22	-.53*	-.41*	-.45*	-.45*
Step/Other	.37	.41*	.48*	.48*	-.12	-.13	-.17	-.18
Demographic Characteristics								
Age		.42*	.42*	.42*		.37*	.38*	.38*
White (reference group)								
Black		.23*	.12	.15		.37*	.32*	.35*
Latino		-.30*	-.39*	-.40*		.10	.08	.07
Other		-.41*	-.32*	-.32*		-.16	-.18	-.17
Parent Education			-.10*	-.09*			-.05	-.05
Single Parent			.36*	.34*			.22*	.21*
Theoretical Mediators								
Self-Acceptance Appraisal				-.03*				-.01
Active Coping Strategy				-.05*				.00
Avoidance Coping Strategy				-.01				-.02
F	21.33*	117.59*	78.51*	59.00*	24.01*	1.05.64*	87.17*	67.19*
R-square	.01	.21	.21	.21	.01	.19	.20	.20

* < .05

Table 24

Hierarchical Multiple Regression Models Estimating Unstandardized Regression Coefficients of Adolescents' Perceptions That Sexual Intercourse Has Positive Consequences

	Models For Females N = 6149				Models For Males N = 6280			
	1	2	3	4	1	2	3	4
Adoptive Status								
Adopted (reference group)								
Biological	-.01	.05	.26	.36	.39	.40	.07	.03
Step/Other	.35	.35	.51	.56	.79	.71	.43	.35
Demographic Characteristics								
Age		.20*	.19*	.22*		.15*	.15*	.17*
White (reference group)								
Black		-.07	-.20	-.17		.83*	.65*	.69*
Latino		-.36	-.41	-.46		.19	.21	.14
Other		.33	.35	.26		.07	-.10	-.16
Parent Education			.02	.07			.06	.09
Single Parent			.53*	.49*			.60*	.54*
Theoretical Mediators								
Self-Acceptance Appraisal				-.15*				-.13*
Active Coping Strategy				-.17*				-.02
Avoidance Coping Strategy				.28*				.25*
F	3.24*	5.16*	5.59*	8.42*	3.04*	4.96*	4.72*	8.38*
R-square	.00	.01	.01	.04	.00	.01	.02	.03

* < .05

Table 25

Hierarchical Multiple Regression Models Estimating Unstandardized Regression Coefficients of Adolescents' Perceptions That Sexual Intercourse Has Negative Consequences

	Models For Females N = 6189				Models For Males N = 6308			
	1	2	3	4	1	2	3	4
Adoptive Status								
Adopted (reference group)								
Biological	-.16	-.27	-.28	-.26	.02	.02	.17	.17
Step/Other	-1.08*	-1.06*	-.85*	-.81*	-.77*	-.64	-.58	-.58
Demographic Characteristics								
Age		-.44*	-.40*	-.40*		-.36*	-.37*	-.37*
White (reference group)								
Black		-.28	.02	.01		-1.05*	-.65*	-.71*
Latino		.55*	.67*	.66*		-.68*	-.55*	-.58*
Other		.88*	.77*	.71*		.31	.41*	.34
Parent Education			.04	.05			.12*	.14*
Single Parent			-1.09*	-1.10*			-1.03*	-1.05*
Theoretical Mediators								
Self-Acceptance Appraisal				-.05				-.01
Active Coping Strategy				.17*				.13*
Avoidance Coping Strategy				.04				.17*
F	29.10*	31.54*	24.98*	22.07*	28.25*	44.99*	37.26*	29.25*
R-square	.02	.06	.07	.08	.01	.07	.10	.11

* < .05

Table 26

Hierarchical Multiple Regression Models Estimating Unstandardized Regression Coefficients of Adolescents' Negative Perceptions of Teen Pregnancy

	Models For Females N = 6243				Models For Males N = 6357			
	1	2	3	4	1	2	3	4
Adoptive Status								
Adopted (reference group)								
Biological	.29	.21	.43	.43	-.50	-.44	-.04	-.01
Step/Other	-1.03*	-.95	-.34	-.29	-1.65*	-1.33*	-.73	-.71
Demographic Characteristics								
Age		-.43*	-.36*	-.37*		-.41*	-.38*	-.38*
White (reference group)								
Black		-1.55*	-1.16*	-1.25*		-2.64*	-2.10*	-2.18*
Latino		-.89*	-.45	-.47*		-1.93*	-1.42*	-1.44*
Other		.95*	.66*	.63*		.02	.02	-.01
Parent Education			.51*	.52*			.64*	.64*
Single Parent			-.73*	-.73*			-.92*	-.91*
Theoretical Mediators								
Self-Acceptance Appraisal				.04				.07*
Active Coping Strategy				.29*				.18*
Avoidance Coping Strategy				.10				.05
F	37.24*	59.20*	50.10*	53.99*	30.86*	71.13*	96.29*	74.46*
R-square	.02	.07	.10	.11	.02	.13	.18	.19

* < .05

Table 27

Hierarchical Multiple Regression Models Estimating Unstandardized Regression Coefficients of Adolescents' Perceptions That Teen Pregnancy Has Negative Consequences

	Models For Females N = 6204				Models For Males N = 6324			
	1	2	3	4	1	2	3	4
Adoptive Status								
Adopted (reference group)								
Biological	.17	.13	.31	.36	.34	.34	.42	.44
Step/Other	-.63	-.55	-.25	-.18	-.22	-.07	.12	.12
Demographic Characteristics								
Age		-.26*	-.22*	-.21*		-.20*	-.18*	-.17*
White (reference group)								
Black		-1.72*	-1.50*	-1.60*		-1.56*	-1.26*	-1.34*
Latino		-.46*	-.23	-.30		-.23	.00	-.04
Other		1.54*	1.32*	1.30*		.22	.28	.24
Parent Education			.26*	.28*			.25*	.27*
Single Parent			-.49*	-.51*			-.36*	-.38*
Theoretical Mediators								
Self-Acceptance Appraisal				.00				.01
Active Coping Strategy				.14*				.12*
Avoidance Coping Strategy				.26*				.20*
F	14.08*	37.87*	23.83*	19.73*	5.93*	22.47*	14.22*	10.31*
R-square	.01	.06	.07	.08	.00	.04	.05	.05

* < .05

Table 28

Hierarchical Multiple Regression Models Estimating Unstandardized Regression Coefficients of Adolescents' Age at First Sexual Intercourse

	Models For Females N = 3083				Models For Males N = 3183			
	1	2	3	4	1	2	3	4
Adoptive Status								
Adopted (reference group)								
Biological	.32	.33	.10	.05	.03	.16	.18	.17
Step/Other	.20	.21	-.16	-.19	-.48	-.26	-.27	-.33
Demographic Characteristics								
Age		na	na	na		na	na	na
White (reference group)								
Black		-.51*	-.42*	-.45*		-2.05*	-1.69*	-1.59*
Latino		-.15	-.13	-.11		-.73*	-.65*	-.62*
Other		-.06	.03	.01		-.55	-.50	-.48
Parent Education			.09*	.08			.13*	.13*
Single Parent			-.32*	-.31*			-.66*	-.68*
Theoretical Mediators								
Self-Acceptance Appraisal				.03				-.11*
Active Coping Strategy				.10*				.12*
Avoidance Coping Strategy				.06				-.14
F	1.43	3.24*	3.81*	3.55*	3.88*	23.33*	14.86*	12.54*
R-square	.00	.01	.03	.04	.01	.10	.10	.10

* < .05

Table 29

Hierarchical Logistic Regression Models Estimating the Odds Ratios That Adolescents Had Ever Experienced Sexual Intercourse

	Models For Females N = 8801				Models For Males N = 8554			
	1	2	3	4	1	2	3	4
Adoptive Status								
Adopted (reference group = 1.00)								
Biological	.64*	.68	.69	.73	.88	.94	.81	.80
Step/Other	1.43	1.40	1.58	1.64	1.66*	1.54	1.36	1.32
Demographic Characteristics								
Age		1.81*	1.82*	1.86*		1.65*	1.68*	1.70*
White (reference group = 1.00)								
Black		1.82*	1.46*	1.54*		3.69*	2.98*	3.05*
Latino		.73*	.62*	.62*		1.33*	1.06	1.08
Other		.33*	.39*	.40*		.75	.75	.76
Parent Education			.84*	.84*			.80*	.79*
Single Parent			1.92*	1.91*			1.82*	1.83*
Theoretical Mediators								
Self-Acceptance Appraisal				.94*				1.00
Active Coping Strategy				.90*				.99
Avoidance Coping Strategy				1.07*				1.00
F	61.56*	72.08*	47.70*	43.14*	34.47*	76.40*	48.84*	57.57*

* < .05

Table 30

Hierarchical Logistic Regression Models Estimating the Odds Ratios That Adolescents Would Ever Consider Childbirth Outside Marriage

	Models For Females N = 8770				Models For Males N = 8537			
	1	2	3	4	1	2	3	4
Adoptive Status								
Adopted (reference group)								
Biological	.69	.71	.72	.76	.77	.79	.72	.69
Step/Other	.96	.92	.85	.86	1.15	1.05	1.08	1.04
Demographic Characteristics								
Age		1.21*	1.19*	1.19*		1.16*	1.16*	1.16*
White (reference group)								
Black		1.67*	1.50*	1.60*		2.51*	1.98*	2.06*
Latino		1.34*	1.30*	1.30*		1.82*	1.68*	1.68*
Other		.71*	.74	.73		1.20	1.31	1.33
Parent Education			.96	.97			.88*	.88*
Single Parent			1.47*	1.43*			1.79*	1.76*
Theoretical Mediators								
Self-Acceptance Appraisal				.90*				.97
Active Coping Strategy				.94*				.96
Avoidance Coping Strategy				1.02				1.03
F	8.67*	20.80*	15.42*	16.62*	10.25*	21.15*	20.32*	16.10*

* < .05

Table 31

Hierarchical Logistic Regression Models Estimating the Odds Ratios That Adolescents Had Ever Engaged in Sexual Intercourse with Nonromantic Partners

	Models For Females N = 8798				Models For Males N = 8527			
	1	2	3	4	1	2	3	4
Adoptive Status								
Adopted (reference group)								
Biological	.73	.80	.73	.77	.89	.92	.86	.84
Step/Other	1.50	1.44	1.51	1.57	1.39	1.23	1.27	1.24
Demographic Characteristics								
Age		1.49*	1.49*	1.51*		1.41*	1.44*	1.47*
White (reference group)								
Black		1.36	1.12	1.18		2.50*	2.11*	2.20*
Latino		.61*	.48*	.48*		1.07	.96	.98
Other		.35*	.42*	.43*		.71	.70	.72
Parent Education			.82*	.83*			.89*	.88*
Single Parent			1.64*	1.64*			1.78*	1.78*
Theoretical Mediators								
Self-Acceptance Appraisal				.92*				1.01
Active Coping Strategy				.91*				.93*
Avoidance Coping Strategy				1.05				1.04
F	38.56*	55.20*	48.98*	40.55*	12.61*	41.62*	34.12*	37.15*

* < .05

Table 32

Hierarchical Logistic Regression Models Estimating the Odds Ratios That Female Adolescents Had Ever Experienced Forced Sexual Intercourse

	Models For Females N = 3211				Models For Males			
	1	2	3	4	1	2	3	4
Adoptive Status								
Adopted (reference group)								
Biological	.33*	.33*	.27*	.29*				
Step/Other	.57	.57	.40*	.42*				
Demographic Characteristics								
Age		.99	.99	1.00				
White (reference group)								
Black		1.03	.90	1.01				
Latino		.84	.73	.71				
Other		.92	.93	.93				
Parent Education			.93	.97				
Single Parent			1.35*	1.31*				
Theoretical Mediators								
Self-Acceptance Appraisal				.83*				
Active Coping Strategy				.97				
Avoidance Coping Strategy				1.09				
F	15.11*	5.40*	2.80*	7.85*				

Note: Males were not asked in the interview if they had ever experienced forced sexual intercourse. Instead, they were asked if they had ever forced someone to have sexual intercourse;167 of 10,265 males reported they had.

* < .05

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CURRENT RESEARCH INTERESTS

Evaluating prevention interventions and services designed to enhance the health, functioning, and social relationships of adolescents and families; Assessing change and the antecedents of change, especially in regard to intraindividual and interindividual processes.

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September 1997 to present — **Graduate Research Assistant**
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Responsibilities include data management; statistical analyses using SAS, SPSS, and STATA; writing literature reviews, editing, and organizing manuscripts for publication; fulfilling general requirements to meet standards for NIH funding; problem-solving.

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August to December 2000 — **Graduate Teaching Assistant**
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PROFESSIONAL PRESENTATIONS

Grotevant, H.D., van Dulmen, M.H., Dunbar, N., Miller, B.C., Fan, X., Christensen, M., & Bayley, B. *Antisocial behavior in adopted and nonadopted adolescents: Differences in process and outcomes?* Paper to be presented at the meeting of the American Psychological Association, San Francisco 2002.

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Fan, X., Miller, B.C., Christensen, M., Bayley, B., Park, K., Grotevant, H.D., van Dulmen, M., & Dunbar, N. *The effect of adoption status inconsistency on the comparison between adopted and non-adopted adolescents.* Manuscript submitted to Adoption Quarterly.

Christensen, M., Miller, B.C., Fan, X., Bayley, B., Grotevant, H., & van Dulmen, M., Dunbar, N. *Adopted adolescents' heterosexual relationship formation and their fertility-related behaviors.*

Grotevant, H.D., van Dulmen, M.H., Dunbar, N., Miller, B.C., Fan, X., Christensen, M., & Bayley, B. *Adopted adolescents' knowledge of and contact with birth parents.*

Christensen, M., Miller, B.C., Fan, X. *Disproportional teenage pregnancy risk among race/ethnic groups: The roles of contextual disadvantage and individual characteristics*

Bayley, B., Miller, B.C., Fan, X., Christensen, M., Grotevant, H., & van Dulmen, M., Dunbar, N. *Transitions from adolescence to young adulthood for adoptees.*

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- Grant Proposal Continuation Grant for Adoption and Adolescent Well-Being. Miller, B. C., Grotevant, H., Fan, X., Christensen, M., Coyl, D., Bayley, B., Dunbar, N., & van Dulmen, M. Funded: March 2001-March 2004 NIH- $951,939.

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