Understanding Casual Sex in Emerging Adulthood: The Role of Mother-Adolescent Attachment, Relationship Expectations and Sexually Transmitted Infections

Shandey Malcolm

University of Miami, shandmal@gmail.com

Follow this and additional works at: https://scholarlyrepository.miami.edu/oa_dissertations

Recommended Citation
https://scholarlyrepository.miami.edu/oa_dissertations/812

This Embargoed is brought to you for free and open access by the Electronic Theses and Dissertations at Scholarly Repository. It has been accepted for inclusion in Open Access Dissertations by an authorized administrator of Scholarly Repository. For more information, please contact repository.library@miami.edu.
UNIVERSITY OF MIAMI

UNDERSTANDING CASUAL SEX IN EMERGING ADULTHOOD: THE ROLE OF MOTHER-ADOLESCENT ATTACHMENT, RELATIONSHIP EXPECTATIONS AND SEXUALLY TRANSMITTED INFECTIONS

By

Shandey D. Malcolm

A DISSERTATION

Submitted to the Faculty of the University of Miami in partial fulfillment of the requirements for the degree of Doctor of Philosophy

Coral Gables, Florida

June 2012
A dissertation submitted in partial fulfillment of
the requirements for the degree of
Doctor of Philosophy

UNDERSTANDING CASUAL SEX IN EMERGING ADULTHOOD: THE ROLE OF
MOTHER-ADOLESCENT ATTACHMENT, RELATIONSHIP EXPECTATIONS
AND SEXUALLY TRANSMITTED INFECTIONS

Shandey D. Malcolm

Approved:

Seth Schwartz, Ph.D.
Associate Professor of Epidemiology

Guillermo Prado, Ph.D.
Associate Professor of Epidemiology

Marilyn Montgomery, Ph.D.
Associate Professor of Psychology
Florida International University

Dean of the Graduate School

Daniel Feaster, Ph.D.
Associate Professor of Biostatistics
Emerging adults engage in casual sex at higher rates than other any other age group. In addition, they engage in casual sex at higher rates than similarly aged individuals from decades earlier. It is, therefore, important to gain a better understanding of casual sex in this age group. The objective of the current study was to examine a model in which mother-adolescent attachments served as a predictor of two distinct types of casual sex: “hookups” and “friends with benefits” in emerging adulthood, both directly, and indirectly through relationship expectations. The study also sought to examine sexually transmitted infections as a consequence of the two types of casual sex. Prospective longitudinal analysis was used to accomplish the study goals, using data from the National Longitudinal Survey of Adolescent Health (Add Health). Structural equation modeling revealed that secure mother-adolescent attachment reduced the likelihood of engaging in “friends with benefits” in emerging adulthood indirectly through increasing sexualized relationship expectations. The study also showed that engaging in “friends with benefits” encounters increased the likelihood of a diagnosis of at least one sexually transmitted infection in emerging adulthood. The study supports public health interventions that promote sexual responsibility in casual sex or abstinence from casual
sex. In addition, the study suggests that improving mother-adolescent attachments and relationship expectations may be a mechanism through which casual sex in emerging adulthood could be reduced. Implications for future research are discussed.
Dedication

I would like to dedicate my dissertation to the memory of two angels that I lost along the way, my aunt, Victorena Malcolm, who was one of my biggest supporters and my grandmother, Esther Malcolm, who always showed me nothing but love and kindness. Your memories will live on in my heart!
Acknowledgements

I would like to express my gratitude to my committee chair, Dr. Seth Schwartz, whose guidance throughout the process allowed me to successfully complete the dissertation requirement. Dr. Schwartz your advice, edits and thoughtful comments is and will always be greatly appreciated. I would also like to thank my committee members, Drs. Montgomery, Feaster and Prado, who have each helped in different ways to shape and improve the end product. Additionally, the staff and faculty of the Center for Family Studies have encouraged me throughout the dissertation process by enquiring about by progress and by never failing to offer their time and assistance, for this I would like to say thank you.

Throughout my life two persons have always stood beside me; my parents, Keith and Claudette Malcolm. Mom and Dad you have played many roles in my life: you started out as my caregivers and providers and have gradually transformed into my counsel, my cheerleaders and my best friends. From the bottom of my heart I thank you for your unwavering love and support. I would also like to thank the man with whom I intend to spend the rest of my life: Will, thank you for always being there to dissuade my incessant doubts about my success in this process and for being the sounding board with whom I could discuss my ideas and opinions. I would also like to thank my brothers and sisters Xavier, Shanard, Alicia and Marexa for always cheering me on, my aunties Melony, Joanne, Crista and Karen for never doubting that I could finish and my grandparents Sarah and Perry for being a constant source of encouragement. I love you all!
# Table of Contents

**List of Figures** .................................................................................. vii  
**List of Tables** .................................................................................. viii

**Chapter 1: Study Rationale** .......................................................... 1  
Statement of the problem ............................................................... 1  
The current study ........................................................................... 4  
   - Special considerations ......................................................... 4  
   - The hypothesized model and its theoretical foundations ......... 7  
   - Mother-adolescent attachments and casual sex .................. 8  
   - Relationship expectations ................................................... 9  
   - Casual sex and sexually transmitted infections ................. 9  
   - The role of gender ............................................................. 10  
Aims and hypotheses .................................................................. 12

**Chapter 2: An Overview of Casual Sex in Emerging Adulthood** .... 15  
Emerging adulthood .................................................................. 15  
   - Personal and sexual identity development .......................... 17  
   - Sexual attitudes and behaviors ........................................... 18  
Casual sex in emerging adulthood ............................................. 20  
   - Types of casual sex ........................................................... 22  
   - Trends in casual sex and the sexual economy theory .......... 24  
   - Gender differences in casual sex ....................................... 25  
   - Sexual script theory .......................................................... 26  
   - Sexually transmitted infections ........................................ 27  
The role of mother adolescent-attachments and relationship expectations in casual sex ........................................ 29

**Chapter 3: Methods** .................................................................. 32  
Study design overview ............................................................... 32  
Data source .................................................................................. 32  
   - Add Health sampling procedure ....................................... 32  
   - School survey .................................................................... 32  
   - In-home survey ................................................................. 34  
Longitudinal design ................................................................... 35  
Correcting for design effects .................................................. 35  
Public-use dataset .................................................................... 36  
Sampling size ........................................................................... 37  
The current study ....................................................................... 37  
Exclusion criteria ...................................................................... 37  
Study variables ......................................................................... 38  
   - Socio-demographic variables .......................................... 38  
   - Mother-adolescent attachments ....................................... 38  
   - Relationship expectations ............................................... 39  
   - Casual sex ...................................................................... 40
List of Figures

Figure 1: The hypothesized model ................................................................. 71
Figure 2: Sampling procedure for school selection in the Add Health survey ..... 72
Figure 3: Sample Size in each stage of the Add Health sampling procedure ... 73
Figure 4: The hypothesized measurement model ........................................ 74
Figure 5: Results from confirmatory factor analysis .................................. 75
Figure 6: Results from the overall structural equation model ..................... 76
Figure 7: Results from the structural equation model by gender ................. 77
List of Tables

Table 1: Baseline socio-demographic characteristics of study participants by gender ........................................ 78
Table 2: Descriptive information for each of the three study scales by gender .................................................. 79
Table 3: Proportion of study participants who engaged in FWB encounters at wave III by gender and number of encounters ........ 80
Table 4: Proportion of study participants who engaged in hookups at wave III by gender and number of encounters .................. 81
Table 5: Sexually transmitted infections reported by wave III participants by gender ......................................... 82
Table 6: Correlations for study variables in the men structural equation model .................................................. 83
Table 7: Correlations of study variables in the women structural equation ....................................................... 84
Table 8: Socio-demographic characteristics of participants with missing information on romanticized and sexualized expectations ........ 85
Table 9: Socio-demographic characteristics of participants with missing information on FWB ................................ 86
Table 10: Socio-demographic characteristics of participants with missing information on hookups .............................. 87
Table 11: Socio-demographic characteristics of participants with missing information on sexually transmitted infections ............................... 88
Table 12: Summary of fit statistics for the tests of gender invariance in the measurement model .............................. 89
Table 13: Results from the test of mean difference by gender for each of the latent scales in the measurement model ............. 90
Table 14: Results from the test of partial mediation in the overall structural equation model ..................................... 91
Table 15: Results from the test of partial mediation in the male structural equation model ........................................ 92
Table 16: Results from the test of partial mediation in the female structural equation model ................................... 93
Table 17: Results from tests of coefficient invariance by gender for each of the significant relationships in the structural equation model .... 94
Chapter 1: Study Rationale

Statement of the Problem

Casual sex is a term used to describe sexual activities that occur outside of the context of a romantic relationship. Emerging adults, defined as individuals between the end of high school and entry into adult roles, are especially likely to engage in casual sex. For instance, estimates of the proportion of college students who report sexual intercourse with at least one non-romantic partner in their lifetime has ranged from 30% to 75% (Fielder & Carey, 2010b; Paul, McManus, & Hayes, 2000). Additionally, not only are contemporary emerging adults engaging in casual sex at rates unmatched by any other age group, but they are also engaging in casual sex at higher rates compared to similarly aged individuals from decades earlier (Garcia & Reiber, 2008; Lefkowitz, Gillen, Arnett, & Tanner, 2006). For instance, the proportion of college students who engaged in sexual intercourse with a stranger or casual acquaintance 3 months prior to assessment was estimated to be 19% in the 1980’s (Baldwin & Baldwin, 1988) and between 28 – 38% two decades later (Fielder & Carey, 2010b). The recent proliferation of casual sexual behaviors has been acknowledged by several researchers who believe that, for many emerging adults, casual sex is becoming a more frequent and normative form of sexual behavior (Bogle, 2007; Heldman & Wade, 2010; Regnerus & Uecker, 2011). However, casual sex among emerging adults is also a risky form of sexual behavior. For instance, casual sex in this group may be linked to HIV and other sexually transmitted infections. Hence, a comprehensive understanding of casual sex in emerging adulthood may be necessary to not only promote the healthy sexual development of emerging adults in the United States, but also to promote their physical health. In
addition, an appreciation of the predictors and consequences of casual sex may help in
developing targeted programs and public policies on sexual health behavior.

Several researchers have studied the correlates of casual sex in emerging adults
and have found demographic factors such as age, gender, and ethnicity to be important.
For instance, older emerging adults, men, and members of certain ethnic minority
groups (i.e., Blacks and Hispanics) are more likely to engage in casual sex (Bailey,
Fleming, Henson, Catalano, & Haggerty, 2008). Additionally, researchers have found
that psychosocial factors such as low self-esteem and depression (Monahan & Lee,
2008; Paul et al., 2000), as well as lifestyle factors such as low religiosity and
permissive attitudes about sex (Grello, Welsh, & Harper, 2006; Owen, Rhoades,
Stanley, & Fincham, 2010), increase the likelihood of casual sex in emerging adults.
However, predictors from earlier developmental periods – childhood and adolescence –
have yet to be identified. For instance, early parental attachments may have an effect on
the casual sexual behaviors of emerging adults. Parents may influence the sexual health
of adolescents in various and alternative ways including through parental monitoring,
parent adolescent communication about sex, parental religiosity, and parental attitudes
about sex (Landor, Simons, Simons, Brody, & Gibbons, 2011; Regnerus & Luchies,
2006). The development of expectations about relationships, romance, and sex may also
represent a way in which parental attachments influence sexual behaviors and, more
specifically, casual sex in emerging adulthood.

Equally important as the precursors of casual sex are the consequences of the
behavior. Whereas some emerging adults express contentment with their experiences of
casual sex (Eisenberg, Ackard, Resnick, & Neumark-Sztainer, 2009; Owen et al., 2010)
others are negatively impacted. For instance, compared to women involved in romantic sexual encounters, women involved in casual sexual encounters are more likely to be the victim of violence or unwanted sex (Conger, Cui, Bryant, & Elder, 2000; Paul et al., 2000). In a sample of college students between the ages of 18 – 24 years, Flack et al. (2007) found that 25% of students who reported casual sex also reported being raped, compared to none of those who reported never having had casual sex. Additionally, studies have found that, especially among women, physical intimacy without concomitant emotional intimacy, such as occurs during casual sex, may lead to psychological distress, including feelings of regret, low self-esteem, and depression (Eshbaugh & Gute, 2008; Grello et al., 2006; Paul et al., 2000). In other ways, however, the consequences of casual sex in emerging adulthood are still unclear. According to Heldman and Wade (2010, p. 327), “little scholarship has delved into the health risks posed by new sexual norms of hook up culture.” For instance, although several investigators have suggested a link between casual sex and sexually transmitted infections (STIs) in emerging adulthood, few studies have found such a relationship empirically. Determining the risk factors for STI diagnosis in emerging adults is especially important because this age group is characterized by the greatest risk for infection (Centers for Disease Control & Prevention (CDC), 2011). Additionally, several STI’s carry many lifelong consequences, including chronic disease, sterility, disability, and death (Bohm, Newman, Satterwhite, Tao, & Weinstock, 2010; Frenkl & Potts, 2008; Wallin et al., 2002). It is, thus, important to examine both the earlier developmental predictors and STI consequences of casual sex in emerging adulthood.
The Current Study

In the current study, I sought to extend the literature on casual sex by determining
the relevance of one factor that, based on theory and research, may influence casual sex
behaviors of emerging adults: early parental attachments. I also considered relationship
expectations as the mechanism by which this occurs, and I considered sexually
transmitted infections as a consequence of casual sex in emerging adulthood. To
accomplish these aims, I used a nationally representative sample of emerging adults.
Much of the research on casual sex in this group is limited to college samples (Fielder &
Carey, 2010a; Grello et al., 2006; Paul et al., 2000). However, it is also important to gain
an understanding of casual sex behaviors in general emerging adult samples. Therefore,
in the current study I utilized a nationally representative dataset; the National Study of
Adolescent Health (Add Health).

Special considerations. Several factors should be considered in studying the
parent-adolescent predictors and STI consequences of casual sex in emerging adulthood.
First, the Add Health dataset has a substantial amount of missing information regarding
fathers. Specifically, although only about 8% of the sample did not provide information
with regard to their mother, as many as 30% of respondents had missing information
about their father. There are several methodological implications of missing fathers on
research examining the impact of parent-adolescent relationships. For instance, Costigan
and Cox (2001) have suggested that a selection bias may arise in such cases, and that
father data are often not missing at random. For instance, they found that fathers who are
missing from research studies are more likely to be minority, less educated, in families
with less than optimal parenting environments and are less likely to be living in the home
consistently, indicating greater marital instability. Perhaps more pertinent to the current study, others have found that adolescents with fathers who are absent from their lives are more likely to engage in problem behaviors such as risky sexual activity (Booth, Scott, & King, 2010). In the current study, missing father information may result in a misevaluation of the effects of parent-adolescent attachments on casual sex. In addition, although fathers play an enormously important role in normative child development into emerging adulthood (Schwartz & Finley, 2006), studies suggest that mothers play a stronger role in the sexual socialization of offspring than do fathers (Diiorio, Kelley, & Hockenberry-Eaton, 1999; Miller, Benson, & Galbraith, 2001). For all of these reasons, only mother-adolescent attachment is considered in the current study. Guilamo-Ramos, Bouris, Jaccard, Lesesne, and Ballan (2009) adopted a similar approach when examining familial effects on adolescent sexual behaviors. Specifically, these authors considered it wiser to recruit only mothers in their study given the high likelihood of missing father data and the implications that would follow, as well as the fact that mothers play a stronger role in influencing their offspring’s sexual behavior.

The second consideration is that relationship expectations are not a single monolithic construct. Cavanagh (2007) proposed that there are two very distinct types of relationship expectations among adolescents: sexualized and romanticized. Similarly, Abowitz, Knox, Zusman, and McNeely (2009) found that most persons seek two very different sides of their relationships: sexual chemistry and intimacy/romance. It is, therefore, important to separate sexualized and romanticized expectations in the current study, as they may be influenced by different sets of factors, and may lead to different outcomes, among emerging adults. Cavanaugh, for instance, found that adolescents’ peer
networks have different effects on sexualized relationship expectations than on romanticized relationship expectations. Mother-adolescent attachments may also affect sexualized and romanticized relationship expectations differently. Furthermore, an adolescent’s romanticized and sexualized relationship expectations may exert different impacts on casual sex behaviors. This possibility is consistent with research suggesting that sexual behavior is influenced differently by relationship expectations that are based on the desire for physical pleasure and on relationship expectations that are based on the desire for romance and intimacy (Owen et al., 2010).

The final consideration is based on the fact that the relationship context of casual sexual encounters is of particular importance. According to Jonason, Li, and Richardson (2011), research on sexuality often focuses on two polar-opposite relationship types: long-term, committed relationships or short term non-romantic relationships. However, multiple types of non-romantic sexual relationships have been identified. Two types, however, are most common; casual sex with friends who agree on a continual sexual arrangement without a commitment (“friends with benefits (FWB”) and casual sex with strangers that occur only once (“hookups”). Although these two types of behaviors are similar in that they center on sex without romantic attachments, several researchers have found that they differ with regard to several characteristics. For instance, compared to hookup encounters, FWB interactions are more likely to include higher levels of affection, engagement in more frequent sexual behaviors, a greater range of sexual behaviors and are linked to fewer negative emotional consequences (Goodboy & Myers, 2008; Hughes, Morrison, & Asada, 2005; Jonason et al., 2011). Hence, it is important to consider FWB and hookups as two separate kinds of casual sex.
**The hypothesized model and its theoretical foundations.** To examine the parental predictors and STI consequences of casual sex, and taking into account the three special considerations mentioned above, I used structural equation modeling. Specifically, I tested a model in which: (1) Mother-adolescent attachment in adolescence directly predicts FWB relationships and hookups in emerging adulthood; (2) Mother-adolescent attachment in adolescence predicts FWB and hookups indirectly through sexualized and romanticized relationship expectations; and (3) FWB and Hookups in emerging adulthood predict sexually transmitted infections (Figure 1). The model was guided by perspectives from two theories: attachment theory and the theory of planned behavior. Attachment theory was first devised by Bowlby (1982) and describes the dynamics of long-term human relationships. Important in this theory is the centrality of early parental attachments in shaping children’s expectations and behaviors. Early secure parental attachments are defined as strong emotional bonds between the caregiver and the child, such that the child is able to separate from the parent, seeks comfort in the parent, prefers the parent to strangers, and experiences positive emotions in response to parents. Bowlby (1982) hypothesized that, although parent-child bonds change over time as the child exerts her/his independence, the original attachment remains extremely important vis-à-vis the child’s functioning, thoughts, and behaviors. Specifically, early parental attachments are thought to lead children to form internal *working models* or expectations about themselves that will help to guide the individual's perceptions and behaviors in later relationships, including romantic relationships. The theory of planned behavior (Ajzen, 1991) was devised to explain the decisional factors underlying specific health-promoting or health-compromising behaviors. This theory posits that human behaviors
such as casual sex are determined by attitudes, norms, and control beliefs about the behavior. Although this study focuses only on beliefs about a given behavior, Ajzen (1991) postulates that all three social cognitive processes (attitudes, norms, and control beliefs) are influenced by one’s social environment, particularly parental relationships.

**Mother-adolescent attachment and casual sex.** The study model begins with an association, both direct and indirect, between mother-adolescent attachments in childhood/adolescence and casual sex in emerging adulthood. Minimal attention has been paid to the quality of the parent-adolescent relationship in shaping casual sexual behaviors in this age group (Lyons, 2009). One exception, however, is Schwartz et al. (2009), who found that college students between the ages of 18 and 22 years who perceived that they have high quality relationships with their parents in adolescence are less likely than those who did not perceive high quality relationships with parents to report at least one casual sexual encounter in the past 30 days. However, what is not known is the extent to which parental relationships measured in adolescence protect against both FWB and hookups in general emerging adult samples. This is an important knowledge gap, given that early parental relationships play an important role in the sexual socialization of children even into emerging adulthood. Early mother-adolescent relationships, in particular, have a strong influence on the sexual behaviors of their emerging adults. For instance, several authors have found that increased time spent with the mother and better quality mother-child relationship in adolescence have been shown to predict later sexual and romantic behaviors such as sexual attraction and connectedness in romantic relationships in emerging adulthood (Lam, Russell, Tan, & Leong, 2008; Seiffge-Krenke, Overbeek, & Vermulst, 2010). This suggests that earlier mother-
adolescent relationships have a long-term impact on children’s lives and may help to predict engagement in casual sexual behaviors in emerging adulthood. Consequently, the model hypothesizes that secure mother-adolescent attachments in adolescence will reduce the likelihood of both FWB and Hookups in emerging adulthood.

**Relationship expectations.** Conceptualizing the mechanism by which parents work to influence casual sex is also pivotal to the understanding of offspring’s sexual health. Expectations about relationships may be especially important in this regard. Indeed, extensive research indicates that romanticized relationship expectations, defined as cognitive values that support emotional aspects of relationships such as love and romance; and sexualized relationship expectations, defined as the belief that sexually intimate behaviors should only occur in the context of a romantic relationship, are among the strongest deterrents against casual sex in emerging adulthood (Downing-Matibag & Geisinger, 2009; Gentzler & Kerns, 2004; Owen et al., 2010). Given that parents are an important influence on beliefs and expectations, in the current study (Ajzen, 1991; Bowlby, 1982), I hypothesized that relationship expectations both romanticized and sexualized would mediate the relationship between parental attachments in adolescence and casual sex (both FWBs and hookups) in emerging adulthood.

**Casual sex and sexually transmitted infections.** For several reasons, I expected that FWB and hookups in emerging adulthood would increase the likelihood of STI diagnosis. First, much deductive evidence points to an association between casual sex and sexually transmitted infections in emerging adults. For instance, emerging adults who participate in casual sex are more likely to have both a higher number of lifetime sexual partners and a higher number of concurrent sexual partners (two or more sexual
partners at the same time) (Grello et al., 2006; Levinson, Jaccard, & Beamer, 1995; Paik, 2010). Because the likelihood of sexually transmitted infection increases with both number of lifetime partners and number of concurrent partners (Manhart, Aral, Holmes, & Foxman, 2002; Weinstock, Berman, & Cates, 2004) an association between casual sex and sexually transmitted infection is likely. Casual sex has also been linked with sexually transmitted infections because both STI awareness and disclosure are unlikely to occur during casual sexual encounters, especially when the sexual partner is a stranger rather than a friend (Bairan et al., 2007; Green et al., 2003; Keller et al., 2000). For instance, among persons reporting at least 1 casual sex partner in the past year, 20% of men and 31% of women did not know the STI status of their most recent sex partner (CDC, 2007).

The role of gender. The hypothesized model guiding the current study centers on the role of mother-adolescent and relationship expectations in shaping casual sex, and by extension, sexually transmitted infections into emerging adulthood. However, the roles of both of these factors – mother-adolescent attachments and relationship expectations – in shaping sexual behaviors often differ according to gender. Such a proposition is consistent with feminist theory, which posits that differences in individuals’ lived experiences are often due to gender structures within larger structural and systemic levels of a society (Fox & Murry, 2000). According to this framework, differences are especially pronounced in the realm of sexual behaviors because a sexual double standard exists whereby women are judged more harshly for engaging in sexual behaviors, such as premarital and casual sex, compared to men. Thus, a gendered lens is particularly important when investigating sexual behaviors (Tolman, Striepe, & Harmon, 2003).
With regard to mother-adolescent attachments, studies have shown that women are more likely to have strong relationships with parents than men are, such that women are more likely to need parents’ support and are less likely to demand autonomy from them (Geuzaine, Debry, & Liesens, 2000; Shek, 2007). Additionally, the effects of early parenting characteristics and behaviors on later sexual risks are often stronger for females (Henrich, Brookmeyer, Shrier, & Shahar, 2006; Rose et al., 2005). For instance, Rose et al. (2005) found that girls who experience poorer quality relationships with their parents were more likely to lose their virginity earlier than their male counterparts, and as parent-child relationship quality improved, the likelihood of girls having sexual intercourse decreased more sharply for girls than for boys. Therefore, I expected that mother-adolescent attachments would more strongly influence casual sex for females than for men in the current study. With regard to relationship expectations, studies have found that women allow their relationship expectations to influence their sexual behaviors more strongly than men do. For example, among a sample of college students, Carroll et al. (2007) found that the association between marital importance and sexual permissiveness were more pronounced for women than for men.
Aims and Hypotheses

Aim 1: To test a prospective model in which mother-adolescent attachment in adolescence exerts an indirect effect on sexually transmitted infections in adulthood through relationship expectations in adolescence and through casual sex in emerging adulthood.

Hypothesis 1.1: Secure mother-adolescent attachment will be directly associated with higher romanticized relationship expectations in adolescence.

Hypothesis 1.2: Secure mother-adolescent attachment will be directly associated with higher sexualized relationship expectations in adolescence.

Hypothesis 1.3: Higher sexualized relationship expectations in adolescence will be inversely related to FWBs in emerging adulthood.

Hypothesis 1.4: Higher sexualized relationship expectations in adolescence will be inversely related to hookups in emerging adulthood.

Hypothesis 1.5: Higher romanticized relationship expectations in adolescence will be inversely related to FWBs in emerging adulthood.

Hypothesis 1.6: Higher romanticized relationship expectations in adolescence will be inversely related to hookups in emerging adulthood.

Hypothesis 1.7: Secure mother-adolescent attachments in adolescence will be inversely related to FWBs in emerging adulthood.

Hypothesis 1.8: Secure mother-adolescent attachments in adolescence will be inversely related to hookups in emerging adulthood.

Hypothesis 1.9: FWBs in emerging adulthood will be directly associated with a diagnosis of sexually transmitted infections in emerging adulthood.
Hypothesis 1.10: Hookups in emerging adulthood will be directly associated with a diagnosis of sexually transmitted infections in emerging adulthood.

**Aim 2: To determine whether relationship expectations mediate the relationship between mother-adolescent attachment and casual sex.**

Hypothesis 2.1: Secure mother-adolescent attachments will reduce the likelihood of FWBs through higher sexualized relationship expectations.

Hypothesis 2.2: Secure mother-adolescent attachments will reduce the likelihood of FWBs through higher romanticized relationship expectations.

Hypothesis 2.3: Secure mother-adolescent attachments will reduce the likelihood of hookups through higher sexualized relationship expectations.

Hypothesis 2.4: Secure mother-adolescent attachments will reduce the likelihood of hookups through higher romanticized relationship expectations.

**Aim 3: To determine whether the hypothesized relationships differ by gender.**

Hypothesis 3.1: Mother-adolescent attachments in adolescence will be a stronger predictor of romanticized relationship expectations for women than for men.

Hypothesis 3.2: Mother-adolescent attachments in adolescence will be a stronger predictor of sexualized relationship expectations for women than for men.

Hypothesis 3.3: Romanticized relationship expectations will be a stronger predictor of FWBs for women than for men.

Hypothesis 3.4: Romanticized relationship expectation will be a stronger predictor of Hookups for women than for men.

Hypothesis 3.5: Sexualized relationship expectation will be a stronger predictor of FWBs for women than for men.
Hypothesis 3.6: Sexualized relationship expectation will be a stronger predictor of Hookups for women than for men.

Hypothesis 3.7: Mother-adolescent attachments in adolescence will be a stronger predictor of FWBs for women than for men.

Hypothesis 3.8: Mother-adolescent attachments in adolescence will be a stronger predictor of hookups for women than for men.
Chapter 2: An Overview of Casual Sex in Emerging Adulthood

Emerging Adulthood

Emerging adulthood typically refers to the period between the end of high school and the mid to late twenties. Relative to adolescence, this period is marked by greater opportunities for autonomy and self-governance (Arnett, 2000, 2004). For instance, behaviors that were frowned upon in adolescence, such as drug/alcohol use and sexual activity, become far more normative (Arnett, 2004). For instance, only 15% of parents in the 2009 National Survey of Adolescents and Their Parents approved of premarital sex among their adolescents who are 16 years old, as compared to 30% of adults who approved of premarital sex among their young adults who were 18 years old (Olsho, Cohen, Walker, Johnson, & Locke, 2009). Parental control is also reduced in emerging adulthood as the parent-child relationship moves toward a relationship between two adults rather than between parent and dependent child. For example, in a sample of 205 university students, Lefkowitz (2005) found that many describe a more amiable and less authoritative relationship with parents than ever before.

However, although greater freedom is experienced by emerging adults relative to adolescents, full adult status, marked by complete self-sufficiency, is also not yet achieved. Emerging adults themselves often recognize that they feel “in between” adolescence and adulthood (Arnett, 2007). Evidence suggests that parental overprotection and psychological control among more contemporary emerging adults often denies them a sense of independence (Lapsley & Edgerton, 2002). For instance, in one study, approximately 40% of undergraduates between the ages of 18 and 25 years described their parents’ parental style as authoritarian, characterized by behaviors that are restrictive and demanding (Marsiglia, Walczyk, Buboltz, & Griffith-Ross, 2007). Parental
control is especially evident when the parents are responsible for the financial needs of emerging adults. The unstable economic realities of emerging adulthood often lead to extended dependency on parents for at least several years after individuals finish high school (Aquilino, 2006; Côté, Arnett, & Tanner, 2006). Parents often provide economic support through payments for postsecondary education, financial subsidies that enable the emerging adult to live independently, the provision of health insurance, transportation, and other forms of assistance (Aquilino, 2006). In addition, a great proportion of emerging adults return to live in the parental home; according to the National Longitudinal study of Youth, over 50% of emerging adults move back in with their parents at least once by age 22.5 years (Kaplan & Fund, 2009).

Whereas past circumstances facilitated quick movement from adolescence to adulthood, more contemporary social-structural factors have helped to delay the behaviors that typically characterize adulthood (Côté et al., 2006). Most important among factors influencing the gap between adolescence and adulthood are industrialization, globalization, and technological change (Schwartz, Donnellan, Ravert, Luyckx, & Zambaonga, In press). These factors brought with them a boom in the labor market but also saw a collapse in the relative earnings of recent high school graduates and dropouts (Côté et al., 2006). For instance, the gap in wage inequality between college graduates and high school graduates was more than twice as large in 2005 as it was in 1973 (Lemieux, 2008). In order to secure better incomes, a greater proportion of high school graduates than ever before began to attend post-secondary institutions. In 2000, approximately 62% of American emerging adults attended colleges or universities (National Center for Education Statistics, 2003). Prolonged educational pursuits were
also accompanied by other demographic changes: for instance, between 1970 and 2005, the estimated median age at first marriage increased from 20.8 to 25.3 years for American women and from 23.2 to 27.1 years for American men (U.S. Census Bureau, 2006). A similar increase occurred in the age at birth of one’s first child: between 1970 and 2002 the mean age of mothers at first birth in the United States increased from 21.4 to 25.1 years of age (Mathews & Hamilton, 2002). Thus, emerging adulthood has been characterized as a “holding pattern” in which traditional adult roles are delayed for several years. Arnett (2004) recognized this period as a distinct life stage.

**Personal and sexual identity development.** Most notable among the distinguishing features of emerging adulthood is identity development, defined by Erikson (1968) as integrating seemingly disparate aspects of the self to arrive at a sense of personal sameness and continuity across time and context. Given that exploration of various alternatives is the key mechanism through which identity is formed (Bosma & Kunnen, 2001), many emerging adults often feel as though they should explore a wide range of lifestyles before they commit to a single life path (Ravert et al., 2009). However, identity exploration can be a taxing process. This is especially true for emerging adults who are in a state of moratorium, which is characterized by in-depth explorations in the absence of strong identity commitments (Luyckx, Goossens, & Soenens, 2006). For instance, identity exploration in emerging adulthood has been linked with decreased well-being and with an increase in negative emotions such as anxiety, depression, and impulsivity (Ravert et al., 2009). Identity exploration has also been linked with maladaptive health behaviors such as binge drinking, marijuana use, hard drug use, inhalant use, and with sexual risk behaviors including unprotected sex, casual sex, and
sex while intoxicated (Schwartz et al., 2010). The link between identity development and sexual risk behaviors suggests that the process of identity consolidation also includes sexual identity development – defining oneself as a sexual being (Worthington, Savoy, Dillon, & Vernaglia, 2002).

During emerging adulthood, much exploration occurs with regard to issues of sex and sexuality. Specifically, emerging adults explore their sexuality by moving quickly into and out of romantic relationships. These relationships are often more tenuous than relationships formed in adulthood, and emerging adults who engage in them are more likely to be aware of other options for romantic relationships (Regnerus & Uecker, 2011). Arnett (2004) proposed that emerging adults explore many romantic relationships for two reasons: to find the right lifetime partner and to have a broad set of life experiences before settling down into the roles and responsibilities of adulthood. He further proposed that emerging adulthood is the ideal time for exploration involving sex, given the normative expectation that sexual intercourse would occur doing this time (unlike in adolescence) and the normative expectation to delay marriage for at least several years (unlike in adulthood).

**Sexual attitudes and behaviors.** The process of sexual identity development is multidimensional and involves identifying one’s sexual attitudes and one’s preferred sexual behavior partners (Worthington et al., 2002). Compared to adolescents, emerging adults tend to be more liberal in their attitudes about sex and more open minded toward their choices of sexual partners and sexual lifestyles (Lefkowitz et al., 2006). For instance, the National Survey of Adolescents and Young Adults indicated that more young adults than adolescents believe that “Waiting to have sex is a nice idea but nobody
really does” and “If you have been seeing someone for a while it is expected that you will have sex” (Kaiser Family Foundation, 2003). A shift in sexual attitudes is particularly important because sexual attitudes are closely correlated with sexual behaviors. For instance, Weeden and Sabini (2007) found that emerging adults who held more conservative moral sexual attitudes, such as the belief that there was too much sexual freedom and promiscuity in the world, were less likely to have engaged in risky sexual behaviors such as higher number of sexual partners, early sexual intercourse, and casual sex.

The transition to emerging adulthood from adolescence also includes increased engagement in sexual behaviors. This is evidenced by the fact that lifetime rates of sexual intercourse increase from approximately 50% at the beginning of emerging adulthood to almost 100% at the end (Lefkowitz et al., 2006). However, emerging adults are not engaging in safer sex practices. In fact, despite the myriad of research focusing on sexual risk behaviors of adolescents, many risky sexual behaviors actually peak during emerging adulthood. For instance, emerging adults are less likely to use a condom consistently as compared to adolescents. Findings from the National Survey of Sexual Health and Behavior reveal that sexually active young adult men 18 – 24 years old (68%) were less likely to report condom use at last intercourse compared to sexually active adolescent men who were 14 – 17 years (78%). A similar disparity in condom use at last sexual intercourse emerged for sexually active emerging adult women versus sexually active adolescent women (rates were 37% versus 58.1%) (Reece et al., 2010a). Additionally, a greater proportion of emerging adults than adolescents report combining alcohol consumption with sexual behavior. For instance, 30% of emerging adults (18 – 24 years),
compared to 20% of adolescents (15 to 17 years) in the National Survey of Adolescents and Young Adults, reported having done more sexually than they wanted to because they were drinking or using drugs. The same survey also found that a greater proportion of young adults compared to adolescents (24% vs. 9%) reported having had unprotected sex because they were drinking or using drugs (Kaiser Family Foundation, 2003).

Emerging adults also report more total and concurrent sexual partners than any other age group. For instance, findings from the National Study of Family Growth revealed that approximately 5-7% of women between the ages of 18 and 24 years had engaged in sexual intercourse with 4 or more partners in the 12 months prior to the survey, compared to 3.8% of women between the ages of 15 and 17 and to 1.9% of those between the ages of 25 and 44. Similarly, approximately 9% of men between the ages of 18 and 24 years reported having engaged in sexual intercourse with 4 or more partners in the past 12 months, compared to 3.7% of men between the ages of 15 and 17 and 5.2% of men between the ages of 25 and 44 years (Chandra, Mosher, Copen, & Sionean, 2011). The same survey found that the odds of sexual concurrency, i.e. having more than one sexual partner at the same time, were highest in the young adult years. Among women 23% between age 18 – 24 reported two or more current sexual partners, as compared to 7% of the those aged 14 and 17 years and between 5 – 15% in those aged 25 – 44 years (Adimora et al., 2002; Adimora, Schoenbach, & Doherty, 2007).

**Casual Sex in Emerging Adults**

Like a number of other sexual risk behaviors, emerging adults are most likely to engage in casual sex. Casual sex has been defined in many ways. However, in essence, casual sex refers to a sexual encounter with someone who is not a romantic partner.
Additionally, the term “casual sex” often refers to a variety of sexual behaviors ranging from non-coital behaviors such as kissing to genital sexual behaviors such as oral sex and vaginal and anal intercourse (Paul et al., 2000). These encounters have also been described as spontaneous, impulsive, superficial in nature, and often based entirely on sexual desire or physical attraction. In fact, Garcia and Reiber (2008) found that 80% of college students who participated in casual sex at least once in their lifetime identified physical pleasure as their motivation for engaging in the behavior.

Estimations of the prevalence of casual sex in emerging adults have been largely inconsistent. For instance, in both college and general emerging adult samples, the rate of sexual intercourse with a nonromantic partner has been estimated to be as low as 20 – 30% (Fielder & Carey, 2010b; Reece et al., 2010b) or as high as 70 – 85% (Feldman & Turner, 1999; Grello, Welsh, Harper, & Dickson, 2003). However, although the exact prevalence of casual sex in emerging adulthood is unclear, what is clear is that emerging adults have the highest rates of engagement. For instance, the National Survey of Sexual Health and Behavior (NSSHB) indicated that as many as 26 - 29% of women between the ages of 18 and 29 years engaged in sexual intercourse in the past 90 days while neither dating nor in a romantic relationship. Comparative rates for other age groups include 10.5% among persons 30 to 39 years old, 7.5% among those 40 – 49% old, and 5% among those 50 – 59 years old. Among men a similar, albeit less distinct, trend was observed. Specifically, among men 18 – 29 years, 24% had engaged in sexual intercourse in the past 90 days years while neither dating nor in a romantic relationship, compared to 19% among those who were aged 30 – 39, 23% among those who were 40 – 49 years old, and 14% among those who were 50 – 59 years old. With regard to casual sex encounters
involving oral sex, a similar trend was observed. Specifically, between 13 and 15% of
women between the ages of 18 and 29 engaged in oral sex with a casual partner, whereas
oral sex with casual partners ranged from 2 – 8% in those between 30 – 50 years of age.
Among young adult men 18 – 29 years old, between 19 - 24% engaged in oral sex with a
casual partner; whereas rates in persons between the ages of 30 and 50 ranged from 15 –
17% (Reece et al., 2010b).

Types of casual sex. Not all casual sexual encounters are equivalent. Although
several types can been identified, two distinct types have been extensively described in
the literature; “friends with benefits (FWBs)” and “hook ups” (Ellen, Cahn, Eyre, &
Boyer, 1996). FWB encounters have been defined as “relationships between cross-sex
friends in which friends engage in sexual activity but do not define their relationship as
romantic” (Hughes et al., 2005, p. 49). However, Furman and Shaffer (2010) also noted
that what matters most in FWB is not that there is an underlying friendship between the
two persons sharing the sexual act, but rather that there is an ongoing opportunity for
sexual relationship without a commitment. Specifically, they found that approximately
50% of adolescents between the ages of 15 and 17 years said that FWB are not different
from other people with whom they periodically engage in casual sexual encounters.
However, what they found to be distinctly different from FWB is hookups. According to
Paul et al. (2000, p. 79) hook ups are “sexual encounter(s), usually only lasting one night,
between two people who are strangers or brief acquaintances.” In accordance with
Furman’s view of casual sex relationships, Epstein, Calzo, Smiler, and Ward (2009) also
noted that the two types of casual relationships – hook ups and FWB – differ mainly in
the length of time that the two partners know each other and whether or not they have ongoing access to sexual activity with no commitment.

Friends with benefits are the most common type of casual sex relationship (Grello et al., 2006; Manning, Longmore, & Giordano, 2005), about two thirds of casual sexual behaviors on college campuses occur in the context of FWB (Grello et al., 2006). In a sample of college students, Puentes, Knox, and Zusman (2008) found that approximately 50% had engaged in at least one FWB relationship. Persons in FWB relationships often see the sexual activity as a positive addition to the existing relationship. In essence, persons in these relationships mutually desire to have a physical connection with no further commitment (Puentes et al., 2008). Additionally, researchers have hypothesized that these relationships act as a compromise between both men and women’s ideal mating strategies; a frequency study of college students found that FWB represent low-investment attractive sexual partners for men, whereas for women it represents an attractive test mate – an opportunity to evaluate potential long term mates (Jonason, Li, & Cason, 2009). Hook ups, on the other hand, are less common. Paul et al. (2000) found that 30% of college students had engaged in at least one hookup involving intercourse in the past 12 months. Unlike FWB, hook ups usually occur with less forethought and without a clear motivation. This is because a majority of these encounters occur while under the influence of drugs and alcohol. In a sample of emerging adults (Graves, 1995), 83% of men who drank alcohol reported at least one hook up partner compared to 32% of those who did not drink. A similar link was found in women; 61% of those who drank reported at least one hook up partner compared to 15% of those who did not drink alcohol (Graves, 1995).
Trends in casual sex and the sexual economy theory. Recent media attention has suggested that casual sex is on the rise and that contemporary emerging adults live within a hook-up culture (Bogle, 2007; Heldman & Wade, 2010). Although little research has examined the trends in casual sex rates over time, it is clear that emerging adults hold more permissive attitudes about casual sex than ever before. For instance, Earle et al. (2007) found a statistically significant increase in the number of emerging adults who approve of sexual intercourse with an occasional partner in 2000 as compared to 1981. Sexual economy theory (Baumeister & Vohs, 2004) provides a framework within which to understand recent changes in casual sexual behaviors and attitudes among emerging adults. In this framework, sex is seen as a female resource where women are the gatekeepers and suppliers of sex, and where men are the consumers. The authors provide evidence of women’s control over sexual activities by showing that female anticipation of when sex will occur in a relationship is highly correlated with when it actually occurs - whereas the same is not true for men. In order to gain access to sex, men must first pay a price, an interaction that Baumeister and Vohs (2004) likens to a buyer and seller relationship. The price that men will pay can be financial but, more often than not, includes emotional resources such as commitment, support, and love.

However, the price that a woman can demand for sex varies widely and is largely based on the local sexual marketplace – local norms that exist to guide sexual behaviors. Years ago when sexual attitudes were most conservative, sexual behaviors were most restrictive, and casual sexual behaviors were at their lowest, women’s circumstances called for an increased dependency on men. Specifically, women could not own property and could not pursue a profitable career. Hence, women often relied on what men could
offer (marriage and security) in exchange for sex, and much higher levels of commitment were required of men for sex. However, post-industrial changes, which resulted in greater liberation for women, led women to require less in return for sexual behaviors. Greater independence in women, therefore, led to sexual behaviors without the benefit of strong emotional commitments. Consequently, an increase in casual sexual behaviors occurred. This theory is in line with the concept of emerging adulthood, which recognizes that young adult women are more likely to attend college and follow career aspirations and are less likely to desire marriage as a way of fulfilling financial needs.

**Gender differences in casual sex.** Many gender differences have been identified in issues of sex and sexuality. With regard to sexual attitudes, women are less likely than men to hold permissive attitudes about sex and are more likely to link sexual intercourse to intimacy. For instance, in studies that survey the motivation toward sexual intercourse, college men often score higher in measures of pleasure and physical satisfaction, whereas college women tend to score higher in measures of commitment and love (Meston & Buss, 2007; Stephenson, Ahrold, & Meston, 2011). Differences also exist with regard to sexual behaviors. For instance, men are more likely to initiate sexual activity at an earlier age than women. In a nationally representative sample of emerging adults, 8.4% of men reported having had sexual intercourse before age 13 years, compared to only 3.1% among women (CDC, 2010b). Additionally, emerging adult men tend to report a higher number of sexual partners than emerging adult women. For instance, in the National study of Family Growth, men between the ages 20 – 24 years were more likely (9.5%) than women (4.6%) to report having had four or more sexual partners in the past 12 months (Chandra et al., 2011).
Similar gender differences have been reported with regard to casual sex. Specifically, men tend to hold more permissive attitudes towards casual sex than women do. For instance, in a survey of sexual attitudes among university students, as many as 34.8% of men, compared to 11% of women, either agreed or strongly agreed with the statement “Premarital sex is acceptable with a casual acquaintance” (Higgins, Mullinax, Trussell, Davidson, & Moore, 2011). Also, in a seminal article, Clark and Hatfield (1989) found that, in specific hypothetical situations as many as 70% of men were receptive to the idea of sex with female strangers, whereas no women were receptive to the idea of sex with a stranger. Twenty years later, Conley (2011) sought answers to the same research question and again found that women were much less receptive to the idea of a sexual offer from stranger. She also found that women perceived male proposers were more dangerous than men perceived female proposers. Further, men engage in casual sexual behaviors at a higher rate than women. For instance, in a sample of college students, Grello et al. (2006) found that 52% of men, compared to 36% of women, had engaged in at least one casual sexual relationship in the past 12 months. However, when alcohol is consumed, hook up sex is just as frequent in men as it is in women (Graves, 1995). The inclusion of homosexual men, who are more likely than heterosexual men to engage in casual sexual behaviors, may also exacerbate gender differences (Levin, Koopman, Aral, Holmes, & Foxman, 2009).

Sexual script theory. According sexual script theory, gender differences in sexual behaviors and attitudes occur because of a complex psychosocial process of development (Gagnon & Simon, 1973). Specifically, individuals learn and internalize a set of cultural rules called sexual scripts that govern sexual attitudes and behaviors. Agents of sexual
socialization, such as parents, peers, the media, and society in general, influence decisions about sexual partners, timing of sexual activities, sexual attitudes, and sexual behaviors. However, scripts for men and women differ in such a way that teaches a double standard. Specifically, women are conditioned to seek emotional aspects of sexual behaviors and to value commitments and investment over their own physical pleasure. Additionally, female sexual scripts advocate for a restriction in their sexual behaviors such that they are expected to engage only in sexual intercourse in monogamous, loving, and committed relationships such as marriage. Women who fail to meet these standards and engage in casual sexual behaviors are often judged harshly. Men on the other hand, are oriented to seek physical pleasure over emotion. Their sexual behaviors are not restricted in the manner in which women’ sexual behavior is. In fact, men are conditioned to actively seek sex as early as and as often as possible in order to gain a vast array of sexual experiences (Kreager & Staff, 2009).

**Sexually transmitted infections.** Casual sex in emerging adulthood may be linked to sexually transmitted infections. Unfortunately, emerging adults are disproportionately affected with STIs: for instance, although persons between the ages of 15 – 25 represent 25% of the sexually active population, they account for 50% of the 19 million new STI cases that occur annually (CDC, 2011). The most common STIs reported to the CDC among emerging adults are Chlamydia, Gonorrhea and Syphilis. With regard to Chlamydia, persons 15 – 25 years old have 4 times the reported Chlamydia rates than persons in the total population (10 – 65+) years. Specifically, the rate among women 20 – 24 years was 3407.9 cases per 100,000 while the rate for the total female population was 610.6 per 100,000. Emerging adult men experienced a lower
rate of Chlamydia when compared to their female counterparts but also experienced a
similar health disparity when compared to men from the general population (1187.0 cases
per 100,000 compared to 233.7 cases per 100,000). Emerging adults also experienced
the highest rate of gonorrhea. With respect to women, emerging adults (20 – 24 years)
experienced a rate of 560.7 diagnosed cases per 100,000, compared to 106.5 per 100,000
for women in the total population. Among men, the rate was 241.3 per 100,000
population for those 20 – 24 and 94.1 per 100,000 for the total male population. With
regard to syphilis, emerging adults experience the highest rate, however, unlike the STI’s
mentioned above men experienced a higher rate of diagnosis. The rate of diagnosis for
women 20 – 24 years was 4.5 per 100,000 compared to 1.1 per 100,000 among women
in the total population. The rate of diagnosis for men 20 – 24 years was 21.9 per 100,
000 compared to 7.9 per 100,000 among women in the total population (CDC, 2011).

Unfortunately, many sexually transmitted infections among emerging adults are
increasing in the United States. For instance, compared to 2009, in 2011 rates of
Chlamydia among persons 20 – 24 years increased by 7.5% and rates of gonorrhea
increased by 4.9% (CDC, 2011). This finding is very troublesome because sexually
transmitted infection can lead to disease, disability and death. For instance, untreated
STIs cause at least 24,000 women in the U.S to become infertile each year (CDC, 2010a).
In addition, untreated STIs can lead to other reproductive health problems, fetal and
perinatal problems, and cancer (Frenkl & Potts, 2008). For instance, Chlamydia and
gonorrhea can lead to chronic pelvic disease and ectopic pregnancy, and untreated
syphilis can lead to serious long term consequences including brain, cardiovascular, and
other organ disorders (Bohm et al., 2010; Wallin et al., 2002). In addition, each of these
infections increases the odds of inquiring the human immunodeficiency virus. Sexually transmitted infections among emerging adults also place a tremendous financial burden on the U.S. health care system. It was estimated that approximately $6.5 billion (in year 2000 dollars) annually are attributed to STI’s in persons 15 – 24 years of age (Chesson, Blandford, Gift, Tao, & Irwin, 2004). A range of factors increases the odds of STI’s in young adults, including lack of access to preventive services (Gavin, 2009). However, individual risk behavior remains the primary factor through which STI’s are acquired and transmitted in this age group. Hence, behaviors such as casual sex, which may increase the odds of STI transmission, should be understood in order to form prevention strategies.

In fact, one of the goals of the U.S. government’s Healthy People 2020 initiative is to promote healthy sexual behaviors, strengthen community capacity, and increase access to quality services to prevent sexually transmitted infections and their complications (U.S. Department of Health and Human Services, 2010).

The role of mother-adolescent attachments and relationship expectations on casual sex. A fundamental task of emerging adulthood is sexual socialization, including establishing and building romantic and sexual relationships. Extensive research indicates that the mother-adolescent relationship plays a strong role in shaping this process. Mother-adolescent attachments may have specific developmental significance in explaining casual sexual behaviors in emerging adults. In fact, classic theorists (Bowlby, 1982; Freud, 1932) argued that the mother-child attachment is the most important factor in determining an individual’s relational psychology throughout her or his entire life span. Several authors have offered theories to explain the link between mother-child relationships and sexual socialization. Conger and Conger (2002) hypothesize that early
parent-child relationship effect the child’s interpersonal skills, which in turn affect one’s capacity to form intimate relationships in adulthood. Similarly, Allen and Land (1999) argue that secure attachments to parents provide adolescents with the capacity for emotion regulation. Specifically, early parental relationships give the emerging adult the ability to cope and to explore a wide range of emotions (Allen & Land, 1999). Empirical research has supported these theories; for instance, parental attachment in childhood has been linked to social skills, conflict resolution, relational competence, and emotional adjustment in college students (Ross & Fuertes, 2010). Similarly, research has also shown that early parental attachments affect connection and intimacy with romantic partners in emerging adulthood (Seiffge-Krenke et al., 2010).

Secure mother-adolescent attachment may lead emerging adults to endorse relationship expectations that promote romance and sexual intimacy within the context of romantic relationships. This is because personal values about romantic love, including beliefs about behaviors that are acceptable in a romantic relationship, are influenced by social contexts in which adolescents live, including the family (Rosenthal & Smith, 1997). Relationship expectations in adolescents are particularly important because, prior to adolescence, little sexual socialization occurs between boys and girls. Adolescents develop expectations about love, which help to shape later behaviors. For instance, one study (Tuval-Mashiach, Walsh, Harel, & Shulman, 2008) found that, although only 59% of adolescents (mean age 14 years) had ever experienced a romantic relationship, as many as 84% reported contemplating future relationships. Research has indicated that these relationship expectations in adolescence are highly correlated with romantic behaviors in later adolescence and in emerging adulthood. For instance, Cavanaugh
found that adolescent idealized perceptions of romance were highly correlated with romantic behaviors a year later. Hence, the effects of early romantic expectations are particular important vis-à-vis later sexual behaviors in adolescence. Cavanaugh hypothesized that romantic expectations in adolescence form a template that prefigures their adult romantic lives.
Chapter 3: Methods

Study Design Overview

The current research employed a perspective longitudinal study to examine the role of mother-attachments and relationship expectations in adolescence as precursors of casual sex, and by extension sexually transmitted infections in emerging adulthood. These aims were pursued using secondary analyses of a nationally representative public-use dataset: the National Longitudinal Study of Adolescent Health (Add Health) (Udry, 1998).

Data Source

The Add Health study was developed in response to a mandate from the U.S. Congress to explain the causes of adolescent health and health behavior and to understand the contexts in which adolescents live. Specifically, three sources of adolescent health were surveyed in the Add Health study. First, the social environments in which adolescents live, including family and school connections and neighborhood effects, were assessed. Second, health related behaviors such as diet and levels of physical activity were measured. Finally, the vulnerabilities and strengths of adolescents, including their personality traits and self-sufficiencies, were surveyed. Consequently, the Add Health dataset has contributed to a richer understanding of the health status and adjustment of adolescents, including the primary role of family context in adolescents’ development (Harris, 2005).

Add Health Sampling Procedure

School survey. The Add Health data collection protocol employed a multistage, cluster sampling design with the school as the primary sampling unit. The Quality Education Data, Inc. (QED) database served as a comprehensive list of all high schools,
public or private, within the United States. Solely for the purpose of high school identification from the QED list, a high school was defined as those schools with (1) an 11th grade and (2) at least 30 students. Using this definition, a total of 26,666 high schools were identified. In subsequent selection procedures, a sample of schools were selected, and all students in the 7th – 12th from the selected schools were expected to complete the survey (Tourangeau & Shin, 1999). The specific school selection protocol is outlined below.

All eligible high schools were sorted according to the following five dimensions: school size, census region, urbanicity, school type, and percentage white. School size was ranked according to whether or not the school enrolled 125 or fewer students, 126 to 350 students, 351 to 775 students, or 776 or more students. School type was classified as public, parochial, or private; and census region was classified as Northeast, Midwest, South, and West. Additionally, level of urbanicity included urban, suburban, and rural; and percent white included the following groupings: 0%, 1 to 66%, 67 to 93%, and 94 to 100%. Following these sorting procedures allowed for a representative sample according to the dimensions of the sorted list. Eighty high schools were then selected with unequal probability. Specifically, schools with higher enrollments had a greater chance of selection. Of the 80 schools, 52 were eligible and agreed to participate in the survey. Replacement schools were then selected systematically (n = 28), again using a sorted list.

In addition, any of the 80 schools that did not have a 7th grade were enrolled along with a single feeder school: a junior high or a middle school that contributed students to the entering high school class. With the help of high school officials, feeder schools with at least 5 graduates sent to the high school were considered for participation in the Add
Health study. The probability of a given junior or middle school being selected as a feeder school for a specific high school in the Add Health study was proportionate to the numbers of students enrolled in, or filtered into, a selected high school. Of the 80 high schools selected, 20 included a 7th grade and did not require a feeder school, and 4 schools drew their entering class from a wide range of junior and middle schools and did not have an eligible feeder. Thus, 56 feeder schools were selected for participation in the Add Health study, of which 52 agreed to participate. In all, 132 schools (80 high schools, 52 feeder schools) were used in the Add Health design. Figure 2 provides a flow chart of the school selection protocol used in the Add Health design.

**In-home survey.** In addition to the school based survey, a random sample of adolescents who were expected to complete the in-school survey was selected to complete the in-home interview. Students were selected based on 3 factors: grade, gender, and school. During the selection process, students in each school were stratified by grade and gender, and approximately 17 students were then randomly selected from each stratum. This resulted in approximately 200 adolescents being selected from each of the high schools or from each high school-feeder school pair. The questionnaire was then administered in home in a 1-2 hour session, with the exact length depending on the respondent's age and experiences (i.e., some measures were gated). To protect the confidentiality of the respondents’ answers, interviewers read the questions aloud and then recorded the answers on laptop computers. However, for more sensitive topics, the respondent listened through earphones to pre-recorded questions and entered the answers directly into the laptop computer.
**Longitudinal design.** The in-school and at home surveys (wave 1) were administered between April and December 1995. Attempts were made to contact and resurvey the same adolescents at three additional time points. The wave II survey took place from April to August 1996 and was administered to 71% of the original study participants. The interviews were generally similar to the wave I survey but did not include variables that were not expected to vary over time such as ethnic background, and included additional questions such as nutrition and sun exposure information. The wave III questionnaire (response rate = 75%) was administered between to 2001 to 2002 when the study participants were in emerging adulthood (18 – 26 years). The focus of the wave III survey shifted towards factors that were more relevant to emerging adulthood. Specifically, information was collected on relationship status, childbearing history, educational pursuits, etc. Finally the wave IV survey was conducted between 2007 and 2008. New questions were added, including information on physical, social, emotional, spiritual, and mental health status (Udry, 1998).

**Correcting for design effects.** For several reasons the wave I Add Health dataset, in its original format, is not representative of the high school population of United States. First, certain subgroups were oversampled. Second, certain subgroups were characterized by different response rates. Finally, there were chance fluctuations in the composition of sample as compared with the composition of the United States. To allow the sample totals to serve as valid estimates of the population totals, the Add Health study incorporated survey weights, clusters, and strata. Weights were first calculated for the in-school survey and the at-home surveys. The weights for the at-home survey were developed in several stages that compensated for differences among the schools in their
probability of selection while adjusting for school ineligibility and school non-response. In other steps, the calculation of the study weights also compensated for differences in student selection probabilities across schools and across grades and genders within a school. Again, compensations were made for non-response to the Wave I in-home questionnaire. Hence, the final weight incorporated adjustments for both school-level and student-level selection and non-response. Additionally, a school identifier variable [PSUSCID] was used as a cluster variable to compensate for the use of middle and high schools as the primary sampling unit. Finally, a post stratification adjustment was made to the sample weights to adjust for the region of the country. In all subsequent waves, waves II – IV, weights were calculated which also compensated for non-response and over sampling. Additionally, for waves II – wave IV two sets of weights were calculated, one for use of the wave alone and the other for used when that wave was used in combination with a previous wave/s (Tourangeau & Shin, 1999).

Public-use data set. The Add Health dataset is available in two forms. The first is a restricted form in which all of the data are available. This dataset is available on a contractual basis and is distributed only to certified researchers who commit themselves to maintaining limited access. The public use dataset, on the other hand, includes all of the variables except those that would allow the information to be linked to study participants. These omitted variables include identifying information such as school, region, and ID numbers of friends or siblings. Another way in which the public use dataset differs from the restricted use dataset is that it consists of one-half of the core sample chosen at random. The public use dataset is certified as a public use dataset and is
completely de-identified. The current study employed the public use version of the Add Health dataset.

**Sample size.** A total of 119,233 students were eligible to complete the in-school survey, of which 90,118 students completed the survey. Using responses from the in-school questionnaire, a total of 16,044 were selected for the core random at home sample, of which a total of 12,105 actually completed the survey. Hence, the public-use dataset consists of 6,072 adolescents from the core sample. In addition, the current study considers only respondents who completed both waves I and III of the survey. Of those in the public use dataset who completed the wave I survey, 75% \((n = 4,490)\) respondents also completed the wave III survey and were available for inclusion in the current study. Figure 3 illustrates the sample size of each phase of the Add Health study.

**The Current Study**

**Exclusion criteria.** Three exclusion criteria further limited the sample size of the current study. First, the study was limited only to respondents who at wave III reported detailed information on at least one romantic relationship. At wave III, each emerging adult was asked to report all of her/his relationships, regardless of length, that had occurred since August 1995. If a relationship began prior to this time but continued at least until August 1995, it was also eligible for inclusion. However, the respondent was only probed further about the details of their relationship in the Add Health survey if at least one of three criteria were satisfied. Specifically, the relationship had to (a) be considered a romantic relationship, (b) be of importance to the respondent, and/or (c) include sexual intercourse. A total of 3,753 respondents both reported at least one relationship and provided detailed information about at least one relationship. These
respondents were included in the study. The second criteria limited the study to opposite sex relationships given the different patterns of casual sex behaviors and the complex factors that influence casual sex behaviors in same-sex sexual relationships. Individuals who indicated having had same sex relationships were included in the analysis as long as they had also engaged in at least one heterosexual relationship in the survey. Using these criteria, the sample size was reduced to 3,715. Finally, married relationships were excluded from the analytic sample. Following this procedure resulted in a final sample size of 3,307 study participants.

**Study variables.**

**Socio-demographic variables.** Baseline socio-demographic information was gathered from the wave I survey. Several descriptive information was included: age, which was calculated as the amount of time between the birth date and the interview date. The public use dataset provides only the birth month and year. Following the Add Health protocol, the 15th of the month was used as an estimate of each person’s birthday. Ethnicity was categorized as Hispanic, non-Hispanic White, non-Hispanic Black, and Others (a combination of American Islander and Asian, or others who reported a mixed-ethnicity). Other variables used to describe the wave I dataset included whether or not the household included two parents (biological or otherwise), parent education, and having at least one parent on public assistance (a proxy measure for socioeconomic status).

**Mother-adolescent attachments.** Mother-adolescent attachment was assessed using 5 items. These included “Most of the time, my mother is warm and loving toward me” [WARMTH], “I am satisfied with the way my mother and I communicate with each
other” [COMMUNICATION], “How much do you feel that your mother care about you?” [CARE], “How close do you feel to your mother?” [CLOSENESS] and “Overall, are you satisfied with your relationship with your mother?” [RELATIONSHIP]. Each item within this scale was scored on a 5 point scale. This scale was created by Resnick et al. (1997) to measure parent connectedness ($\alpha = .83$). In addition, the same scale was successfully used by Hyeouk, Maureen, and Neil (2003) ($\alpha = .90$) and Guterman, Hahm, and Cameron (2002) ($\alpha = .88$) to measure mother-adolescent attachment.

**Relationship expectations.** Two types of relationship expectations were examined in the current analyses: sexualized relationship expectations and romanticized relationship expectations. Both types were measured from the idealized relationship section of the wave I battery. Adolescents were given 17 cards that described different activities that may occur in the context of a romantic relationship. Adolescents were then asked to accept or reject the card depending on whether or not they felt that it was an activity that was expected in the context of a romantic relationship. Some of these relationship activities represented romantic ideals and some of them represented sexualized ideals. Five items were used to measure romanticized relationship expectations. These included “tell people we are a couple” [TELL], “We would go out alone together” [ALONE], “We would hold hands” [HANDS], “We would think of ourselves as a couple” [THINK] and “We would kiss” [KISS]. On the other hand, four items were used to measure sexualized romantic ideals. These included: “We would talk about STDs and contraception” [CONTRACEPTION], “We would touch each other under our clothes” [TOUCH], “We would have sex” [SEX] and “We would get pregnant”
The two subscales have previously been used to measure romanticized and sexualized relationship expectations in the Add Health dataset (Cavanagh, 2007).

**Casual sex.** Casual sexual experiences in emerging adulthood were measured at Wave III. For the purpose of the current study, casual sex included sexual intercourse (i.e. non coital forms of casual sex, such as oral sex, were not considered). Each relationship mentioned in the detail relationship segment of the survey was assessed to determine whether it included casual sex. Although several different types of casual sex exists, the current study focuses only on friends with benefits (FWB) and hook ups. FWB relationships were assessed using 2 items. First, the following item was used to assess whether sexual intercourse occurred in the context of a romantic relationship: which of the following best describes your relationship? Answer choices were as follows: “dating exclusively,” “dating frequently but not exclusively,” “dating partner once in a while,” and “just having sex with partner.” If respondents answered “just having sex,” this was considered a casual sexual relationship. However, in addition to this criteria, the two types of casual sex were differentiated not by the closeness of the relationship but by the on-going access to sex without a commitment (Epstein et al., 2009; Furman & Shaffer, 2010). Therefore, a second criterion for FWB was that sexual activities had to occur on more than one occasion. Specifically, the following item was used: On how many occasions did you have sexual intercourse with <PARTNER>? Answer choices were “one occasion” and “more than one occasion.” For a relationship to be considered a FWB relationship, the respondent had to answer “more than one occasion” to the question.

Following Paul et al.’s (2000, p. 79) definition of a hook up (“sexual encounter(s), usually only lasting one night, between two people who are strangers or brief
acquaintances…”), three criteria were used to define a hook up in the current study. They were (a) Sexual intercourse outside of the context of a romantic relationship, (b) Having sexual intercourse with someone who was a stranger or a brief acquaintance, and (c) Having sexual intercourse on only one occasion. With regard to the first criterion, participants had to answer, “Just having sex” when asked about the nature of the relationship. For the second criterion, the following item was considered: How long had you known <PARTNER> when you first had intercourse with (HIM/HER)? The following responses choices were available: “one day or less,” “two to seven days,” “one or two weeks,” “two to four weeks,” “one to five months,” “six months to a year.” To be considered a hook-up, the respondent would have to have known the sexual partner for one day or less before sexual intercourse. Lastly, sexual intercourse had to occur only once. The following question was used: Have you and <PARTNER> had (vaginal/oral/anal) intercourse on one occasion or more than one occasion? The following ordinal categories were used to describe the number of FWB and Hookup encounters: 0, 1, 2, 3 and >=4.

**Sexually transmitted infections.** Sexually transmitted infections were also measured at wave III. Young adults self-reported whether or not they had been diagnosed with several sexually transmitted infections in the past 12 months. Specifically, the following question was used: In the past 12 months, have you been told by a doctor or nurse that you had the following sexually transmitted diseases: Chlamydia, gonorrhea, trichomoniasis, syphilis, genital herpes, genital warts, human papilloma virus (HPV), HIV/AIDS, and other? Based on the responses to each of the items, a variable called STI was created, which was coded as “1” if young adults answered affirmatively to any of the
questions (diagnosed with at least one sexually transmitted infection) and “0” if they did not.

**Data analytic plan.**

*Design effects.* The sampling variance of survey statistics is affected by the stratification, clustering and weighting of cases. Thus, software that can correct for standard error biases created by the grouped nature of the data is needed to provide accurate analyses. Mplus (Muthén & Muthén, 1998-2010), which was used for the analysis in the current study, can effectively handle the sampling design of the Add Health survey. Analyses incorporating the design effects due to the cluster design can be obtained in Mplus by specifying TYPE=COMPLEX in the analysis command in conjunction with the stratification, cluster and weight commands. This approach is implemented by computing standard errors and a chi-square test of model fit that take into account stratification, clustering, and unequal probability of selection (Muthén & Muthén, 1998-2010). In the current study, the TYPE=COMPLEX option was used in descriptive and in all subsequent confirmatory factor analysis and structural equation modeling. The public use version of the dataset does not include strata information; consequently, strata were not incorporated in the current analyses. The lack of strata information results in minimal biases in the standard errors (Udry, 1998).

*Descriptive analysis.* Descriptive analyses were conducted on the study sample. Specifically, the frequency of categorical variables and the means of continuous variables were assessed on demographic and study variables. In each of the descriptive analysis, chi-squares or t tests, depending on the scaling of the variable, were calculated to
determine whether study variables differed by gender. Finally, correlations were calculated for each combination of study variables in the hypothesized model.

**Missing Data.** The Weighted Least Squares Mean and Variance Adjusted (WLSMV) estimator was used for all confirmatory factor analysis and structural equation modeling. This estimator was chosen in confirmatory factor analysis given the binary nature of the items in the relationship expectations scales, and in subsequent structural equation modeling given the categorical nature of the casual sex and STI outcomes. The WLSMV estimator uses pairwise deletion for missing data – that is, it considers all available data for each pair of variables when estimating the sample statistics to which the model is fit. The pairwise present approach is ideal under missing completely at random (MCAR) that is, if missingness is independent both of observable variables and of unobservable parameters of interest. Pairwise deletion is less optimal when data are missing at random (MAR); i.e, when missingness depends on observed data but not unobserved data. Pairwise deletion is least optimal when not missing at random (NMAR); i.e., where missingness depends on unobserved data (Graham, 2009). Hence, it was important to analyze the mechanism of missing values in the dataset. Little’s (1988) test was conducted to determine whether the data were missing completely at random (MCAR). However, given the complex nature of the sample, the null hypothesis of MCAR was rejected ($\chi^2 (13) = 26364.48, p < .001$). Next, a series of logistic regression models were estimated to determine whether a binary variable representing missingness (i.e., $1 =$ missing $0 =$ not missing) for each study variable was associated with demographic and other factors. If missingness on any study variable was found to be related to another study variable, that variable was added as a covariate in the model.
**Confirmatory factor analysis.** The specification of the measurement model, particularly the choice of constructs, how they are related to each other, and the directionality have all been informed by theory and prior research. For instance, the mother-adolescent attachment scale was created by Resnick et al. (1997) and successfully used by several other studies (Guterman et al., 2002; Hyeouk et al., 2003). Similarly, the romanticized relationship expectations and sexualized relationship expectations scales were both established by Cavanagh (2007). However, although all of the scales used in the present study have been used with the Add Health dataset before, none have been tested extensively for factorial validity. Hence, confirmatory factor analysis (CFA), rather than exploratory factor analysis (Thompson, 2004), was conducted in the current study to determine the factorial validity of the established scales. The assumption underlying CFA is that the latent variable explains the covariation among the indicators.

A large class of omnibus tests exists for determining overall model fit. Four fit indices were used to evaluate the model fit for confirmatory factor analysis. These include the comparative fit index (CFI), the Tucker-Lewis Index (TLI), the root mean square error of approximation (RMSEA) and chi-square test ($\chi^2$). The CFI and TLI compare the hypothesized model to a null model with no paths or latent variables. Good model fit is indicated by values greater than .95 and adequate fit is indicated by values greater than .90 (Byrne, 2001). The RMSEA, on the other hand, estimates the degree to which the hypothesized covariance matrix deviates from the observed covariate matrix. Good model fit is represented by values less than .05, and an adequate model fit is represented by values less than .08 (Byrne, 2001). The $\chi^2$ tests the null hypothesis that the model provides a perfect fit to the data and, consequently, a p-value greater than .05
indicates a good model fit. However, caution should be made when interpreting chi square values given their sensitivity to sample size and model complexity. In addition, loading magnitudes were considered unacceptably low if they were less than .50 (Hair, Anderson, Tatham, & Black, 1998). Figure 4 illustrates the measurement model.

Test for measurement invariance by gender. Following confirmatory factor analysis, the factor structures of the mother-adolescent attachments, romanticized relationship expectations, and sexualized relationship expectations scales were tested for measurement invariance across gender. This was done to determine whether each factor carries the same meaning for boys and for girls. A lack of equivalence may lead to incorrect conclusions regarding the impact of parental attachments and relationship expectations on casual sex outcomes for one gender or the other (Gregorich, 2006). Following the approach outlined by Dimitrov (2010), a three step procedure was used to test for measurement invariance by gender. First, the hypothesized measurement model was tested with factor loadings free to vary across groups. This test was conducted to evaluate the assumption of configural invariance; that is, whether the number and pattern of factors was invariant across gender. The configural invariance model served as a baseline model against which other models were compared to establish invariance. Second, metric invariance, which implies that factors have the same meaning across genders, was examined. Specifically, the configural model (free factor loadings and thresholds) was compared to a model in which the factor loadings were constrained equal across gender. If the configural and metric invariance models were not significantly different from each other, then metric measurement invariance was assumed. However, a
finding of non-invariance would have to be explored by freeing one factor loading at a time to determine the source(s) of the non-invariance.

The final step included a test of scalar invariance, which would mean that group mean comparisons would be meaningful. The metric invariance model (including free thresholds) was compared with a model in which item thresholds (for categorical variables) or intercepts (for continuous variables) were constrained equally across gender. A non-significant difference represented scalar invariance. However, following a finding of non-invariance, item thresholds or intercepts would be tested one by one to determine the cause of the invariance; and these thresholds or intercepts would be freed in future analysis. In addition, in order to conduct latent mean comparisons, at least partial scalar invariance; i.e., some of the thresholds/intercepts invariant across gender, would have to be observed (Hancock, 2004).

It is possible to go beyond scalar invariance and conduct additional tests for strict or complete invariance – in which item residual variances are equivalent across groups. However, in the current study I did not test for residual invariance because residual invariance may be an excessively stringent assumption (Vandenberg & Lance, 2000). For each test of measurement invariance; i.e., metric and scalar invariance, a two out of three rule was used to evaluate invariance (Dimitrov, 2010). That is, the null hypothesis of measurement invariance would be rejected if two of the following three criteria were met: (a) significant chi-square difference (p < 0.05), (b) CFI difference of .01 or greater, and/or (c) TLI difference of .02 or greater. Chi-square differences cannot be estimated directly in Mplus models using the WLSMV estimator. The DIFFTEST option of the analysis command, however, can be used to compare a given model to a nested null
hypothesis model (Muthén & Muthén, 1998-2010). The DIFFTEST option was therefore used to evaluate the chi-square difference of two models.

**Structural equation modeling.** Each of the aims in the current study was evaluated using structural equation modeling. SEM was selected to examine the research questions in the current study for two reasons. First, it allows for inclusion of both latent and observed constructs. Second, it allows for examination of indirect or mediated effects. Third, it allows for simultaneous testing of multiple models, including comparisons between direct and indirect models. The following is an explanation of how SEM was used to test each of the aims of the study.

**Aim #1.** Aim 1 was to test a prospective model in which parental attachment in adolescence exerts an indirect effect on sexually transmitted infections in adulthood through relationship expectations in adolescence and through casual sex in emerging adulthood. The direct relationships in the hypothesized model were evaluated using probit regression, which is specified using the WLSMV estimator with categorical outcomes. Similar to CFA, in SEM a RMSEA of .05, a CFI of .95, a TLI of .95, and a non-significant chi-square value were taken as indicative of good fit and a RMSEA of .08, a CFI of .90, and a TLI of .90 were taken as indicative of adequate fit (Byrne, 2001).

**Aim #2.** Aim 2 was to determine whether relationship expectations mediated the relationship between mother-adolescent relationships and casual sex. Hypothesized mediational pathways within the model were tested using the asymmetric distribution of products test (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002). In this procedure, the path coefficients within the mediational chain are multiplied, and if the confidence interval for this product does not include 0, then partial mediation is assumed.
Four specific mediation pathways were tested for both genders: (a) from parental attachments to sexualized relationship expectations to hook ups, (b) from parental attachments to sexualized relationship expectations to FWB, (c) from parental attachments to romanticized relationship expectations to hook ups, and (d) from parental attachments to romanticized relationship expectations to FWB.

*Aim # 3.* Aim 3 was to test whether the hypothesized relationships differed by gender. To determine gender differences in the model, multiple group analyses were conducted, which allows for comparison of model fit across groups. However, the exact methodology was dependent on the results of measurement invariance. If the measurement model were to be invariant across gender, the exact same model would be estimated for men and women (all factor loadings and intercepts/thresholds constrained). On the other hand, if the assumption of invariance were to be statistically rejected, factor loadings and the thresholds/intercepts would all be constrained, except for those items that were found to be non-invariant. These items would be freed in all subsequent analyses. Gender invariance in the significant regression coefficients were evaluated in a two-step approach outlined by Kwan and Chan (2011). First, two multigroup models were estimated – one with each path coefficient allowed to vary across gender, and a second with each coefficient constrained equal across gender. Similar to the case of measurement invariance testing, a two out of three rule was used to evaluate invariance: significant $\chi^2$ difference (using DIFFTEST) $\Delta$TLI $\geq .02$ and $\Delta$CFI $\geq .01$. 
Chapter 4: Findings

Descriptive Analysis

**Baseline characteristics.** Table 1 presents the baseline characteristics of study participants by gender. The study sample consisted of an approximately equal proportion of men (50.92%) and women (49.08%). Additionally, baseline socio-demographic characteristics were similar across gender. For instance, the ethnic distribution did not differ significantly by gender, $\chi^2 = 4.69, p = .21$. Both groups were predominately White (71.55% for men and 72.56% for women) followed by Black (12.30% for men and 13.67% for women), Hispanics (11.86% for men and 9.94% for women), and other (4.20% for men and 3.83% for women). The genders did not differ on other demographic variables, including family structure, parents’ level of education and socioeconomic status as measured by having at least one parent on public assistance. However, men were significantly older than women were, $t = 2.44, p = .02$. Therefore, age was added to the model as a covariate.

**Study predictors.** Table 2 provides the descriptive information for items in each of the three study scales (mother-adolescent attachment, romanticized relationship expectations and sexualized relationship expectations) by gender. Mean responses to each item in the mother-adolescent attachment scale were between 3.9 and 4.88, suggesting a strong attachment to mother for both men and women. However, boys reported a significantly higher score on each of the items when compared to girls ($t$ values ranged from 2.51 to 5.29, all $ps < .01$). Similar proportions of boys and girls reported endorsing the majority of activities listed in the romanticized relationship expectations scale. Specifically, boys and girls were similarly likely to endorse telling others of their relationship (92.74% for boys, 94.30% for girls), holding hands (95.10%
for boys, 96.38% for girls), thinking of themselves as a couple (96.49% for boys, 95.61% for girls) and kissing (94.02% for boys, 93.02% for girls). The only exception was in the belief that persons in a romantic relationship would go out alone together. Boys were more likely to endorse this item compared to girls (92.50% versus 88.30%, $\chi^2 = 11.29, p < .001$). Both genders were more likely to endorse romanticized expectations as compared to sexualized relationship expectations. In addition, boys were more likely than girls to endorse a majority of the sexualized activities. A significantly greater proportion of boys than girls believed that persons in a relationship should touch under clothes (60.21% versus 45.66%, $\chi^2 = 51.31, p < .001$), have sex (51.61% versus 33.96%, $\chi^2 = 63.88, p < .001$), and get pregnant (12.82% versus 9.80%, $\chi^2 = 4.55, p = .03$). However, boys and girls were similarly likely to endorse talking about contraception or sexually transmitted diseases (64.30% versus 64.44%).

**Study outcomes.** Table 3 provides the proportion of young adults who reported engaging in FWB at Wave III. Men were significantly more likely than women to report having FWBs ($\chi^2 = 41.74, p < .001$). Specifically, men were more likely than women to report engaging in one (16.61% for men, 10.77% for women), two (6.15% for men, 3.52% for women), three (2.38% for men, 0.66% for women) and four or more (1.61% for men, 0.72% for women) FWBs. Additionally, Table 4 provides the proportion of young adults who reported engaging in hookups at Wave III. Similar to FWBs, men were significantly more likely to report engaging in hookups at wave III ($\chi^2 = 27.52, p < .001$). Specifically, men were more likely than women to report engaging in one (8.18% for men, 3.52% for women), two (2.00% for men, 0.71% for women) and three (0.69% for men, 0.27% for women) hookups. Table 5 provides the proportion of sexually transmitted
infections reported by Wave III participants by gender. According to participants’ self-reports, sexually transmitted infections were diagnosed in a small proportion of the young adults in the survey. Only 7.6% of young adults reported being diagnosed with at least one STI in the past 12 months. Women were more likely than men to be diagnosed with at least one STI (10.38% for women, 4.28% for men; $\chi^2=37.80, p < .001$). In addition, women were more likely than men to report a diagnosis of Chlamydia (3.96% for women, 2.06% for men; $\chi^2 = 8.74, p = .004$), trichomoniasis (0.90% for women, 0.27% for men; $\chi^2 = 4.76, p = 0.03$), genital warts (2.29% for women, 0.60% for men; $\chi^2 = 10.00, p = .002$) and Human Papillomavirus (2.85% for women, 0.02% for men; $\chi^2 = 25.18, p < .001$).

Correlation analysis. Table 6 displays the correlation coefficients for study variables among men. In this group, mother-adolescent attachments were correlated with sexualized relationship expectations ($r = .20, p < .001$). In addition, romanticized relationship expectations were directly correlated with sexualized relationship expectations ($r = .19, p = .01$) and inversely correlated with FWB ($r = -.15, p = .01$) and hookups ($r = -.26, p < .001$). On the other hand, sexualized relationship expectations were inversely correlated with FWBs ($r = -.16, p < .001$). In addition, friends with benefits was correlated with hookups ($r = .26, p < .001$). Table 7 displays the correlation coefficients for study variables among women. Among women, mother-adolescent attachments were correlated with sexualized relationship expectations ($r = .27, p < .001$). In addition, romanticized relation expectations were related to sexualized relationship expectations ($r = .26, p < .001$). Finally, FWBs were correlated with hookups ($r = .26, p < .001$). Based on correlation analysis the subsequent models included a correlation between hookups
and FWBs and between romanticized relationship expectations and sexualized relationship expectations.

**Missing Data**

Many of the variables had minimal missing values. For instance, 170 adolescents reported not having a biological/resident mother and therefore did not provide information about mother-adolescent attachment. Additionally, 21 adolescents either refused to answer or answered “I don’t know” to all of the relationship expectation items in the survey. With regard to Wave III emerging adult data, 27 participants did not provide information on sexually transmitted infections. The majority of the Wave III missing data, however, involved questions regarding casual sex; 235 young adults did not provide sufficient information to answer FWB and 605 did not provide information on hookups. Table 8 provides socio-demographic characteristics of participants with missing information on romanticized and sexualized relationship expectations. Only ethnicity ($\chi^2 = 11.00; p = .01$) was related to having a missing value on relationship expectations. Table 9 provides socio-demographic characteristics of participants with missing information on FWBs. Age ($t = 2.16; p = .03$), parent education ($\chi^2 = 13.64; p < .001$) and socioeconomic status ($\chi^2 = 8.85; p = .004$) were related to having missing information. Table 10 shows the socio-demographic characteristics of participants with missing information on hookups. Missingness on hookup was only related to family structure ($\chi^2 = 6.00; p = .01$) and parental education ($\chi^2 = 4.42; p = .005$). Table 11 shows the socio-demographic characteristics of participants with missing information on sexually transmitted infections. Variables found to be predict missingness on any of the mediating or outcome variables were added as covariates in the full SEM model.
Confirmatory Factor Analysis

Results from the confirmatory factor analysis are provided in Figure 5. Factor loadings for the indicators of the mother-adolescent attachment scale were all acceptable ($\geq .50$). Specifically, the warmth (.72), communication (.80), overall relationship (.85), closeness (.72) and care (.50) indicators all loaded acceptably on the mother-adolescent attachment scale. Similarly, the telling others (.73) going out alone (.83), holding hands (.81), thinking as a couple (.85) and kissing (.92) indicators all loaded acceptably on the romanticized relationship expectations scale. Finally, items within the sexualized relationship expectations loaded acceptably on the sexualized relationship expectations scale. Specifically, the factor loadings for the contraception, touching under clothes, sex and pregnant indicators were .61, .94, .96 and .54 respectively. Modification indices suggested that the two indicators in the mother-adolescent attachments scales should be allowed to correlate (closeness and care). This correlation was included in the model in all subsequent steps. The final model fit was then acceptable: CFI = .91; TLI = .93; RMSEA = .07; $\chi^2$ (21) = 387.70, $p < .001$.

Measurement Invariance

Table 12 summarizes the tests for measurement invariance by gender. The configural invariance model indicated acceptable fit for the data with $\chi^2 = 358.55$ (37), $p < .001$, a CFI value of .924, a TLI value of .928 and a RMSEA value of .07. In addition, all factor loadings were greater than .50 for both genders, indicating configural invariance. The metric invariance model was then estimated. This model also provided an adequate fit to the data ($\chi^2 = 344.65$ (39), $p < .001$; CFI = .927; TLI = .935; RMSEA = .069). In addition, the test for metric invariance, which involved comparing the configural and
metric invariance models, was non-significant ($\chi^2 = 10.70$ (9), $ns$; $\Delta$TLI = .007; $\Delta$CFI = .003). The null hypothesis of metric invariance was therefore retained. The final step involved constraining the item intercepts/thresholds as well as the factor loadings. This model had $\chi^2 = 355.63$ (41), $p < .001$, a CFI value of .925, a TLI value of .936 and a RMSEA value of .067. In addition, the fit of the scalar invariance model was not significantly different from that of the metric invariance model. Specifically, although the chi-square test was significant ($\chi^2 = 52.19$ (9), $p < .001$), the change in TLI was less than .02 ($\Delta$TLI = .001) and the change in CFI was less than .01 ($\Delta$CFI = .002). The null hypothesis of scalar invariance was therefore retained and latent means could be compared.

Table 13 shows the results from the test for mean difference by gender for each of the latent scales in the measurement model. For each scale, the mean for men was constrained to zero and the mean value for women was the difference in latent means between men and women (Hancock, 2001). The difference in latent means for women in the mother-adolescent scale as compared to men was significantly different from zero (difference = −.33, SE = .09, $p < .001$), indicating that men perceived greater attachments to their mothers. Men and women did not differ significantly on romanticized relationship expectations (difference = −.36, SE = 0.20, $p = .08$). On the other hand, women reported significantly higher mean sexualized relationship expectations (difference = 0.37, SE = 0.10, $p < .001$).
Structural Equation Modeling

**AIM 1.** To test a prospective model in which parental attachment in adolescence exerts an indirect effect on sexually transmitted infections in adulthood through relationship expectations in adolescence and through casual sex in emerging adulthood.

Figure 6 displays the results from the overall structural equation model, Standardized regression coefficients are presented. The overall SEM model provided an adequate fit for the data, $\chi^2 = 269.01$ (37), $p < .001$; CFI = .927, TLI = .92 and RMSEA = .047. Mother-adolescent attachments were significantly, positively, and directly associated with sexualized relationship expectations ($\beta = .12, p < .001$). In addition, although hookups were not related to relationship expectations, FWB was negatively related to both romanticized relationship expectations ($\beta = -.12, p = .02$) and to sexualized relationship expectations ($\beta = -.25, p < .001$). Finally, FWB (but not hookups) were directly associated with being diagnosed with a sexually transmitted infection in the previous 12 months ($\beta = .16, p = .02$).

**AIM 2.** To determine the role of relationship expectations as a mediator in the relationship between mother-adolescent relationships and casual sex.

Table 14 shows the results from the test of partial mediation in the overall structural equation model. Only one of the four hypothesized mediational pathways – the path from mother-adolescent attachment to FWB through sexualized relationship expectations – was statistically significant. Specifically, the inverse association between secure mother adolescent attachment and FWB was partially mediated by higher sexualized relationship expectations ($\beta = -.06, 95\% CI = -.09$ to -.02). However, the path from mother-adolescent attachment to FWB through romanticized relationship
expectations was not significant ($\beta = -.02$, 95% CI = -.04 to .004). In addition, neither path from mother-adolescent attachment to hookups was significant. Specifically, the pathway through romanticized relationship expectations was not significant ($\beta = -.02$, 95% CI = -.05 to .009) and the pathway through sexualized relationship expectations ($\beta = -.02$, 95% CI = -.06 to .007) was also not significant.

**AIM 3.** To determine whether the hypothesized model differs among men and women.

The multigroup SEM model provided an adequate fit for the data ($\chi^2 = 350, p < .001; \text{CFI} = .913; \text{TLI} = .905; \text{RMSEA} = .05$). Figure 7 displays the structural equation model by gender. Among men mother-adolescent attachments were significantly and directly associated with sexualized relationship expectations ($\beta = .10$, $p = .002$) but not with romanticized relationship expectations. In addition, both romanticized relationship expectations ($\beta = -.18$, $p = .004$) and sexualized relationship expectations ($\beta = -.21$, $p = .001$) were inversely related to FWBs. Furthermore, romanticized relationship expectations, ($\beta = .70$, $p < .001$) but not sexualized relationship expectations, were inversely related to hookups. Finally, FWBs (but not hookups) were directly associated with being diagnosed with a sexually transmitted infection in the previous 12 months ($\beta = .23$, $p = .009$). Table 15 displays the results from the test of partial mediation in the men structural equation model. When the indirect hypothesis was examined, the association between mother-adolescent attachment and friends with benefits was partially mediated by sexualized relationship expectations ($\beta = -.02$, 95% CI = -.04 to -.001).

Among women mother-adolescent attachments were significantly and directly associated with sexualized relationship expectations ($\beta = .18$, $p < .001$) but not with
romanticized relationship expectations. In addition, FWBs were inversely related to sexualized relationship expectations ($\beta = -.20, p = .006$) but not to romanticized relationship expectations. Additionally, hookups were not related to either romanticized relationship expectations or sexualized relationship expectations. Finally, FWBs (and not hookups) were directly associated with being diagnosed with a sexually transmitted infection in the previous 12 months ($\beta = .21, p = .005$). Table 16 displays the results from the test of partial mediation in the women structural equation model. As was found for men, the association between mother-adolescent attachment and FWB was partially mediated by sexualized relationship expectations ($\beta = -.03, 95\% \text{ C.I} = -.05 \text{ to } -.004$).

Finally, tests to determine the differences in the regression coefficients revealed several differences by gender. Table 17 shows the results of test of invariance by gender of beta coefficients for significant relationships in the hypothesized model. The effect of mother-adolescent attachments on sexualized relationship expectations was higher among women than among men. Invariance testing revealed that this difference was significant: $\Delta \chi^2 (2) = 62.47, p < .001; \Delta \text{CFI} = .02; \Delta \text{TLI} = .02$. Invariance testing also indicated that the regression coefficient for the relationships between romanticized relationship expectations and FWBs ($\Delta \chi^2 (2) = 128.92, p < .001; \Delta \text{CFI} = .021; \Delta \text{TLI} = .021$) and between sexualized relationship and FWBs ($\Delta \chi^2 (2) = 231.9, p < .001; \Delta \text{CFI} = .033; \Delta \text{TLI} = .034$) was significantly stronger among men. Additionally, the regression coefficient for the relationship between romanticized relationship expectations and hookups was significantly higher among men ($\Delta \chi^2 (2) = 354.6, p < .001; \Delta \text{CFI} = .045; \Delta \text{TLI} = .046$). However, the relationship between FWBs and sexually transmitted infections did not differ significantly by gender.
Chapter 5: Discussion

The purpose of the current study was to further the understanding of casual sex in emerging adulthood by examining both its predictors and consequences. More specifically, the objective was to examine a hypothesized model of casual sex in which (a) mother-adolescent attachments served as a predictor, both directly and indirectly through relationship expectations, and (b) sexually transmitted disease served as an outcome. Findings from the present study largely support previous literature that has highlighted the pivotal role of mothers in not only the development of offspring in childhood but also as they transition into adulthood. The present results also support previous suggestions that casual sex in emerging adulthood represents a risky form of sexual activity. However, the current study also extends previous studies by specifying the effects of mother-adolescent attachments on two very distinct types of casual sex. For instance, secure mother-adolescent attachments in adolescence indirectly influenced engagement in FWB through sexualized relationship expectations. Secure mother-adolescent attachments, however, did not have either a direct or indirect impact on engagement in hookups. The current study also adds to previous literature by demonstrating an empirical association between casual sex and sexually transmitted infections in a nationally representative sample of emerging adults. Given the association between casual sex and STI’s, the current study suggests the need for efforts to reduce casual sex or, at the very least, promote sexual responsibility among emerging adults who engage in casual sex. The study also suggests that early mother-adolescent attachments, which promote healthy sexual expectations, could be one mechanism through which casual sex behaviors are influenced.
Gender Differences in Study Variables

Notable gender differences were observed in each of the important study variables. For instance, contrary to what was expected, boys reported a significantly higher attachment to mothers than girls did. While several studies have found the opposite association (Geuzaine et al., 2000), some others have, in fact, found mother-adolescent attachment to be higher among boys (Copeland, 2010). One explanation for this contradiction could be the increasing relevance of peer attachments in adolescent females in comparison to adolescent males (Ma & Huebner, 2008). Ma and Huebner (2008) argued that the effects of peers may overshadow adolescents’ need for parental involvement. In addition, as expected, sexualized relationship expectations were higher among men. These findings are consistent with several studies suggesting that men, more so than women, value physical aspects of a relationship such as pleasure (Meston & Buss, 2007; Stephenson et al., 2011). Also consistent with previous research was the finding that men were significantly more likely to engage in both types of casual sex. There could be several reasons for this difference; first, the sexual behavior of women may be inhibited by social double standards that dictate that men can be more sexually permissive than women can (Kreager & Staff, 2009). In addition, women may be inclined to underreport, and men more inclined to over-report, their sexual behavior because of the same double standards. Finally, the finding that women were more likely to report a sexually transmitted infection is consistent with current surveillance data on STI diagnosis among emerging adults (CDC, 2011). This is reflected in the fact that based on medical recommendations sexually active adolescent females 18 years and older are
expected to obtain annual gynecological examinations and have more opportunities for STI diagnosis.

**The Hypothesized Model**

The hypotheses for aim # 1 were partially supported by the study results. For instance, mother-adolescent attachments were found to predict sexualized relationship expectations, but not romanticized relationship expectations. This maybe because romanticized relationship activities such as kissing, hand-holding, and going out together are more prevalent in early adolescence then sexual behaviors which generally comes a bit later. In the current study, nearly all adolescents endorsed the romanticized relationship expectations items, whereas endorsement of the sexualized relationship expectations items ranged from 6.2% to 62.4%. Another study (Ott, Millstein, Ofner, & Halpern-Felsher, 2006) similarly found that both male and female adolescents rank their expectations for romance higher than their expectation for sexual pleasure. Sexualized relationship expectations, therefore, might be a more malleable construct, and may be more strongly influenced by one’s social environment compared to romanticized relationship expectations. Although no study, to my knowledge, has examined the relative contribution of mother-adolescent attachments on romanticized and sexualized relationship expectations, one study (Cavanagh, 2007) found that living with two biological parents had a stronger effect on sexualized relationship expectations than on romanticized relationship expectations.

The hypothesis that relationship expectations would be predictive of casual sex behaviors was partially supported. Specifically, both romanticized and sexualized relationship expectations were predictive of FWB encounters, but not hookups, in
emerging adulthood. One potential explanation for this finding may be that hookups are often spontaneous and impulsive and are not often linked to preconceived beliefs about what would happen, or would not happen, during the sexual relationship. Indeed most hookups, approximately 65%, are facilitated by alcohol consumption – suggesting that hook ups are facilitated by lowered sexual inhibitions (Grello et al., 2006). On the other hand, FWB are often linked to preconceived notions of relationships. With respect to romanticized relationship expectations, Hughes et al. (2005) found that, in a sample of 143 college students, FWB were associated with the belief that love is about game-playing, and with the tendency to shy away from romantic commitments. Hughes et al. also found that FWB relationships often include preconceived values that advocate for the strict control of emotion in order for the sexual relationship to be maintained: these values included not becoming emotionally involved and not spending the night after a sexual encounter. In support of the hypothesis that sexualized relationship expectations are more strongly linked to FWB than to hookups, Richey, Knox, and Zusman (2009) found that, compared to hook up relationships, FWB relationships were more strongly associated with hedonistic sexual values, including an emphasis on pleasure seeking and self-gratification.

The hypothesis that secure mother-adolescent attachments in adolescence would be both directly and indirectly protective against engaging in casual sexual behaviors was partially supported. Specifically, in the current study I did not find a direct relationship between mother-adolescent attachments and casual sex, however, I did find that secure mother-adolescent expectations predicted FWB indirectly through higher sexualized relationship expectations. An indirect link between mother-adolescent attachment and
FWB may suggest that parents continue to serve as powerful agents of socialization even into emerging adulthood and that earlier parenting continues to affect offspring outcomes through a chain of offspring life outcomes. In support of this finding, (Aquilino, 1997) provided considerable support for some degree of continuity in parent-child relations from adolescence to young adulthood. Early parental relationships have additionally been shown to translate into reduced engagement in risky sexual behaviors (Schwartz et al., 2009). Several hypotheses have been offered to explain these associations. This study supports the hypothesis posited by Bowlby (1982) that parents attachments affect behaviors into adulthood by influencing their working models or expectations.

I also hypothesized that casual sex would increase the likelihood of being diagnosed with a sexually transmitted infection. An association was observed between FWB and STI diagnosis, but not between Hookups and STI diagnosis. One possible explanation for the relationship between STI diagnosis and FWB and not hookups may be the lack of condom use in one type of sexual behavior as opposed to the other. Many emerging adults have a heuristic belief about sex; “a known partner is a safe partner” (Thorburn, Harvey, & Ryan, 2005; Vanderdrift, Lehmiller, & Kelly, 2010). Specifically, they perceive that greater risk of sexually transmitted infection accompanies casual sex with a stranger than with a friend. This belief may cause emerging adults to behave differently during the two types of casual sexual relationships. For instance, emerging adults engage in a wider range of sexual behaviors, and are less likely to use a condom, with a friend than with a stranger (Ellen et al., 1996; Macaluso, Demand, Artz, & Hook, 2000; Monahan & Lee, 2008). In addition, friends with benefit relationships include more
frequent acts of sexual intercourse than hook up relationships so that the chances for exposure may be higher for this type of casual sex.

The Importance of Gender

There were notable gender differences in many of the model results. For instance, among women, mother-adolescent attachments more strongly predicted sexualized relationship expectations as compared to men. A stronger effect among women is consistent with what I expected and has been hypothesized to stem from women’s greater dependence on, need for social support from and susceptibility to influence from parents. Several studies show that parental attachments more strongly influence the social functioning of girls than of boys. For instance, Liu (2008) found that parental attachment was a stronger predictor of expectations with regard to peer relationships among girls than boys, providing support for the conclusion that the relationship expectations among women are more strongly influenced by parents when compared to men.

Contrary to expectations, however, we found that relationship expectations played a stronger role on the casual sexual behaviors of men than of women. I had expected that among women desire for a stable, long-term relationship and emotional closeness would translate to engagement in fewer casual sexual encounters. However, I found that sexualized expectations played a stronger role on FWB among men than among women. Additionally, I found that romanticized relationship expectations predicted both Hookups and FWB among men, whereas these expectations did not significantly affect either type of casual sexual behavior among women. Several explanations can be offered for these counter-hypothetical findings. There may be circumstances in which thoughtfulness about dating and romance does not correlate with sexual behavior. These circumstances
may involve social pressure and alcohol consumption. Unfortunately, both of these factors are more important among women who are most likely to be pressured into casual sex and for whom alcohol is most likely to compromise their decision-making. For instance, previous research shows that women’s, but not men’s, alcohol use influence critical decisions during hook ups (Owen & Fincham, 2011; Scott-Sheldon et al., 2009). However, these explanations are most appropriate to explain the lack of association between relationship expectations and hookups – and less relevant to FWB’s.

Confusion about the future of the casual sexual encounter may be a reason for the gender differences in the effects of relationship expectations on FWB. Grello et al. (2006) found that a significantly higher (17% vs. 3%) proportion of women than men reported believing that a casual sex act was the “beginning of a romance”. The expectation of a romantic relationship may lead women to engage in casual sex despite endorsing high romantic expectations. In fact, several studies have found that persons (especially women) who are “anxious” about romance are more likely to engage in risky sexual behaviors including condom non-use (Owen et al., 2010). Another study found that women who engaged in FWB relationships often desire a romantic relationship and use the encounter as a test relationship (Jonason et al., 2009). Again, in this scenario, high relationship expectations would not necessarily translate into lower engagement in FWB. A final explanation for the lack of association between relationship expectations and casual sex among women may be that women’s relationship expectations in adolescents are not the same in emerging adulthood. This suggestion can provide the explanation for the congruence between conceptions of ideal relationships and sexual behavior one year
later (Cavanagh, 2007), but not seven years later (Oberlander, Agostini, Houston, & Black, 2010).

**Limitations**

The current findings should be considered in light of several limitations. First, in the current study, I sought to extend the understanding of casual sex in contemporary emerging adults – but the Add Health’s third wave in which our emerging adult sample was taken was collected in 2002. Sexual behaviors, their influences and their consequences, are likely different in 2012 than in 2002 as a result of changing norms and social structures. For instance, contemporary emerging adults are more likely to cohabit and delay marriage. Second, as is the case with any secondary dataset, the variables in the dataset may have been different than those that would be included in a study specifically designed to address the present hypotheses. For instance, items that more directly measure casual sex would be used if the opportunity was present, rather than a composite of several items. In addition, a comprehensive list of the social cognitive processes such as control beliefs and social norms could have been included as potential mediation pathways. Additionally, Add Health respondents may have misinterpreted some of the items related to romantic relationships. Specifically, the Add Health protocol included the requirement that respondents answer questions related to three kinds of relationships: (1) sexual relationships, (2) important relationships, and/or (3) couple relationships. According to this protocol, all casual sex encounters, hookups and FWB would be included in the analysis since they included sexual intercourse. However, many respondents may have been confused with the wording and may have only included relationships that were of significance, most likely refraining from including casual sex
behaviors that would not, by definition, be emotionally important (Lyons, Manning, Giordano, & Longmore, 2010). This may have accounted for the low occurrence of hookups and FWB reported in Add Health compared to other national datasets. Additionally, some respondents may also have failed to report casual sexual behaviors because of the feelings of regret and remorse that sometimes accompany casual sex (Eshbaugh & Gute, 2008).

Finally, some aspects of the study are longitudinal in nature, but others are cross-sectional and, therefore, causality or directionality could not be inferred. For instance, mother-adolescent attachments and relationship expectations were both measured at wave I, and it is therefore not possible to determine the causal order between these two variables. However, it is likely that aspects of the mother-adolescent relationship, such as levels of warmth and extent of open communication, precede the formation of relationship expectations. Similarly, casual sex and sexually transmitted infections were both measured at wave III, so that it cannot be determined whether casual sex preceded the diagnosis of sexually transmitted diseases or vice versa. However, given the fact that casual sexual relationships were measured in relationships up to 5 years in the past and STI diagnosis was based on the last 12 months, it is likely that, in many cases, casual sex preceded the STI diagnosis. Notwithstanding these limitations, the current study found early mother-adolescent attachments to have an indirect effect on FWB through sexualized relationship expectations. In addition, the study found FWB to increase the risk of sexually transmitted infections in emerging adulthood.
Implications

The current study has several important implications. For instance, the finding that casual sex carries physical health consequences in the form of sexually transmitted infections in both men and women is of great importance. Sexually transmitted infections can lead to far greater health concerns including chronic disease, disability, and death. Hence, it is essential for emerging adults to make responsible decisions about casual sex, and for public health practitioners to reduce casual sex behaviors among emerging adults.

The present findings suggest that a way to reduce the incidence of casual sex, especially among men, is by promoting sexualized and romanticized relationship expectations. Therefore, emerging adults and public health practitioners who seek to reduce casual sex or promote responsible casual sex behaviors should seek to promote beliefs that sexual activities should occur in the context of a romantic relationship. Additionally, among men, public health interventions that promote romance, emotional attachments, and commitment may also be a way to reduce casual sex behaviors.

Additionally, I found that mother-adolescent attachments in early and middle adolescence may play an important role in the formation of sexualized relationship expectation, which may in turn serve as an important deterrent of casual sex behaviors in emerging adulthood in both genders. In light of the study findings, promoting parenting skills involving nurturance, warmth, and care giving skills may indirectly influence casual sex behaviors in emerging adulthood. As young adults delay marriage further into the life course (or choose not to marry at all), they are likely to view activities that once coincided with marriage (such as sexual activity and childbirth) as acceptable in other types of committed or uncommitted relationships. The present findings suggest that
parents play an important role in guiding decision making regarding relationships and sexual activity. Hence, public health practitioners who wish to reduce casual sexual activities in emerging adults may seek to promote positive mother-adolescent relationships in adolescence.

**Implications for Future Research**

Future studies on the mother-adolescent predictors and STI consequences of casual sex should be conducted in a manner that can fully test for mediation. That is, mother-adolescent attachment, relationship expectations, casual sex behaviors, and sexually transmitted infections should all be measured at different time points. Furthermore, in addition to mother-adolescent attachments, future studies should focus on the role of father-adolescent attachments in directly and indirectly influencing casual sex behaviors. Adolescent-father attachment impacts adolescent adjustment in a different way from the mother-adolescent attachment (Grossmann et al., 2002). Liu (2008), for instance, found that attachment to mothers and fathers contributed to different aspects of their offspring’s social development. In their study, father-adolescent attachment, rather than mother-adolescent attachment contributed to social expectations with regard to peers. In addition, Schwartz et al. (2009) found separate effects of mothering and fathering on risk behaviors in emerging adulthood. Therefore, future studies should disentangle the effects of mother and father attachments in forming sexualized and romanticized relationship expectations and in engaging in FWB and Hookup relationships. Finally, although the use of the Add Health dataset in the current study provided several advantages, including a large sample size and a nationally representative sample, it also introduced several limitations. Future studies should include a more recent
sample of emerging adults, so that predictors and consequences of casual sex among more contemporary emerging adults can be determined. In addition, the use of a dataset which defines casual sex relationships more clearly could also reduce the under reporting of casual sex due to a misinterpretation of study items. Such future investigations will be valuable because they have the potential to lead to a greater understanding of casual sex in emerging adulthood.

Conclusion

Extended periods of identity development in emerging adulthood have led to changing social norms which are more sexually permissive. With this, casual sex, a risky form of behavior is becoming more frequent. The current study extended the knowledge of the predictors and consequences of casual sex in emerging adulthood. Specifically, mother-adolescent attachment was found to reduce the likelihood of casual sex through higher sexualized relationship expectations. Additionally, casual sex was associated with a higher rate of sexually transmitted infections. In addition to adding to knowledge on the predictors and consequences, the study findings highlight the value of differentiating between hookups and FWB in understanding the etiology of casual sex behaviors in emerging adulthood. Friends with benefits are deliberately chosen form of casual sex and hookups are generally impulsive and involve alcohol consumption. Probably for this reason, the findings of the current study point to FWB being more easily molded by earlier parental relationships than hookups. Additionally, FWB and not hookups was associated with a diagnosis of sexually transmitted infections. Emerging adults, an age group with the highest occurrence of sexually transmitted infections, should therefore make responsible choices about casual sex either by abstaining from casual sex or
through consistent condom use during casual sex. Mother-adolescent attachments may be a viable mechanism of change.
Figures

Figure 1: The hypothesized model
Figure 2: Sampling procedure for school selection in the Add Health survey

QED: 26,666 High Schools

Systematic random based on urbanicity, census region, school size, school type, percentage white

80 High Schools selected

Feeder schools based on the number of students filtered into high school (if no 7th grade)

132 Schools

52 Feeder Schools selected
Figure 3: Sample Size in each stage of the Add Health sampling procedure

All students in the 7th – 12th grade in selected schools: 119,233

Completed the in-school survey 90,118

In-home random selection by gender, sex and school 27,559

Completed the in-home survey: 20,745

Core at home sample 12,105

Special oversamples

Public use dataset (half of core sample) 6,072

Participants who also completed wave III 4490
Figure 4: The hypothesized measurement model
Figure 5: Results from confirmatory factor analysis

Mother-adolescent attachments
- Warmth: .72
- Communication: .80
- Relationship: .85
- Closeness: .72
- Care: .50

Romanticized relationship expectations
- Tell: .73
- Alone: .83
- Hands: .81
- Think: .85
- Kiss: .92

Sexualized Relationship Expectations
- Contraception: .61
- Touch: .94
- Sex: .96
- Pregnant: .54
Figure 6: Results from the overall structural equation model

- *.08
- -.04
- -.02
- .12***
- -.10
- -.12*
- -.25***
- -.13
- .16*
- .04
- .04

*p < .05
**p < .01
***p < .001
Figure 7: Results from the structural equation model by gender

Results from the men’s model given above and from the women’s model are below (parenthesized)

*p< .05
** p< .01
***< .001
### Table 1: Baseline socio-demographic characteristics of study participants by gender

<table>
<thead>
<tr>
<th>Baseline Characteristics</th>
<th>Men (1543(50.92%))</th>
<th>Women (1764(49.08%))</th>
<th>(\chi^2) or T</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>15.92 (.12)</td>
<td>15.74 (.12)</td>
<td>2.44</td>
<td>.02</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Hispanic White</td>
<td>1045 (71.55)</td>
<td>1200 (72.56)</td>
<td>4.69</td>
<td>.21</td>
</tr>
<tr>
<td>Non-Hispanic Black</td>
<td>236 (12.30)</td>
<td>315 (13.67)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>182 (11.86)</td>
<td>167 (9.94)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>80 (4.20)</td>
<td>82 (3.83)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family structure</td>
<td></td>
<td></td>
<td>2.42</td>
<td>.12</td>
</tr>
<tr>
<td>Two biological parents</td>
<td>1079 (7.86)</td>
<td>1177 (67.78)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single or no parent household</td>
<td>462 (29.14)</td>
<td>586 (32.23)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parent’s Highest Level of Education</td>
<td></td>
<td></td>
<td>1.44</td>
<td>.84</td>
</tr>
<tr>
<td>Less than a high school diploma</td>
<td>162 (12.07)</td>
<td>215 (13.56)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High School Graduate or equivalent</td>
<td>510 (38.36)</td>
<td>576 (37.19)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some College</td>
<td>291 (19.97)</td>
<td>338 (2.77)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>College Graduate</td>
<td>445 (29.60)</td>
<td>493 (28.44)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Socioeconomic Status</td>
<td></td>
<td></td>
<td>0.34</td>
<td>.56</td>
</tr>
<tr>
<td>Low</td>
<td>1380 (9.67)</td>
<td>1563 (91.37)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medium to High</td>
<td>135 (9.33)</td>
<td>159 (8.63)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*a. This number may not sum to the total number of participants because of missing data*

*b. Reflects the representative proportion of the target U.S. population*
Table 2: Descriptive information for each of the three study scales (mother-adolescent attachment, romanticized relationship expectations and sexualized relationship expectations) by gender

<table>
<thead>
<tr>
<th>Scale</th>
<th>Men</th>
<th>Women</th>
<th>( \chi^2 ) or T</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Item Mean (SE)</td>
<td>Item Frequency (%)</td>
<td>Item Mean (SE)</td>
<td>Item Frequency (%)</td>
</tr>
<tr>
<td><strong>Mother-adolescent attachment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Warmth</td>
<td>4.45 (.02)</td>
<td>4.31 (.03)</td>
<td>4.26</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Communication</td>
<td>4.15 (.03)</td>
<td>3.92 (.04)</td>
<td>5.29</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Relationship</td>
<td>4.39 (.02)</td>
<td>4.21 (.03)</td>
<td>4.80</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Closeness</td>
<td>4.62 (.02)</td>
<td>4.42 (.03)</td>
<td>5.20</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Care</td>
<td>4.88 (.01)</td>
<td>4.82 (.02)</td>
<td>2.51</td>
<td>.01</td>
</tr>
<tr>
<td><strong>Romanticized Relationship Expectation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tell others</td>
<td>1414 (92.74)</td>
<td>1642 (94.30)</td>
<td>2.36</td>
<td>.13</td>
</tr>
<tr>
<td>Go out alone</td>
<td>1414 (92.50)</td>
<td>1550 (88.30)</td>
<td>11.29</td>
<td>.001</td>
</tr>
<tr>
<td>Hold Hands</td>
<td>1453 (95.10)</td>
<td>1680 (96.38)</td>
<td>2.06</td>
<td>.15</td>
</tr>
<tr>
<td>Think as a couple</td>
<td>1472 (96.49)</td>
<td>1672 (95.61)</td>
<td>1.46</td>
<td>.23</td>
</tr>
<tr>
<td>Kiss</td>
<td>1442 (94.02)</td>
<td>1623 (93.02)</td>
<td>1.46</td>
<td>.23</td>
</tr>
<tr>
<td><strong>Sexualized Relationship Expectations</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contraception</td>
<td>985 (64.30)</td>
<td>1117 (64.44)</td>
<td>0.006</td>
<td>.94</td>
</tr>
<tr>
<td>Touch under clothes</td>
<td>935 (6.21)</td>
<td>789 (45.66)</td>
<td>51.31</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Sex</td>
<td>794 (51.61)</td>
<td>596 (33.96)</td>
<td>63.88</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Pregnant</td>
<td>188 (12.82)</td>
<td>172 (9.80)</td>
<td>4.55</td>
<td>.03</td>
</tr>
</tbody>
</table>
Table 3: Proportion of study participants who engaged in FWB encounters at wave III by gender and number of encounters

<table>
<thead>
<tr>
<th>Number of Friends with benefits encounters</th>
<th>Men</th>
<th></th>
<th></th>
<th>Women</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No of participants$^a$</td>
<td>Weighted %$^b$</td>
<td>No. of participants$^c$</td>
<td>Weighted %$^b$</td>
<td>$\chi^2$</td>
<td>p</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>1038</td>
<td>73.25</td>
<td>1379</td>
<td>84.33</td>
<td>41.74</td>
<td>&lt;.001</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>142</td>
<td>16.61</td>
<td>173</td>
<td>1.77</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>46</td>
<td>6.15</td>
<td>59</td>
<td>3.52</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>19</td>
<td>2.38</td>
<td>13</td>
<td>.66</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$\geqslant$4</td>
<td>14</td>
<td>1.61</td>
<td>15</td>
<td>.72</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- This number may not sum to the total number of men because of missing data
- Reflects the representative proportion of the target U.S. population
- This number may not sum to the total number of women because of missing data
Table 4: Proportion of study participants who engaged in hookups at wave III by gender and number of encounters

| Number of Hookups | Men |         |         |         |         |         |         |
|-------------------|-----|---------|---------|---------|---------|---------|
|                   | No of participants | Weighted % | No. of participants | Weighted % | χ² | p       |
| 0                 | 1015 | 73.25   | 1365    | 94.97   | 27.52   | <.001   |
| 1                 | 104  | 8.18    | 49      | 3.52    |         |         |
| 2                 | 27   | 2.00    | 13      | .71     |         |         |
| 3                 | 9    | .69     | 4       | .27     |         |         |
| 4                 | 6    | .51     | 8       | .52     |         |         |

a. This number may not sum to the total number of men because of missing data
b. Reflects the representative proportion of the target U.S. population
c. This number may not sum to the total number of women because of missing data
Table 5: Sexually transmitted infections reported by wave III participants by gender

<table>
<thead>
<tr>
<th>Sexually transmitted infection</th>
<th>Men</th>
<th></th>
<th></th>
<th>Women</th>
<th></th>
<th></th>
<th>( \chi^2 )</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No of participants</td>
<td>Weighted %&lt;sup&gt;a&lt;/sup&gt;</td>
<td>No. of participants</td>
<td>Weighted %&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>At least one</td>
<td>71</td>
<td>4.28</td>
<td>176</td>
<td>10.36</td>
<td>37.80</td>
<td>&lt;.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chlamydia</td>
<td>39</td>
<td>2.06</td>
<td>70</td>
<td>3.96</td>
<td>8.74</td>
<td>.004</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gonorrhea</td>
<td>18</td>
<td>1.19</td>
<td>13</td>
<td>0.74</td>
<td>0.73</td>
<td>.39</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trichonomiasis</td>
<td>4</td>
<td>0.27</td>
<td>17</td>
<td>0.90</td>
<td>4.76</td>
<td>.03</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Syphilis</td>
<td>4</td>
<td>0.01</td>
<td>2</td>
<td>0.17</td>
<td>0.95</td>
<td>.33</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Genital Herpes</td>
<td>11</td>
<td>0.70</td>
<td>24</td>
<td>1.38</td>
<td>2.27</td>
<td>.13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Genital Warts</td>
<td>10</td>
<td>0.60</td>
<td>34</td>
<td>2.29</td>
<td>10.00</td>
<td>.002</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human Papillomavirus</td>
<td>5</td>
<td>0.02</td>
<td>48</td>
<td>2.85</td>
<td>25.18</td>
<td>&lt;.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HIV/AIDS</td>
<td>5</td>
<td>0.29</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>9</td>
<td>0.58</td>
<td>6</td>
<td>.58</td>
<td>0.001</td>
<td>.99</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup> Reflects the representative proportion of the target U.S. population
Table 6: Correlations for study variables in the men structural equation model

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Mother-adolescent attachments</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Romanticized relationship expectations</td>
<td>.11</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Sexualized relationship expectations</td>
<td>.20***</td>
<td>.19**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 FWB</td>
<td>-.05</td>
<td>-.15**</td>
<td>-.16***</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 Hookups</td>
<td>-.05</td>
<td>-.26***</td>
<td>-.06</td>
<td>.30***</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>6 Sexually transmitted infections</td>
<td>-.04</td>
<td>-.04</td>
<td>-.09</td>
<td>.05</td>
<td>.04</td>
<td>1</td>
</tr>
</tbody>
</table>

*** p < .001

** p < .01
Table 7: Correlations for study variables in the women structural equation model

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Mother-adolescent attachments</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Romanticized relationship expectations</td>
<td>.11</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Sexualized relationship expectations</td>
<td>.27***</td>
<td>.26***</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 FWB</td>
<td>-.08**</td>
<td>-.03</td>
<td>-.11</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 Hookups</td>
<td>-.03</td>
<td>-.002</td>
<td>-.05</td>
<td>.26***</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>6 Sexually transmitted infections</td>
<td>-.04</td>
<td>-.04</td>
<td>-.06</td>
<td>.11</td>
<td>.02</td>
<td>1</td>
</tr>
</tbody>
</table>

** p< .01  
***< .001
Table 8: Socio-demographic characteristics of participants with missing information on romanticized and sexualized expectations

<table>
<thead>
<tr>
<th></th>
<th>χ² or T</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>.21</td>
<td>.84</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Hispanic White</td>
<td>11.00</td>
<td>.01</td>
</tr>
<tr>
<td>Non-Hispanic Black</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family Structure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Two biological parents</td>
<td>2.50</td>
<td>.12</td>
</tr>
<tr>
<td>Single or no parent household</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parent Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than a high school diploma</td>
<td>5.57</td>
<td>.14</td>
</tr>
<tr>
<td>High School Graduate or equivalent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some College</td>
<td></td>
<td></td>
</tr>
<tr>
<td>College Graduate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Socioeconomic Status</td>
<td>.13</td>
<td>.72</td>
</tr>
<tr>
<td>Low</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medium to High</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 9: Socio-demographic characteristics of participants with missing information on FWB

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>$\chi^2$ or t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>2.16</td>
<td>.03</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Hispanic White</td>
<td>6.87</td>
<td>.08</td>
</tr>
<tr>
<td>Non-Hispanic Black</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family Structure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Two biological parents</td>
<td>2.52</td>
<td>.11</td>
</tr>
<tr>
<td>Single or no parent household</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parent Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than a high school diploma</td>
<td>13.64</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>High School Graduate or equivalent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some College</td>
<td></td>
<td></td>
</tr>
<tr>
<td>College Graduate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Socioeconomic Status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>8.85</td>
<td>.004</td>
</tr>
<tr>
<td>Medium to High</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 10: Socio-demographic characteristics of participants with missing information on hookups

<table>
<thead>
<tr>
<th></th>
<th>$\chi^2$ or t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>1.96</td>
<td>.05</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Hispanic White</td>
<td>.32</td>
<td>.96</td>
</tr>
<tr>
<td>Non-Hispanic Black</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family Structure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Two biological parents</td>
<td>6.00</td>
<td>.02</td>
</tr>
<tr>
<td>Single or no parent household</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parent Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than a high school diploma</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High School Graduate or equivalent</td>
<td>4.42</td>
<td>.005</td>
</tr>
<tr>
<td>Some College</td>
<td></td>
<td></td>
</tr>
<tr>
<td>College Graduate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Socioeconomic Status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>1.53</td>
<td>.22</td>
</tr>
<tr>
<td>Medium to High</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 11: Socio-demographic characteristics of participants with missing information on sexually transmitted infections

<table>
<thead>
<tr>
<th></th>
<th>$\chi^2$ or $t$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>.51</td>
<td>.61</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Hispanic White</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Hispanic Black</td>
<td>.63</td>
<td>.11</td>
</tr>
<tr>
<td>Hispanic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family Structure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Two biological parents</td>
<td>.68</td>
<td>.41</td>
</tr>
<tr>
<td>Single or no parent household</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parent Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than a high school diploma</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High School Graduate or equivalent</td>
<td>3.36</td>
<td>.35</td>
</tr>
<tr>
<td>Some College</td>
<td></td>
<td></td>
</tr>
<tr>
<td>College Graduate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Socioeconomic Status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>.35</td>
<td>.55</td>
</tr>
<tr>
<td>Medium to High</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 12: Summary of fit statistics for the tests of gender invariance in the measurement model

<table>
<thead>
<tr>
<th>Step</th>
<th>Procedure</th>
<th>CFI</th>
<th>TLI</th>
<th>RMSEA</th>
<th>ΔCFI</th>
<th>ΔTLI</th>
<th>$\chi^2$</th>
<th>Δdf</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Baseline configural model</td>
<td>.924</td>
<td>.928</td>
<td>.07</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Test for metric invariance (Factor loadings constrained)</td>
<td>.927</td>
<td>.935</td>
<td>.069</td>
<td>.003</td>
<td>.007</td>
<td>1.71</td>
<td>9</td>
<td>.30</td>
</tr>
<tr>
<td>3</td>
<td>Test for scalar invariance (Factor Loadings and thresholds/intercepts constrained)</td>
<td>.925</td>
<td>.936</td>
<td>.067</td>
<td>.002</td>
<td>.001</td>
<td>52.194</td>
<td>9</td>
<td>&lt;.00</td>
</tr>
</tbody>
</table>
Table 13: Results from the test of mean difference by gender for each of the latent scales in the measurement model

<table>
<thead>
<tr>
<th>Scale</th>
<th>Mean difference</th>
<th>SE</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mother-Adolescent attachment</td>
<td>-.33</td>
<td>.09</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Relationship Expectations</td>
<td>-.36</td>
<td>.20</td>
<td>.08</td>
</tr>
<tr>
<td>Sexualized expectations</td>
<td>.37</td>
<td>.09</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>
Table 14: Results from the test of partial mediation in the overall structural equation model

<table>
<thead>
<tr>
<th>Specific Indirect Effect</th>
<th>Standardized β</th>
<th>Lower 95% CI</th>
<th>Higher 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mother-adolescent attachment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Romanticized relationship Expectations FWB</td>
<td>-.02</td>
<td>-.04</td>
<td>.004</td>
</tr>
<tr>
<td>Sexualized relationship expectations FWB</td>
<td>-.06</td>
<td>-.09</td>
<td>-.02</td>
</tr>
<tr>
<td>Romanticized relationship expectations Hook ups</td>
<td>-.02</td>
<td>-.05</td>
<td>.009</td>
</tr>
<tr>
<td>Sexualized relationship expectations Hook ups</td>
<td>-.02</td>
<td>-.06</td>
<td>.007</td>
</tr>
</tbody>
</table>
Table 15: Results from the test of partial mediation in the men structural equation model

<table>
<thead>
<tr>
<th>Specific Indirect Effect</th>
<th>Standardized β</th>
<th>Lower 95% CI</th>
<th>Higher 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mother-adolescent attachment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Romanticized relationship Expectations FWB</td>
<td>-.01</td>
<td>-.03</td>
<td>.006</td>
</tr>
<tr>
<td>Sexualized relationship expectations FWB</td>
<td>-.02</td>
<td>-.04</td>
<td>-.001</td>
</tr>
<tr>
<td>Romanticized relationship expectations Hook ups</td>
<td>-.06</td>
<td>-.16</td>
<td>.04</td>
</tr>
<tr>
<td>Sexualized relationship expectations Hook ups</td>
<td>-.008</td>
<td>-.03</td>
<td>.02</td>
</tr>
</tbody>
</table>
Table 16: Results from the test of partial mediation in the women structural equation model

<table>
<thead>
<tr>
<th>Specific Indirect Effect</th>
<th>Standardized β</th>
<th>Lower 95% CI</th>
<th>Higher 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parental Attachment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Romanticized relationship expectations FWB</td>
<td>-.002</td>
<td>-.01</td>
<td>.006</td>
</tr>
<tr>
<td>Parental Attachment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sexualized relationship expectations FWB</td>
<td>-.03</td>
<td>-.05</td>
<td>-.004</td>
</tr>
<tr>
<td>Parental Attachment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Romanticized relationship expectations Hook ups</td>
<td>-.002</td>
<td>-.01</td>
<td>.01</td>
</tr>
<tr>
<td>Parental Attachment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sexualized relationship expectations Hook ups</td>
<td>-.02</td>
<td>-.04</td>
<td>.009</td>
</tr>
</tbody>
</table>
Table 17: Results from tests of coefficient invariance by gender for each of the significant relationships in the structural equation model

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Predictor</th>
<th>CFI</th>
<th>TLI</th>
<th>ΔCFI</th>
<th>ΔTLI</th>
<th>$\chi^2$</th>
<th>Δdf</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline model</td>
<td></td>
<td>.913</td>
<td>.905</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sexualized Relationship</td>
<td>Mother-adolescent Attachments</td>
<td>.897</td>
<td>.889</td>
<td>.016</td>
<td>.016</td>
<td>62.47</td>
<td>2</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>FWB</td>
<td>Romanticized relationship expectations</td>
<td>.892</td>
<td>.883</td>
<td>.021</td>
<td>.022</td>
<td>128.92</td>
<td>2</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>Sexualized relationship expectations</td>
<td>.880</td>
<td>.871</td>
<td>.033</td>
<td>.034</td>
<td>231.86</td>
<td>2</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>Romanticized relationship expectations</td>
<td>.868</td>
<td>.859</td>
<td>.045</td>
<td>.046</td>
<td>354.57</td>
<td>2</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Hookups</td>
<td></td>
<td>.911</td>
<td>.905</td>
<td>.002</td>
<td>.00</td>
<td>7.68</td>
<td>2</td>
<td>.02</td>
</tr>
<tr>
<td>Sexually transmitted infections</td>
<td>FWB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
References


