Adolescents' Sexual Risk Indicators: The Interplay of Faulty Relationship Beliefs, Healthy Sex Attitudes, Attachment Security, Gender and Relationship Status

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Indicators of adolescents' engagement in risky sexual behaviors remains a critical concern in modern day society. Although moral debate continues, sexual exploration during adolescence is considered normative. According to the Centers for Disease Control and Prevention (2017), over 40% of adolescents (ages 15-19 years old) indicated having had sexual intercourse. Examples of sexual risk indicators for adolescents include beginning sexual activity at a young age, having multiple and casual sexual partners, engaging in a high frequency of sexual activity, and inconsistent condom use (e.g., Feeney, Peterson, Gallois, & Terry, 2000; Letcher & Slesnick, 2014; Tracy, Shaver, Albino, & Cooper, 2003). Variability in adolescents' sexual risk indicators remains a pressing concern for scholars of adolescent development and practitioners who work with adolescents.

Understanding factors that exacerbate or mitigate risky sexual experiences is important for adolescents' emotional, social, and physical health outcomes. For instance, Kahn et al. (2018) in their examination of 7th through 12th grade adolescents found that having fewer lifetime sexual partners was associated with lower odds of sexually transmitted infections, unintended pregnancies, and higher odds of better romantic relationship quality. Adolescents' romantic attachment insecurity, as well as their beliefs about relationships and sex may be particularly important for understanding risky sexual engagement during this developmental period (McElwain, Kerpelman, & Pittman, 2015; Tracy et al., 2003). Whether sexually active adolescents are in serious committed romantic relationships or short-term, casual relationships also may matter (Manning, Longmore, & Giordano, 2005; Manning, Giordano, & Longmore, 2006). It remains to be examined how attachment security and adolescents' beliefs about sex and

relationships collectively influence specific indicators of risky sexual engagement and how these associations may vary according to gender and relationship status.

Two studies addressed these research gaps. Study 1 used a test-replication design to examine how attachment insecurity, healthy sex attitudes, and faulty relationship beliefs directly and indirectly influenced sexual risk indicators for adolescents. In Study 2, to better understand risks for adolescents in casual dating relationships, the model tested in the first study was used to compare sexually active male and female adolescents in casual, uncommitted or non-dating relationships with their counterparts in serious, committed relationships. Together, these studies contribute to current understanding of factors associated with adolescent sexual risk.

Study 1

The present study used the framework of a risk/protective factor model (Manning et al., 2005) derived from Problem-Behavior Theory (PBT; Jessor, 1991) to examine influences on sexual risk indicators. According to PBT, in order to reduce risks, it is crucial to understand the antecedents of these risks (Jessor, 1991). Antecedents are referred to here as risk factors that may increase the probability of risky sexual engagement. In the current study, sexual risk indicators (i.e., indicators of risky sexual engagement) reflected varying degrees of adolescent choice that are common in prior research (e.g., age at sexual debut, number of sexual partners, condom use) (e.g., Feeney et al., 2000; Letcher & Slesnick, 2014; Tracy et al., 2003). Predictors expected to be associated with greater risk included attachment insecurity (i.e., avoidance and anxiety) and faulty relationship beliefs (i.e., unrealistic beliefs about romantic relationships and mate selection). PBT also argues the importance of addressing factors that minimize the likelihood of risks (Jessor, 1991). Thus, healthy attitudes about sex were examined as protective factors

against sexual risk indicators. Our set of predictors comprise what is on the minds of adolescents and how their perceptions are associated with indicators of risky sexual engagement.

Romantic Attachment Insecurity and Adolescents' Sexual Activity

Romantic attachment in adolescence evolves from earlier attachment (in)security with caregivers and is further shaped by close relationship experiences in childhood and adolescence (Pittman, Keiley, Kerpelman, & Vaughn, 2011). Attachment theory holds that individuals may have trouble forming intimacy in their romantic relationships due to their worries or discomfort with such unions. Individuals may devalue or avoid intimacy out of fear of rejection or fear of losing their independence or they may become enmeshed in the relationship to the point of over-dependence on their partner (Bartholomew, 1990; Bartholomew & Horowitz, 1991). Through this framework, two dimensions of romantic attachment insecurity were developed: (a) anxious (feeling overly dependent on the relationship partner) and (b) avoidant (evading closeness with one's romantic partner, often out of fear of rejection or fear of losing self-autonomy) (Brennan, Clark, & Shaver, 1998). These dimensions of attachment insecurity link to various sexual behaviors seen in adolescence, including frequent sexual activity (Tracy et al., 2003) and low condom use during intercourse (Feeney et al., 2000). Although attachment orientations remain relatively stable across time, the quality of relationships with both parents and romantic partners influences adolescents' and young adults' romantic attachment insecurity and psychological adjustment (Dinero, Conger, Shaver, Widaman, & Larsen-Rife, 2011; Pittman et al., 2011; Viejo, Ortega-Ruiz, & Sánchez, 2015). Romantic attachment insecurity, in turn, affects how adolescents and young adults think about close relationships (McElwain et al., 2015; Schachner & Shaver, 2004) which is proximally associated with their sexual engagement (Davis, Shaver, & Vernon, 2004; Feeney, Kelly, Gallois, Peterson, & Terry, 1999; Feeney et al., 2000; Tracy et al., 2003).

Past research found that the attachment dimensions of anxiety and avoidance associate differently with sexual behaviors, but these findings are not always consistent across studies. Both Schachner and Shaver (2004) and Tracy et al. (2003) reported that adolescents with higher levels of avoidant or anxious attachment gave different reasons for engaging in sex, with avoidant adolescents doing so to lose their virginity, and anxious adolescents doing so to increase intimacy with the partner. Tracy et al. (2003) also found that adolescents with higher avoidance were less likely than secure or anxious adolescents to have ever had sexual intercourse and also reported to have less sexual experiences relative to secure and anxious adolescents. In a small sample of primarily white and African American heterosexual adolescent couples, Letcher and Slesnick (2014) showed that adolescents with higher attachment anxiety participated in a greater frequency of sexual behavior compared to adolescents with lower attachment anxiety; no association was found between sexual risk-taking and attachment avoidance. Furthermore, among heterosexual college students, greater anxiety was found to be associated with less frequent condom use (Feeney et al., 1999; 2000), whereas avoidance was associated with more frequent condom use for males (Feeney et al., 2000).

Additionally, several studies focusing on Canadian youth found similar associations between insecure attachment dimensions and sexual behavior. In a study of 1,553 Canadian adolescents ages 16-20, Lemelin, Lussier, Sabourin, Brassard, and Naud (2014) found that adolescent sexual risk-taking behaviors indicated via sexual intercourse at a young age and having more sexual partners (the latter was reverse coded so that higher scores indicated less sexual partners) were negatively predicted by attachment avoidance but not associated with attachment anxiety. In another Canadian sample focusing on young adults (ages 20-29), results showed that anxious attachment was associated with an earlier sexual debut, more lifetime

partners, and higher condom use. Furthermore, associations between attachment anxiety and sexual risk-taking were stronger for women than for men (Bogaert & Sadava, 2002).

Most of the studies reviewed used some version of the *Experiences in Close Relationships* measure of romantic attachment (Brennan et al., 1998; Fraley, Waller & Brennan, 2000) and focused on diverse indicators of sexual activity. Across the studies, findings show associations between insecure attachment and sexual risk-taking, with attachment avoidance and anxiety showing differing patterns. The present study builds on this literature by examining associations between attachment insecurity and sexual risk while controlling for beliefs about sex and relationships. Based on the literature reviewed, *it was hypothesized that greater anxious attachment would be related positively to sexual risk indicators, whereas avoidant attachment would be related to indicators of sexual risk indicators reflecting less commitment to or knowledge of the partner.*

Beliefs about Romantic Relationships and Sexual Activity

Just as romantic attachment insecurity has far reaching effects on adolescents' lives, relationship attitudes and beliefs that begin to take shape during early adolescence have the potential to set a foundation for future relationship trajectories that continue to influence relationship experiences across the lifespan (Bauermeister et al., 2010). For instance, research has demonstrated a compelling link between characteristics of relationship quality during adolescence and characteristics of relationship quality during emerging adulthood (Furman & Winkles, 2012; Madsen & Collins, 2011). Only limited studies have focused on adolescents' beliefs about relationships and their relative influence on engaging in or avoiding sexual activity and developing or maintaining romantic relationships (e.g., Mitchell, Tanner, & Raymond, 2004).

Individuals enter relationships with pre-existing beliefs about what relationships should be like, expectations for a satisfactory relationship, and how partners should behave in a romantic relationship (Ma, Pittman, Kerpelman, & Adler-Baeder, 2014; Sprecher & Metts, 1999). Notably, the start of creating a script for romantic relationships and potential relationship partners, as well as organizing one's ideology to try new behaviors or interpret the behaviors of a potential partner begins during adolescence (Furman & Simon, 1999). In Western culture, faulty relationship beliefs are personal beliefs toward romantic relationships and mate selection that "idealize" the notion of romantic relationships (Larson, 1992). For example, beliefs such as "love is enough to sustain a relationship" may influence mate selection during adolescence and young adulthood (Cobb, Larson, & Watson, 2003).

The relationship beliefs and attitudes that may influence sexual behaviors are dynamic, not fixed traits (Lantagne & Furman, 2017). The current perspective on adolescent risky sexual engagement emphasizes the need to unpack a range of possible actions and processes, including the beliefs that motivate decisions of whether or not to engage in sexual behaviors, not as fixed or oppositional constructs, but as processes of sexuality unique to adolescent development (Tolman & McClelland, 2011).

In a recent study of relationship beliefs among Belgian adolescent girls (ages 11-14), researchers illustrated that adolescents are likely to hold faulty relationship beliefs, such as the belief that one's true love will be nearly perfect (Driesmans, Vandenbosch, & Eggermont, 2016). However, few studies address connections between beliefs about relationships and sex and sexual behaviors. One study addressing among ninth graders in romantic relationships found that intimacy was valued the most, then status, then pleasure as motivation for sexual behavior (Ott, Milstein, Ofner, & Halpern-Felsher, 2006). The motive of having sex to build intimacy was also

found to be related to unprotected sex among adolescents (Geghardt, Kuyper, & Greusven, 2003). Another study found that non-dating sexual partnerships were associated with adolescents' hopes or expectations that the relationship would lead to more conventional dating relationships (Manning et al., 2006). Moreover, Bersamin, Walker, Fisher, and Grube (2006) found that early to middle adolescents' endorsements of negative health expectations pertaining to having sex (e.g., getting a sexually transmitted infection) negatively predicted engagement in oral sex and vaginal intercourse. Lastly, McElwain et al. (2015) indicated that endorsing positive attitudes about sex was related to less engagement in risky sexual behaviors during adolescence. Given these past findings, *it was expected that high endorsements of faulty relationship beliefs would be related to more sexual risk indicators, whereas high endorsements of healthy sex attitudes would be related to lower sexual risk indicators.*

Indirect Associations among Attachment Security, Beliefs and Sexual Risk

Another aspect of PBT is the consideration of how risk and protective factors may work together to influence sexual risk indicators. Because romantic attachment security evolves, in part, from earlier childhood attachment to caregivers (Pittman et al., 2011), and beliefs and attitudes about romantic relationships and sexual activity take shape during adolescence (Bauermeister et al., 2010), it may be that romantic attachment insecurity predicts sexual risk through associations with faulty relationship beliefs or attitudes about sex (see McElwain et al., 2015). Thus, faulty relationship beliefs and heathy sex attitudes were both examined as intervening variables between romantic attachment insecurity and indicators of sexual risk indicators.

Demographic Covariates

Gender, race, and participants' socioeconomic status (SES) were examined as covariates given their significance on risky sexual behaviors. Past studies have shown that adolescents who engage in risky sexual behaviors are more likely to be younger, more likely to be boys, more likely to come from an ethnic minority background, and are more likely to come from a lower SES household (Harris, Duncan, & Boisjoly, 2002; Manning, Longmore, & Giordano, 2000; Manning et al., 2005, 2006). Thus, these demographics were important to include as covariates in the present study.

The Present Study

In summary, this study aims to examine how attachment insecurity, faulty relationship beliefs, and healthy sex attitudes work together as risk/protective factors to explain adolescents' sexual risk. The following hypotheses were posed:

- Hypothesis 1: Higher levels of attachment anxiety will predict greater sexual risk across the indicators. Higher levels of attachment avoidance will be associated primarily with risk indicators of relationship commitment and length of time knowing the partner (i.e., greater avoidance will be related to less commitment to and less time knowing the sexual partner).
- Hypothesis 2: Higher endorsements of faulty relationship beliefs will be related to greater sexual risk indicators.
- Hypothesis 3: Higher endorsements of healthy sex attitudes will be related to lower sexual risk indicators.
- Hypothesis 4: Attachment insecurities will show indirect associations with sexual risk indicators through faulty relationship beliefs and healthy sex attitudes.

Method

Data from two cohorts were analyzed for this test-replication study. Both cohorts were recruited, one year apart, for a five-year evaluation project known as Healthy Couples Healthy Children: Targeting Youth (HCHCTY) (Kerpelman et al., 2012). Written assent/consent for both cohorts were provided by participants/parents for data collection. Data were collected during regular school hours from public high schools across a Southern state in the United States. All participants were enrolled in a mandatory health class.

Participants and Procedure

Cohort 1. The first cohort consisted of 2,577 adolescent youth who were recruited during the third year of the HCHCTY project. Only pre-test data (data collected prior to the evaluation) were used in Study 1. Adolescents were dropped from this study if they indicated they were virgins at the time of data collection (n = 1,331). Adolescents who indicated to have had sex at age nine of younger were also dropped from this study (n = 29) in order to exclude adolescents who may have been molested or made to engage in sexual activities without their consent. Also dropped were adolescents with missing data across all the study variables (n = 284) and participants with responses categorized as inconsistent (e.g., responses suggested that they did not take the survey seriously or that they misunderstood the question) (n = 55). Inconsistent cases were more likely to have been males (χ^2 (1) = 10.06, p < .01) and to have been part of an ethnic minority group (χ^2 (1) = 7.16, p < .01).

The final analysis sample was composed of predominately 10th graders (58%; N = 878 adolescents). Approximately 35% of the analysis sample was 16 years old (Age range: 14-20 years old; M = 16.50; SD = 1.06), female (51.1%) and more than half of adolescents received free/reduced lunch (52.6%). Nearly half of adolescents identified as European-Americans (46.2%) whereas the remainder of the sample identified as part of an ethnic minority background

(44.0% African Americans, 4.2% Hispanics/Latinos, 2.2% Native Americans, 0.8% Asian Americans, and 2.2% Other).

Cohort 2. The second cohort included almost 2,000 adolescent youth (*N* = 1,942) recruited during the fourth year of the HCHCTY project. As with Cohort 1, only pre-test data were used. Also, as with Cohort 1, virgins (*n* = 1,051), adolescents who were missing data across all variables of interests to this study (*n* = 66), adolescents who had sex at age nine or prior (*n* = 37), and whose data on these variables were labeled as inconsistent (*n* = 29) were removed from further analyses.

Thus, the analysis sample for Cohort 2 consisted of 759 adolescents. Adolescents were predominately 10th graders (55.7%) and were between the ages of 14-19 years old (*M* = 15.78; *SD* = .95). Slightly more than half of adolescents were male (50.2%) and more than half identified as African Americans (60.7%) whereas the remainder of the sample identified as European-Americans (31.4%), Hispanics/Latinos (3.3%), Native Americans (0.7%), Asian Americans (0.3%), and 3.2% Others. The majority of participants received free/reduced lunch (65.5%).

Measures for both Cohorts 1 and 2

Insecure Attachment Dimensions. The dimensions of insecure attachments were assessed by 18 selected items (nine for each dimensions) from the *Experiences in Close Relationships Scale* (Brennan et al., 1998). Items for the avoidant dimension assessed discomfort with intimacy (e.g., “I get uncomfortable when a romantic partner wants to be very close”) whereas items for the anxious dimension assessed dependency on the relationship (e.g., “My desire to be close sometimes scares people away”). Items were rated on a five-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Based on an independent sample,

correlations between the selected items and the full subscale were .97 for both subscales (Kerpelman et al., 2012). Cronbach alphas for cohorts 1 and 2 were .75 and .74, respectively for avoidance, and .80 and .82 respectively for anxiety. A composite score based on the mean of the items for each attachment dimension was created. Higher scores indicated more endorsement of each attachment dimension.

Healthy Sex Attitudes. Seven selected items from Gardner, Giese, and Parrott (2006) were used to assess reports of healthy sex attitudes. The selected items assessed the ability to wait to have sex (e.g., "In future dating relationships, I intend to wait to have sex until I really feel emotionally connected with my partner") and general attitudes regarding sexual intercourse (e.g., "It is risky for young teens to have sex"). Items were rated on a five-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*) (α = .69 for Cohort 1; α = .78 for Cohort 2). A composite score based on the mean of the items was created. Higher scores indicated more endorsement of healthy sex attitudes.

Faulty Relationship Beliefs. Faulty relationship beliefs were assessed via eight items selected from the *Attitudes and Romance Mate Selection scale* (Cobb et al., 2003). The selected items assessed the beliefs that there is one person meant for one to marry (e.g., "There is one true love out there who is right for me to marry") and love is enough to sustain a relationship (e.g., "In the end, our feelings of love for each other should be enough to sustain a happy marriage"). Items were rated on a five-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*) (α = .76 for Cohort 1; α = .74 for Cohort 2). A composite score based on the mean of the items was calculated. Higher scores indicated more endorsements of faulty relationship beliefs.

Sexual Risk Indicators. The following five items were used to assess sexual risk indicators across both cohorts: (a) Age at first sex ("How old were you when you first had sexual

intercourse?"). Responses ranged from 10-16 years old. (b) Number of sexual partners ("During your life, with how many people have you had sexual intercourse?" 1 (*one person*) – 5 (*five people or more*)), (c) Condom use ("In the last month, how much of the time did you or your sexual partner use a condom (rubber) when you had sexual intercourse?"; 1 (*None of the times*) – 5 (*Always*)), (d) Relationship length ("How long did you know the person with whom you most recently had sexual intercourse?"; 1 (*Knew the person less than a week*) – 5 (*Knew the person for more than six months*)), and (e) Seriousness of relationship ("How serious is the relationship with the person with whom you most recently had sexual intercourse?"; 1 (*We are not dating*) – 4 (*We are dating seriously and only each other*)). Participants in Cohort 2 also rated one item on a five-point scale (1 (*less than once a week*) – 4 (*four or more times a week*)) assessing how often have they had sexual intercourse with their partner (i.e., frequency of sex).

Demographic covariates. With the exception of age, all demographic variables were dichotomized (**Gender:** 0 = *male*, 1 = *female*; **Race:** 0 = *European-Americans*, 1 = *Minorities*; **Free/reduced lunch:** 0 = *No*, 1 = *Yes*). Free/reduced lunch was used to assess participants' socioeconomic status. **Age** was coded in years and ranged from 14-20 years old for Cohort 1 (M = 16.50; SD = 1.06) and ranged from 14-19 years old for Cohort 2 (M = 15.78; SD = .95).

Plan of Analysis

Preliminary analyses were conducted in SPSS Version 26 (IBM Corp, 2018). A structural equation model (SEM) with indirect effects was fit to the data in MPLUS Version 7 (Muthén & Muthén, 1998-2012) to answer the research questions of Study 1. All sexual risk indicators were treated as individual variables in the model predicted by all composite variables (i.e., anxious and avoidant attachment dimensions, healthy sex attitudes, and faulty relationship beliefs) while controlling for demographic covariates (i.e., sex, race, free/reduced lunch, and age). Pathways

with indirect effects were also included in the model to examine whether insecure attachment dimensions predicted any of the sexual risk indicators through healthy sex attitudes or faulty relationship beliefs. This procedure was conducted for both cohorts.

Full Information Maximum Likelihood (FIML) was used to manage missing data. Model fit for the SEM model was determined by a non-significant chi-square (χ^2), a comparative fit index (CFI) between .90 – 1.00 (Bentler & Bonnett, 1980), a root mean square error of approximation (RMSEA) of .10 of lower (Harlow, 2014), and a standardized root mean square residual (SRMR) of .10 or lower (Kline, 2016).

Results

Cohort 1

Approximately 78% of participants indicated to have had sex prior to the age of 16, 16% reported to have had sex with five or more people, 17% reported to have never used a condom during sex, 5% reported to only have known their partner for less than a week before engaging in sexual intercourse, and 28% of participants were not dating their partner before having sex. Means for insecure attachment dimensions, healthy sex attitudes, faulty relationship beliefs, and all five sexual risk indicators were compared across the categorical demographic groups (see Table 1). Intercorrelations across these variables are presented in Table 2.

SEM Results. The $\chi 2$ of the SEM model was significant, but this was expected as the χ^2 is typically influenced by large samples (i.e., the χ^2 is often significant in large samples) (Kline, 2016). The RMSEA was also slightly above the cutoff for an acceptable model fit, but the CFI and SRMR indicated that the model was an excellent fit to the data. High scores on the avoidant dimension were marginally related to condom use, suggesting that adolescents with high scores on the avoidant dimension were more likely to use a condom during sex. As expected,

adolescents with high scores on the avoidant dimension were less likely to be seriously involved with their partner before having sex. High scores on the anxious dimension were marginally negatively associated with age at first sex, thus, adolescents with high scores on the anxious dimension were more likely to have had sex for the first time at a younger age relative to their counterparts. Results also showed that adolescents who endorsed healthy sex attitudes were more likely to be older when they had sex for the first time, reported to have known their partner for a longer period before having sex, and reported less sexual partners during their lifetime. Lastly, participants who endorsed faulty relationship beliefs were less likely to use a condom during their last sexual encounter (see Table 3).

Indirect Effects. Five significant indirect effects were found. First, high scores on the avoidant dimension were related to lower scores on healthy sex attitudes (B = -.13, $p < .001$; β = -.13, $p < .001$) which in turn was associated with having sex for the first time at a younger age (B = .24, $p < .01$; β = .13, $p < .01$). High scores on the avoidant dimension were negatively related to healthy sex attitudes, and lower scores on healthy sex attitudes were related to having more sexual partners in a lifetime (B = -.42, $p < .001$; β = -.22, $p < .001$). Moreover, high scores on the avoidant dimension were related to lower scores on healthy sex attitudes, which in turn were related to knowing your partner for a shorter period before having sex (B = .29, $p < .001$; β = .19, $p < .001$). Therefore, avoidant attachment predicted sexual risk indicators through healthy sex attitudes for age at first sex, number of sexual partners, and length of time knowing a sexual partner (see Table 3).

Additionally, the anxious attachment predicted condom use through faulty relationship beliefs, where high scores on the anxious dimension were related to high scores on faulty relationship beliefs (B = .10, $p < .01$; β = .12, $p < .01$) which in turn were related to a lower

likelihood of using a condom while having sex (B = -.17, $p < .05$; β = -.08, $p < .05$). Furthermore, high scores on the avoidant dimension were related to lower scores on faulty relationship beliefs (B = -.29, $p < .001$; β = -.28, $p < .001$), which in turn were related to a higher likelihood for condom use during sex.

Cohort 2

The rates for risky sexual engagement in Cohort 2 was similar to Cohort 1. Approximately 78% of adolescents indicated having sex prior to the age of 16, 19% indicated having five or more people sexual partners in a lifetime, 15% reported having never used a condom during sex, 3% reported to have known their partner for less than a week prior to having sex, 34% reported not dating their partner before having sex, and 5% reported having sex with their partner four or more times a week. Means for insecure attachment dimensions, healthy sex attitudes, faulty relationship beliefs, and all six risky sexual engagement items were compared across all categorical demographic groups (see Table 1). Intercorrelations across these variables are presented in Table 2.

Differences across cohorts in the demographics, predictors, and outcomes were identified. Compared to Cohort 1 adolescents, adolescents in Cohort 2 were more likely to have received free/reduced lunch (χ^2 (1) = 21.13, $p < .001$), were more likely to identify as part of an ethnic minority group (χ^2 (1) = 37.77, $p < .001$), and were more likely to be younger (t (1615) = 14.38, $p < .001$). Cohort 2 adolescents also endorsed less faulty relationship beliefs (t (1526) = 3.46, $p < .01$), less healthy sex attitudes (t (1583) = 3.08, $p < .01$), and reported lower scores on the anxious dimension (t (1550) = 2.64, $p < .01$) relative to Cohort 1 adolescents. Regarding sexual risk indicators, Cohort 2 adolescents indicated to have had sex for the first time at a younger age than Cohort 1 adolescents (t (1496) = 2.98, $p < .01$). These adolescents also on

average reported to be less committed to their romantic partner (t (1487) = 3.09, $p < .01$) and reported to have had more sexual partners in a lifetime (t (1484) = -2.22, $p < .05$) relative to Cohort 1 adolescents.

SEM Results. First, an SEM model without the frequency of sex indicator was fit to the data. Although the χ^2 was significant and the RMSEA was above the accepted value for an acceptable model fit, values for the CFI and SRMR suggested that this model was an excellent fit to the data. Results showed that adolescents with high scores on the avoidant dimension were more likely to have had sex for the first time at a younger age, were more likely to have known their sexual partner for a short period of time, and were less likely to be committed to their partner before having sex. Adolescents with high scores on the anxious dimension were less likely to use a condom during sex. Endorsement of healthy attitudes about sex predicted being older before first having sex, having a lower number of sexual partners, and knowing a partner for a longer period of time before having sex. Lastly, adolescents with higher faulty relationship beliefs were more likely to be committed to their sexual partners (see Table 4).

Indirect Effects. Results also indicated four indirect effects. Two pathways showed indirect effects from attachment avoidance to two sexual risk indicators through healthy sex attitudes. Specifically, high scores on the avoidant dimension were related to lower endorsements of healthy sex attitudes (B = -.09, $p < .05$; β = -.08, $p < .05$), which in turn were related to having more sexual partners in a lifetime (B = -.41, $p < .001$; β = -.22, $p < .001$) and to knowing the sexual partner for a shorter period of time (B = .32, $p < .001$; β = .23, $p < .001$).

Two additional pathways from the attachment dimensions to seriousness of relationship through faulty relationship beliefs were found. High scores on the anxious dimension were related to faulty relationship beliefs (B = .21, $p < .001$; β = .23, $p < .001$), which in turn were

related to being more committed to one's partner (B = .27, p < .001; β = .15, p < .001). Additionally, high scores on the avoidant dimension were related to lower scores on faulty relationship beliefs (B = .32, p < .001; β = -.30, p < .001), which in turn were related to lower levels of commitment to one's partner (see Table 4).

Replication Findings Across Cohorts. Across both cohorts, healthy sex attitudes were related to having sex at an older age, a lower number of sexual partners in a lifetime, and knowing one's sexual partner for a longer timeframe. Avoidant attachment was associated with lower commitment in the relationship prior to sexual activity. Furthermore, attachment avoidance worked through healthy sex attitudes in relating to the number of sexual partners in a lifetime and the length of knowing a sexual partner.

SEM Results with Frequency of Sex. Next, the item frequency of sex was included in the model as a sexual risk indicator. Although the χ^2 remained significant ($\chi^2_{(1)}$ = 17.13, p < .001) and the RMSEA was above the cutoff of an acceptable model fit (RMSEA = .15, 90% Confidence Interval (CI) = [.09, .21]), the CFI was at .99 and the SRMR was at .01, both suggestive of an excellent model fit. Results indicated that high scores on healthy sex attitudes were related to lower frequency of sex during the week (B = -.30, p < .001; β = -.25, p < .001) whereas high scores on faulty relationship beliefs were related to having sex more often during the week (B = .10, p < .05; β = .08, p < .05).

Indirect Effects. High scores on the anxious dimension were related to high scores on faulty relationship beliefs (B = .21, p < .001; β = .23, p < .001), which in turn were related to having sex more often during the week. High scores on the avoidant dimension were related to low scores on healthy sex attitudes (B = -.09, p < .05; β = -.08, p < .05), which in turn were related to a higher frequency of sex during the week. Lastly, high scores on the avoidant

dimension were also related to low scores on faulty relationship beliefs (B = -.32, p < .001; β = -.30, p < .001), which was then associated with a lower sex frequency during the week.

Study 2

Study 2 builds on the findings of the first study to further explore sexual risk among adolescents in non-committed relationships. Specifically, the model examined in Study 1 was used in Study 2 to compare sexually active male and female adolescents in uncommitted relationships (i.e., non-committed group) with their counterparts in committed romantic relationships (i.e., seriously dating group). To date, there is a paucity of research devoted to understanding nonromantic, casual sexual experiences among adolescents (Collins et al., 2009). Such unions are critical to understand as adolescents who are having casual sex are at higher odds of experiencing negative mental health outcomes including depression and low self-esteem (Manning et al., 2005; Manning, Longmore, Copp, & Giordano, 2014). Adolescents engaging in casual sex are also more likely to engage in sexual risk-taking behaviors (e.g., the absence of condom use and other contraceptives during sex) (Ford, Sohn, & Lepkowski, 2001; Manlove, Ryan, & Franzetta, 2007; Manning et al., 2000) and are more likely to be diagnosed with a sexually transmitted infection relative to adolescents who are committed to their romantic partner (Gurvey, Adler, & Ellen, 2005; Rosenberg, Gurvey, Adler, Dunlop, & Ellen, 1999).

Nonromantic or casual sexual experiences have been examined as “sexual encounters with a friend, stranger, or acquaintance” (Paul et al., 2000, p. 76). Such encounters have often been referred to as “hook-ups” in the literature and may not always involve sexual intercourse (Bradshaw, Kahn, & Soville, 2010; Fortunato, Young, Boyd, & Fons, 2010). In other words, such experiences may be limited to kissing and/or other sexual activities that do not involve sexual intercourse (Fortunato et al., 2010). At times, these encounters may be perceived as one-

time events (e.g., one-night stands) but they can also be repeated occurrences with someone whom may not be recognized as a romantic partner. In the present study, the non-committed dating group consists of adolescents whom either were having sexual intercourse with someone that they were not dating or that they were dating casually (i.e., not seriously dating).

Most of the research on casual sex/nonromantic sexual activities have largely focused on young adult samples (e.g., Cubbins & Tanfer, 2000; Hennink, Cooper, & Diamond, 2000; Herold, Maticka-Tyndale, & Mewhinney, 1998; Maticka-Tyndale, Herold, & Mewhinney, 1998). However, a large percentage of adolescents' report to have sex within unions outside of the dating context. For instance, Carver, Joyner, and Udry (2003) found that slightly over 40% of sexually active teens were having sex with their dating partner. These findings coincide with Manning et al's. (2006) results of 61% of sexually active adolescents reporting to have sex in nondating relationships. Furthermore, Manning et al. (2005) found that 23.8% of sexually active adolescents within their sample indicated to have sex solely with a nonromantic partner, and nearly over a third (37.8%) of sexually active adolescents reported to have sex with both a romantic and a nonromantic partner. Lastly, Elo, King, and Furstenberg (1999) and Manning et al. (2000) both found based on their analyses of the 1995 National Survey of Family Growth that nearly one fourth (23%-24.2%) of adolescent girls lost their virginity to a nonromantic sexual partner (e.g., a stranger, a friend, or someone whom they were casually dating). These findings stress the need to understand nonromantic sexual experiences among adolescents.

Although the literature on adolescent nonromantic sexual experiences is sparse, the existing research on young adult nonromantic experiences allow for the assumption of group differences in the hypothesized pathways of the present study. For instance, it was found that high endorsements of an avoidant attachment style in young adulthood was associated with being

more accepting of casual sex (Feeney et al., 1993). Such individuals are also more likely to be sexually active within uncommitted relationships (e.g., one-night stands) (Brennan et al., 1998; Brennan & Shaver, 1995; Schachner & Shaver, 2002; see Feeney & Noller, 2004 for a review of the literature).

Gender matters for how adolescents experience romantic relationships. For example, Byers, Sullivan, and Brotto (2016) found more girls than boys reporting avoiding sexual activity. Additionally, Eaton and Stephens (2019) found in their sample of African American adolescents that girls' behavioral beliefs for avoiding unwanted outcomes of sexual risk-taking (e.g., sexually transmitted infections, loss of respect from peers), were related to resisting engagement in unwanted sexual activity. On the other hand, they found that girls who believed engaging in sexual activity was important to developing or maintaining a dating relationship were potentially at a higher risk for giving in to verbal sexual coercion. Findings from the same study showed for boys, the belief that engaging in verbal coercion would lead to having sex was viewed as a "benefit," whereas negative relationship outcomes (e.g., loss of the relationship) were viewed as a risk. Furthermore, in two studies, Manning and colleagues (Manning et al., 2005; 2006) found that more sexually active adolescent boys have sex in a nondating relationship relative to sexually active adolescent girls, and Maticka-Tyndale et al. (1998) indicated that more young adult males intended to engage in casual sex while on spring break relative to young adult women (although similar percentages of men and women participated in casual sex during spring break).

Taken together, prior research points to the need to examine gender differences to understand the sexual risks among adolescents engaged in non-committed dating relationships. In this second study, gender was considered in the comparisons of adolescents in non-committed

and serious dating relationships. The aim was to determine similarities and differences among sexually active adolescents in non-committed and serious dating relationships.

Method

Participants and Procedure

In order to increase power when comparing pathways across groups, data from both cohorts were combined into one dataset. Only adolescents who indicated to have had sex in the past 30 days prior to data collection were included in the analyses of Study 2. From this sample, four groups were created based on adolescents' gender, whether adolescents were either not dating or were casually dating their sexual partner (Non-committed group (NCG)), and whether adolescents were committed/seriously dating their sexual partner (Seriously dating group (SDG)). Thus, the following four groups were created: (a) SDG males (n = 193), (b) SDG females (n = 318), (c) NCG males (n = 179), and (d) NCG females (n = 111). This led to an analysis sample of 801 adolescents.

Adolescents were excluded from the analyses of Study 2 (n = 836) should they could not be categorized in either of these four groups. These adolescents were more likely to have been males (χ^2 (1) = 6.26, $p < .05$) and were more likely to be part of an ethnic minority group (χ^2 (1) = 11.82, $p < .01$). Adolescents who were excluded were also more likely to younger (t (1615) = 3.15, $p < .01$), endorsed lower levels of faulty relationship beliefs (t (1526) = 2.98, $p < .01$), and reported higher scores in the avoidant dimension (t (1550) = -5.24, $p < .001$). Furthermore, the excluded sample reported less sexual partners (t (1484) = 6.74, $p < .001$) and more use of a condom during sex (t (1472) = -3.45, $p < .01$).

The analysis sample was predominately 10th graders (62.4%) and were between the ages of 14-20 years old (M = 16.25; SD = 1.04). Nearly over half of participants were female (53.6%)

and indicated to received free/reduced lunch (58.1%). Moreover, the analysis sample was reasonable diverse, as in 43.6% identified as European-Americans, 47.4% identified as African Americans, 3.7% identified as Hispanics/Latinos, 1.6% identified as Native Americans, 0.5% identified as Asian Americans, and 2.6% identified as Others.

Measures

The same predictors and most of the sexual risk indicators used in Study 1 were also used in Study 2. Cronbach alphas were .74 for the avoidant dimension, .82 for the anxious dimension, .74 for healthy sex attitudes, and .76 for faulty relationship beliefs, respectively. Because seriousness of relationship was used as a grouping factor, this item was not used as a sexual risk indicator outcome in Study 2. Frequency of sex was also not used in Study 2 as data on this item were collected only for Cohort 2.

Demographic covariates. The same demographic covariates used in Study 1, except for gender, which was used as a grouping variable, were also used in Study 2.

Plan of Analysis

Preliminary analyses were conducted in SPSS Version 26 (IBM Corp, 2018). The main analyses to address the research questions of Study 2 were conducted in MPLUS Version 7 (Muthén & Muthén, 1998-2012). Same as for Study 1, FIML was used to manage missing data. An SEM model was first fit to the data to examine model fit before proceeding with the multi-group analyses of Study 2. This model included pathways of sexual risk indicators (i.e., age at first sex, number of sexual partners, condom use, and length with sexual partner) being predicted by all composite variables (i.e., anxious and avoidant attachment dimensions, healthy sex attitudes, and faulty relationship beliefs) while controlling for demographic covariates (i.e., race, free/reduced lunch, and age). Pathways were also fitted to test for the indirect effects examined

in Study 1. A non-significant χ^2, a CFI between .90 – 1.00 (Bentler & Bonnett, 1980), an RMSEA of .10 or lower (Harlow, 2014), and a SRMR of .10 or lower (Kline, 2016) were used as indicators of an adequate to an excellent model fit for the SEM model.

Next, a multi-group analysis was conducted that compared the pathways of the SEM model across the following four groups: (a) males SDG (n = 193), (b) females SDG (n = 318), (c) males NCG (n = 179), and (d) females NCG (n = 111). Comparisons were made for two groups at a time (e.g., males SDG vs. females SDG). For each comparison, pathways that were significant across both groups were constrained to equality across these groups. The χ^2 of the constrained models were then compared to the unconstrained model via $\Delta\chi^2$ tests. Pathways were concluded to be significantly different across groups should change in the overall χ^2 exceeded the critical value for one degree of freedom (χ^2 (1) = 3.84, $p < .05$) for the constrained model relative to the unconstrained models.

Results

Preliminary findings indicated that SDG females were overrepresented by European-American adolescents, whereas NCG males were overrepresented by adolescents who identified as part of a minority ethnic group (χ^2 (3) = 30.81, $p < .001$). ANOVA results with Bonferroni tests revealed that NCG females were more likely to be younger relative to other groups (F (3, 794) = 5.85, $p < .01$) and reported higher scores in the anxious dimension relative to SDG males (F (3, 790) = 2.57, $p = .05$). NCG male and female adolescents reported higher scores in the avoidant dimension relative to SDG male and female adolescents (F (3, 790) = 23.35, $p < .001$). Additionally, adolescent females regardless of the grouping category endorsed higher levels of healthy sex attitudes relative to their counterparts (F (3, 796) = 149.95, $p < .001$). SDG females also endorsed higher levels of faulty relationship beliefs relative to other groups (F (3, 792) =

23.00, $p < .001$). Regarding the sexual risk indicators, NCG males reported to have had sex for the first time at a younger age relative to their counterparts (F (3, 795) = 35.15, $p < .001$), indicated to have had more sexual partner in a lifetime compared to other groups (F (3, 788) = 40.97, $p < .001$), and reported to have known their sexual partner for a shorter period of time (F (3, 791) = 37.63, $p < .001$). Lastly, SDG females reported the lowest condom use during sex compared to other groups (F (3, 790) = 9.42, $p < .001$) (see Table 5).

Results for the overall SEM model with indirect effects suggested that it was safe to proceed with this model. Although the χ^2 was significant (χ^2 (1) = 12.29, $p < .001$) and the RMSEA was above the cutoff for an acceptable model fit (RMSEA = .12, 90% Confidence Interval (CI) = [.07, .18]) other fit indices indicated that the model was an excellent fit to the data (CFI = .99; SRMR = .01).

SDG and NCG Comparisons

Pathways were compared across the following four groups: (a) SDG males (n = 193), (b) SDG females (n = 318), (c) NCG males (n = 179), and (d) NCG females (n = 111). First, a model with all four groups was fit to the data (see Tables 6 and 7 for standardized and unstandardized coefficients for all four groups). Pathways that were significant across two groups were constrained to equality across these two groups and then compared via $\Delta\chi^2$ tests. Pathways were concluded as significantly different across both groups should change in the overall χ^2 between the constrained and unconstrained model exceed the critical value for one degree of freedom (χ^2 (1) = 3.84, $p < .05$).

High scores on healthy sex attitudes were negatively related to number of sexual partners in a lifetime and were positively related to length with sexual partner for SDG males and females (see Table 6). Results from $\Delta\chi^2$ tests revealed that these pathways were not significantly different

across these groups for number of sexual partners but were significantly different across groups for length with sexual partner. Specifically, for the latter, change in the overall χ^2 after these pathways were constrained to equality across both groups exceeded the critical value for one degree of freedom ($\Delta\chi^2 = 4.35$, $p < .05$). Thus, the relationship between healthy sex attitudes and length with sexual partner was stronger for SDG females relative to SDG males (see Table 6).

The relationship between healthy sex attitudes and number of sexual partners and between healthy sex attitudes and length with sexual partner were compared between SDG females vs. NCG females. Although the relationship between healthy sex attitudes and number of sexual partners was negative across both groups, results from a $\Delta\chi^2$ test showed that these pathways were not significantly different across these groups. However, results from a $\Delta\chi^2$ test revealed that the relationship between healthy sex attitudes and length with sexual partner was significantly different across both groups ($\Delta\chi^2 = 4.48$, $p < .05$). Specifically, this relationship was stronger for NCG females relative to SDG females (see Tables 6 & 7).

These pathways were again compared between SDG males vs. NCG females. The relationship between healthy sex attitudes and number of sexual partners were not significantly different across these groups, but the relationship between healthy sex attitudes and length with sexual partner was statistically different across both groups ($\Delta\chi^2 = 13.14$, $p < .05$). Thus, this association was stronger for NCG females relative to SDG males (see Tables 6 & 7).

In summary, healthy sex attitudes were related to having less sexual partners in a lifetime and knowing your sexual partner for a longer period of time for three out of four groups (i.e., SDG males, SDG females, and NCG females). The relationship between healthy sex attitudes and length with sexual partner was stronger for females relative to males and was stronger for NCG females.

Furthermore, significant pathways were found for one group, but not others. For instance, the avoidant dimension was related to more condom use for SDG males. Also, for this group, the anxious dimension and higher levels of healthy sex attitudes were related to having sex for the first time at an older age. For SDG females, high scores on the avoidant dimension were marginally related to having sex for the first time at an older age, whereas high scores on the anxious dimension were related to less condom use during sex (see Table 6). Lastly, for NCG females, high scores on the anxious dimension were marginally related to knowing your sexual partner for a lesser period of time. Also, for this group, high scores on healthy sex attitudes were related to more condom use during sex, and high scores on faulty relationship beliefs were related to having sex for the first time at a younger age (see Table 7).

Indirect Effects. Across groups, only two indirect effects were found. These effects were for NCG females only. Specifically, faulty relationship beliefs intervened between the anxious dimension and age at first sex; as in high scores on the anxious dimension were related to high scores on faulty relationship beliefs ($B = .38$, $p < .001$; $\beta = .44$, $p < .001$) which in turn were related to having sex for the first time at a younger age ($B = -.33$, $p < .05$; $\beta = -.21$, $p < .05$). Moreover, healthy sex attitudes intervened between the anxious dimension and length with sexual partner. High scores on the anxious dimension were related to more positive attitudes about sex ($B = .14$, $p < .05$; $\beta = .19$, $p < .05$) which were then related to knowing one's sexual partner for a longer period of time ($B = .80$, $p < .001$; $\beta = .46$, $p < .001$).

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Table 1. *Differences across demographic variables in reports of insecure attachment dimensions, healthy sex attitudes, faulty relationship beliefs, and sexual risk indicators.*

Cohort 1 (*N* = 878)	Gender		Race		Free/Reduced Lunch	
	Males (*n* = 410)	Females (*n* = 449)	EA (*n* = 406)	Minorities (*n* = 468)	No (*n* = 372)	Yes (*n* = 462)
	M (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)
Insecure Attachment Dimensions						
Avoidant Dimension	2.14 (.71)	2.06 (.73)	1.96 (.71)	2.22 (.71) ***	1.97 (.69)	2.19 (.73) ***
Anxious Dimension	2.63 (.79)	2.76 (.89) *	2.74 (.85)	2.67 (.84)	2.70 (.87)	2.72 (.83)
Healthy Sex Attitudes	3.39 (.74)	4.16 (.62) ***	3.94 (.74)	3.69 (.79) ***	3.90 (.72)	3.72 (.80) ***
Faulty Relationship Beliefs	3.50 (.76)	3.89 (.73) ***	3.81 (.78)	3.62 (.74) ***	3.76 (.79)	3.68 (.75)
Risky Sex Engagement						
Age at first sex	13.86 (1.58)	14.43 (1.19) ***	14.49 (1.19)	13.85 (1.53) ***	14.32 (1.33)	14.04 (1.46) **
Number of sexual partners	2.81 (1.61)	2.23 (1.36) ***	2.10 (1.36)	2.86 (1.54) ***	2.29 (1.46)	2.65 (1.52) **
Condom use	3.75 (1.54)	3.57 (1.64)	3.42 (1.70)	3.86 (1.46) ***	3.63 (1.64)	3.67 (1.57)
Length with sexual partner	3.86 (1.34)	4.45 (.99) ***	4.29 (1.16)	4.07 (1.23) *	4.25 (1.17)	4.11 (1.22)
Seriousness of relationship	2.46 (1.40)	3.14 (1.25) ***	2.98 (1.37)	2.70 (1.34) **	2.85 (1.39)	2.81 (1.33)
Cohort 2 (*N* = 759)	Gender		Race		Free/Reduced Lunch	
	Males (*n* = 381)	Females (*n* = 356)	EA (*n* = 238)	Minorities (*n* = 517)	No (*n* = 248)	Yes (*n* = 497)
	M (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)
Insecure Attachment Dimensions						
Avoidant Dimension	2.17 (.70)	2.05 (.74) *	2.00 (.72)	2.17 (.71) **	2.00 (.66)	2.17 (.73) **
Anxious Dimension	2.49 (.81)	2.70 (.85) **	2.75 (.83)	2.52 (.83) ***	2.63 (.85)	2.57 (.83)
Healthy Sex Attitudes	3.27 (.74)	4.12 (.63) ***	3.70 (.79)	3.67 (.82)	3.60 (.80)	3.71 (.81)
Faulty Relationship Beliefs	3.41 (.73)	3.75 (.78) ***	3.60 (.82)	3.57 (.75)	3.52 (.76)	3.62 (.77)
Risky Sex Engagement						
Age at first sex	13.49 (1.61)	14.43 (1.15) ***	14.31 (1.32)	13.76 (1.53) ***	14.18 (1.35)	13.80 (1.53) **
Number of sexual partners	2.98 (1.58)	2.34 (1.38) ***	2.37 (1.48)	2.82 (1.53) ***	2.51 (1.51)	2.77 (1.53) *
Condom use	3.91 (1.47)	3.63 (1.60) *	3.58 (1.64)	3.89 (1.48) *	3.74 (1.57)	3.78 (1.54)
Length with sexual partner	3.94 (1.28)	4.51 (.92) ***	4.16 (1.21)	4.26 (1.12)	4.24 (1.14)	4.21 (1.15)
Seriousness of relationship	2.35 (1.36)	2.92 (1.35) ***	2.72 (1.42)	2.56 (1.37)	2.65 (1.41)	2.60 (1.37)
Frequency of sex	1.79 (1.00)	1.62 (.93) *	1.81 (1.07)	1.65 (.91)	1.82 (1.04)	1.65 (.92) *

Table 1. (continued.).

Note. Mean differences for Cohort 1 (N = 878) appear in the top columns and rows and Cohort 2 (N = 759) in the bottom columns and rows. EA = European-Americans. Gender (0 = *Males*, 1 = *Females*), Race (0 = *European-Americans*, 1 = *Minorities*), Free/Reduced Lunch (0 = *No*, 1 = *Yes*).
* $p < .05$, ** $p < .01$, *** $p < .001$.

Table 2. *Correlations between insecure attachment dimensions, healthy sex attitudes, faulty relationship beliefs, sexual risk indicators, and control variables.*

Variable	1	2	3	4	5	6	7	8	9	10
1. Avoidant	-	.28***	-.12**	-.23***	-.13**	.13**	.01	-.14**	-.19***	-.04
2. Anxious	.25***	-	.02	.17***	.05	.00	-.09*	-.02	.01	.04
3. Sex Att.	-.17***	.03	-	.25***	.24***	-.27***	-.03	.30***	.19***	-.20***
4. Beliefs	-.26***	.07	.26***	-	.12**	-.14**	-.04	.12**	.23***	.05
5. 1st Sex Age	-.09**	-.04	.23***	.07	-	-.46***	.03	.15**	.15***	-.05
6. # of partners	.10**	.03	-.27***	-.12**	-.44***	-	-.02	-.22***	-.13**	.14***
7. Condom Use	.10**	-.03	-.06	-.12**	.03	-.03	-	.04	-.03	-.18***
8. Length w/ partner	-.06	.03	.27***	.09**	.13***	-.18***	.08*	-	.24***	-.04
9. Serious relationship	-.25***	-.03	.21***	.15***	.19***	-.11**	-.06	.28***	-	.24***
10. Sex frequency										-

Note. Correlations for Cohort 1 (N = 878) appear in the lower left and Cohort 2 (N = 759) in the upper right diagonals. Sex Att = Healthy Sex Attitudes; Beliefs = Faulty Relationship Beliefs; 1st Sex Age = Age at first sex.
*p < .05, **p < .01, ***p < .001.

Table 3. *Cohort 1: Standardized and unstandardized parameter estimates, indirect effects, R-squares, and fit statistics for insecure attachment dimensions, healthy sex attitudes, and faulty relationship beliefs predicting sexual risk indicators* (*N* = 878).

	Age at First Sex			Number of Sex Partners			Condom Use			Length w/ Partner			Serious Relationship		
	B	(S.E)	*β*	*B*	(S.E)	*β*	*B*	(S.E)	*β*	*B*	(S.E)	*β*	*B*	(S.E)	*β*
Avoidant Dimension	-.03	(.07)	-.01	.02	(.07)	.01	.16	(.08)	.07~	-.02	(.06)	-.01	-.42	(.07)	-.22*
Anxious Dimension	-.11	(.06)	-.07~	.07	(.06)	.04	-.06	(.07)	-.03	.01	(.05)	.01	-.00	(.06)	-.00
Healthy Sex Attitudes	.24	(.07)	.13*	-.42	(.07)	-.22*	-.00	(.08)	-.00	.29	(.06)	.19*	.11	(.07)	.06
Faulty Rel. Beliefs	-.05	(.06)	-.03	-.06	(.07)	-.03	-.17	(.08)	-.08*	.00	(.06)	.00	.05	(.06)	.03
Sex	.36	(.11)	.13*	-.10	(.12)	-.03	-.04	(.13)	-.01	.35	(.10)	.15*	.55	(.11)	.20*
Race	-.57	(.10)	-.20*	.57	(.11)	.19*	.46	(.12)	.14*	-.05	(.09)	-.02	-.10	(.10)	-.03
Free/Reduced Lunch	-.06	(.10)	-.02	.01	(.11)	.00	-.19	(.12)	-.06	-.07	(.09)	-.03	.08	(.10)	.03
Age	.34	(.04)	.25*	.21	(.05)	.15*	-.13	(.05)	-.09*	-.02	(.04)	-.01	.11	(.04)	.08*
Anxious Dimension															
Total effects	-.11	(.06)	-.07~	.06	(.06)	.03	-.08	(.07)	-.04	.02	(.05)	.01	.00	(.05)	.00
Total indirect effects	.00	(.01)	.00	-.02	(.01)	-.01	-.02	(.01)	-.01~	.01	(.01)	.00	.01	(.01)	.00
Specific Indirect Effects															
Healthy Sex Att.	.01	(.01)	.00	-.01	(.01)	-.01	.00	(.00)	.00	.01	(.01)	.00	.00	(.00)	.00
Faulty Rel. Beliefs	-.00	(.01)	-.00	-.01	(.01)	-.00	-.02	(.01)	-.01~	.00	(.01)	.00	.00	(.01)	.00
Avoidant Dimension															
Total effects	-.04	(.07)	-.02	.10	(.07)	.05	.21	(.08)	.09*	-.06	(.06)	-.03	-.45	(.07)	.24*
Total indirect effects	-.02	(.02)	-.01	.07	(.03)	.04*	.05	(.02)	.02*	-.04	(.02)	-.02~	-.03	(.02)	.02
Specific Indirect Effects															
Healthy Sex Att.	-.03	(.01)	-.02*	.06	(.02)	.03*	.00	(.01)	.00	-.04	(.01)	-.02*	-.01	(.01)	-.01
Faulty Rel. Beliefs	.01	(.02)	.01	.02	(.02)	.01	.05	(.02)	.02*	-.00	(.02)	-.00	-.01	(.02)	-.01
R-Squares															
Healthy Sex Att.	.28														
Age at First Sex	.16														
Number of Partners	.14														
Condom Use	.04														
Length w/ Partner	.09														
Serious Rel.	.13														
Faulty Rel. Beliefs	.14														

Table 3 (continues.).

Table 3 (continued).

Fit Statistics	
Chi-Square	11.78*
DF	1
CFI	.99
RMSEA	.11
SRMR	.01

~$p < .10$, *$p < .05$

Table 4. *Cohort 2: Standardized and unstandardized parameter estimates, indirect effects, R-squares, and fit statistics for insecure attachment dimensions, healthy sex attitudes, and faulty relationship beliefs predicting sexual risk indicators* (*N* = 759).

	Age at First Sex			Number of Sex Partners			Condom Use			Length w/ Partner			Serious Relationship		
	B	(S.E)	*β*	*B*	(S.E)	*β*	*B*	(S.E)	*β*	*B*	(S.E)	*β*	*B*	(S.E)	*β*
Avoidant Dimension	-.18	(.08)	-.08*	.13	(.09)	.06	.04	(.09)	.02	-.17	(.06)	-.11*	-.27	(.08)	-.14*
Anxious Dimension	.04	(.06)	.02	.04	(.07)	.02	-.14	(.08)	-.07~	-.01	(.05)	-.00	.00	(.07)	.00
Healthy Sex Attitudes	.15	(.07)	.08*	-.41	(.08)	-.22*	.02	(.09)	.01	.32	(.06)	.23*	.09	(.07)	.05
Faulty Rel. Beliefs	.03	(.07)	.02	-.12	(.08)	-.06	-.01	(.08)	-.00	.02	(.06)	.02	.27	(.07)	.15*
Sex	.80	(.12)	.27*	-.21	(.13)	-.07	-.23	(.14)	-.08~	.28	(.10)	.12*	.39	(.12)	.14*
Race	-.40	(.11)	-.12*	.33	(.12)	.10*	.27	(.13)	.08*	.18	(.09)	.07~	-.09	(.11)	-.03
Free/Reduced Lunch	-.25	(.11)	-.08*	.17	(.12)	.05	-.06	(.13)	-.02	-.10	(.09)	-.04	-.03	(.11)	.01
Age	.50	(.05)	.32*	.17	(.06)	.11*	-.01	(.06)	-.01	.03	(.04)	.03	.17	(.05)	.12*
Anxious Dimension															
Total effects	.05	(.06)	.03	.02	(.07)	.01	-.14	(.07)	-.08~	-.00	(.05)	-.00	.06	(.06)	.04
Total indirect effects	.00	(.02)	.00	-.02	(.02)	-.01	-.00	(.02)	-.00	-.00	(.02)	-.00	.05	(.02)	.03*
Specific Indirect Effects															
Healthy Sex Att.	-.00	(.00)	-.00	.01	(.01)	.00	.00	(.00)	.00	-.01	(.01)	-.00	-.00	(.00)	-.00
Faulty Rel. Beliefs	.00	(.01)	-.00	-.03	(.02)	-.01	-.00	(.02)	-.01	.00	(.01)	.00	.06	(.02)	.03*
Avoidant Dimension															
Total effects	-.20	(.07)	-.10*	.20	(.08)	.10*	.04	(.09)	.02	-.21	(.06)	-.13*	-.36	(.08)	-.19*
Total indirect effects	-.02	(.02)	-.01	.07	(.03)	.03*	.00	(.03)	.00	-.04	(.02)	-.02	-.09	(.02)	-.05*
Specific Indirect Effects															
Healthy Sex Att.	-.01	(.01)	-.01	.04	(.02)	.02*	-.00	(.01)	-.00	-.03	(.01)	-.02*	-.01	(.01)	-.00
Faulty Rel. Beliefs	-.01	(.02)	-.00	.04	(.02)	.02	.00	(.03)	.00	-.01	(.02)	-.00	-.08	(.02)	-.04*
R-Squares															
Healthy Sex Att.	.29														
Age at First Sex	.25														
Number of Partners	.12														
Condom Use	.02														
Length w/ Partner	.12														
Serious Rel.	.12														
Faulty Rel. Beliefs	.15														

Table 4 (continues.).

Table 4 (continued).

Fit Statistics	
Chi-Square	16.91*
DF	1
CFI	.98
RMSEA	.14
SRMR	.01

~$p < .10$, *$p < .05$

Table 5. *Differences across relationship groups in demographics and reports of insecure attachment dimensions, healthy sex attitudes, faulty relationship beliefs, and sexual risk indicators* (*N* = 801).

	Males Seriously Dating (*n* = 193; 24.1%)	Females Seriously Dating (*n* = 318; 39.7%)	Males Non-Committed (*n* = 179; 22.3%)	Females Non-Committed (*n* = 111; 13.9%)
Cross-Tabulation Results				
Race***				
White (43.6%)$^{+}$	42.4%	51.9%^{o}	27.0%^{u}	50.0%
Minorities (55.9%)$^{+}$	57.6%	48.1%^{u}	73.0%^{o}	50.0%
Free/Reduced Lunch				
No (40.3%)$^{+}$	45.3%	41.2%	38.1%	37.8%
Yes (58.1%)$^{+}$	54.7%	58.8%	61.9%	62.2%
ANOVA Results	***M* (*SD*)**	***M* (*SD*)**	***M* (*SD*)**	***M* (*SD*)**
Age**	16.43^{a} (1.12)	16.24^{a} (.96)	16.27^{a} (1.05)	15.92^{b} (1.00)
Insecure Attachments				
Avoidant***	1.92^{a} (.67)	1.83^{a} (.69)	2.30^{b} (.66)	2.23^{b} (.68)
Anxious$^{\sim}$	2.55^{a} (.82)	2.68^{ab} (.93)	2.58^{ab} (.82)	2.81^{b} (.87)
Healthy Sex Attitudes***	3.33^{a} (.77)	4.21^{b} (.56)	3.05^{c} (.72)	4.11^{b} (.69)
Faulty Rel. Beliefs***	3.67^{a} (.79)	3.93^{b} (.79)	3.34^{c} (.69)	3.70^{a} (.77)
Sexual Risk Indicators				
Age at First Sex***	13.96^{a} (1.59)	14.58^{b} (1.12)	13.25^{c} (1.70)	14.19^{a} (1.20)
# of Sex Partners***	2.80^{a} (1.60)	2.29^{b} (1.38)	3.80^{c} (1.40)	2.83^{a} (1.43)
Condom Use***	3.64^{a} (1.51)	3.25^{b} (1.70)	3.99^{a} (1.41)	3.77^{a} (1.48)
Sex Partner Length***	4.37^{a} (.98)	4.53^{a} (.92)	3.46^{b} (1.44)	4.29^{a} (1.19)

Note. $^{+}$Percentages of the total sample. ^{o} (Over-represented), ^{u} (Under-represented). Classes that share the same superscript in the ANOVA results are not different. $^{\sim}p < .10$, $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

Table 6. *Seriously dating groups: Standardized and unstandardized parameter estimates and R-squares for insecure attachment dimensions, healthy sex attitudes, and faulty relationship beliefs predicting sexual risk indicators*.

Males Seriously Dating (n = 193)	Age at First Sex			Number of Sex Partners			Condom Use			Length w/ Partner		
	B	(S.E)	*β*	*B*	(S.E)	*β*	*B*	(S.E)	*β*	*B*	(S.E)	*B*
Avoidant Dimension	-.22	(.17)	-.10	.08	(.18)	.03	.43	(.19)	.19*	.04	(.12)	.03
Anxious Dimension	.23	(.13)	.12~	-.10	(.14)	-.05	-.14	(.14)	-.08	-.06	(.09)	-.05
Healthy Sex Attitudes	.26	(.13)	.13*	-.50	(.13)	-.24***	.09	(.14)	.05	.15	(.09)	.12~
Faulty Rel. Beliefs	.05	(.13)	.03	-.18	(.14)	-.09	-.11	(.14)	-.06	-.02	(.09)	-.02
Race	-.98	(.23)	-.31***	.99	(.24)	.30***	-.08	(.24)	-.02	.19	(.16)	.09
Free/Reduced Lunch	-.13	(.22)	-.04	.12	(.23)	.04	.03	(.23)	.01	-.13	(.15)	-.07
Age	.28	(.06)	.20***	.17	(.06)	.12**	-.15	(.07)	-.11*	.01	(.04)	.02
R-Squares												
Healthy Sex Attitudes	.01											
Age at First Sex	.21											
Number of Sex Partners	.21											
Condom Use	.05											
Length w/ Partner	.03											
Faulty Rel. Beliefs	.12											

Females Seriously Dating (n = 318)	Age at First Sex			Number of Sex Partners			Condom Use			Length w/ Partner		
	B	(S.E)	*β*	*B*	(S.E)	*β*	*B*	(S.E)	*β*	*B*	(S.E)	*B*
Avoidant Dimension	.17	(.09)	.10~	.08	(.12)	.04	.13	(.14)	.05	.02	(.08)	.01
Anxious Dimension	-.09	(.07)	-.07	.07	(.09)	.05	-.19	(.11)	-.11~	-.04	(.06)	-.04
Healthy Sex Attitudes	.10	(.10)	.05	-.37	(.13)	-.15**	.05	(.16)	.02	.42	(.08)	.26***
Faulty Rel. Beliefs	-.03	(.08)	-.02	-.15	(.09)	-.08	-.01	(.12)	-.01	-.10	(.06)	-.09
Race	.15	(.14)	.07	-.26	(.17)	-.10	.66	(.21)	.19**	-.05	(.11)	-.03
Free/Reduced Lunch	-.28	(.14)	-.12*	.28	(.17)	.10	-.17	(.21)	-.05	-.10	(.11)	-.05
Age	.33	(.05)	.28***	.14	(.06)	.10*	-.16	(.07)	-.09*	-.03	(.04)	-.03
R-Squares												
Healthy Sex Attitudes	.03											
Age at First Sex	.10											
Number of Sex Partners	.05											
Condom Use	.06											
Length w/ Partner	.08											
Faulty Rel. Beliefs	.04											

~$p < .10$, *$p < .05$, **$p < .01$, ***$p < .001$.

Table 7. *Non-committed groups: Standardized and unstandardized parameter estimates, indirect effects, R-squares, and fit statistics for insecure attachment dimensions, healthy sex attitudes, and faulty relationship beliefs predicting sexual risk indicators.*

Males Non-Committed (n = 179)	Age at First Sex			Number of Sex Partners			Condom Use			Length w/ Partner		
	B	(S.E)	*β*	*B*	(S.E)	*β*	*B*	(S.E)	*β*	*B*	(S.E)	*β*
Avoidant Dimension	-.09	(.20)	-.04	.19	(.17)	.10	-.10	(.17)	-.05	-.03	(.18)	-.01
Anxious Dimension	.18	(.15)	.08	-.13	(.13)	-.08	-.07	(.13)	-.04	-.09	(.14)	-.05
Healthy Sex Attitudes	.22	(.18)	.09	-.22	(.15)	-.11	-.19	(.15)	-.10	.21	(.16)	.10
Faulty Rel. Beliefs	.29	(.18)	.09	.02	(.15)	.01	-.09	(.16)	-.04	-.03	(.16)	-.01
Race	-.56	(.31)	-.16$^{\sim}$	.40	(.26)	.14	.51	(.27)	.17$^{\sim}$	.23	(.28)	.07
Free/Reduced Lunch	-.52	(.28)	-.15$^{\sim}$	.48	(.23)	.17*	-.23	(.25)	-.08	-.01	(.25)	-.00
Age	.21	(.07)	.13**	.12	(.06)	.09$^{\sim}$	-.04	(.06)	-.03	-.04	(.06)	-.03
R-Squares												
Healthy Sex Attitudes	.05											
Age at First Sex	.14											
Number of Sex Partners	.13											
Condom Use	.04											
Length w/ Partner	.02											
Faulty Rel. Beliefs	.11											

Females Non-Committed (n = 111)	Age at First Sex			Number of Sex Partners			Condom Use			Length w/ Partner		
	B	(S.E)	*β*	*B*	(S.E)	*β*	*B*	(S.E)	*β*	*B*	(S.E)	*β*
Avoidant Dimension	.04	(.16)	.03	.09	(.21)	.05	.18	(.21)	.08	-.19	(.15)	-.11
Anxious Dimension	.09	(.14)	.07	.15	(.17)	.09	-.21	(.18)	-.12	-.22	(.13)	-.16$^{\sim}$
Healthy Sex Attitudes	.07	(.16)	.04	-.39	(.21)	-.18$^{\sim}$	.50	(.21)	.23*	.80	(.15)	.46***
Faulty Rel. Beliefs	-.33	(.15)	-.21*	-.13	(.19)	-.07	.09	(.20)	.05	.12	(.14)	.08
Race	-.32	(.23)	-.13	.07	(.30)	.02	.00	(.31)	.00	.25	(.22)	.10
Free/Reduced Lunch	-.19	(.24)	-.08	.25	(.31)	.08	-.26	(.32)	-.09	-.26	(.23)	-.11
Age	.39	(.07)	.34***	.14	(.08)	.10$^{\sim}$	-.25	(.08)	-.18**	-.13	(.06)	-.12*
R-Squares												
Healthy Sex Attitudes	.09											
Age at First Sex	.18											
Number of Sex Partners	.06											
Condom Use	.09											
Length w/ Partner	.25											
Faulty Rel. Beliefs	.20											

$^{\sim}p < .10$, $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.