RELATIONSHIP LENGTH AND REPEATED EXPERIENCES OF SEXUAL

COERCION WITHIN ADOLESCENT WOMEN'S ROMANTIC RELATIONSHIPS

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DEDICATION

        This work is dedicated to my Aunt Vivian. Aunt Vivian, you left me at the tender age of thirteen, and I still have not stopped crying over the loss of you. You are the first individual I think of when I need to share a success or sorrow. From the time I was an infant, you encouraged, loved and supported me. You didn't laugh when I claimed I wanted to be an astronaut, instead you bought me books on science. You made lemon cookies that were frankly quite gross, but I would gladly eat a dozen more if it meant one more chance to sit and talk with you. If I have a guardian angel, you are it. I believe you sit on my shoulder with every step I take in this life. I love you more than I could ever express with words.

Allison Kaye Muzzey

RELATIONSHIP LENGTH AND REPEATED EXPERIENCES OF SEXUAL

COERCION WITHIN ADOLESCENT WOMEN'S ROMANTIC RELATIONSHIPS

Sexual coercion is a prevalent and problematic aspect of adolescent women's sexual experiences, with nationally representative data reporting that 15% of adolescent women were forced by a romantic partner to do sexual things they did not want to do in the past year. However, little is known about how the length of a given adolescent relationship may impact ongoing instances of sexual coercion, and what impact these repeated instances have on the emotional and behavioral characteristics of a given relationship. Accordingly, the current study examines the impact of relationship length on relationship attributes and behaviors within adolescent women's romantic relationships with repeated experiences of sexual coercion and compares these associations between age groups. Data for the current study were drawn from a larger, longitudinal cohort study (N = 385); utilizing quarterly interviews (N = 5151) that were administered from 1999-2009. Relationship timing of initial and repeat experiences of sexual coercion are discussed. Specifically, our findings suggest that within relationships with repeat experiences of sexual coercion, longer relationship length decreases sexual satisfaction and condom use, while simultaneously increasing vaginal intercourse and the odds of acquiring a sexually transmitted infection.

Devon J. Hensel PhD, Chair

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Sexual coercion is a prevalent and problematic aspect of adolescent women's sexual experiences, with nationally representative data reporting that 15% of adolescent women were forced by a romantic partner to do sexual things they did not want to do in the past year (Kann et al. 2016). Similarly, other studies have reported up to 20% of young women have ever experienced some type of sexually-related coercive behavior in the context of romantic partnerships (Hamby and Turner 2013; Ybarra et al. 2016). Being a victim of sexual coercion increases young women's reports of adverse physical and mental health outcomes, including Post-Traumatic Stress Disorder (PTSD), lower levels of self-esteem, higher levels of depression, more frequent physical fighting, and higher levels of substance use (Exner-Cortens, Eckenrode, and Rothman 2013; Hamby and Turner 2013; Silverman et al. 2001; Stockman, Campbell, and Celetano 2010; Watkins et al. 2014; Ybarra et al. 2016).

Emerging data also suggest that experiencing sexual coercion in a romantic relationship can negatively impact the emotional and behavioral qualities of both current and future relationships. For example, a single experience of sexual coercion increases an adolescent women's likelihood of experiencing future sexual coercion in that same relationship by seven (Young and Furman 2008). Ongoing sexual coercion can create adversity in relationships by increasing rates of jealousy and decreasing relationship satisfaction (Collibee and Furman 2014). Moreover, our own work has shown that relationship attributes important for managing sexual risk in relationships, including relationship quality and sexual satisfaction, decrease leading into an experience of sexual coercion (Muzzey and Hensel 2016).

Less is known about how the length of a given adolescent relationship may impact ongoing instances of sexual coercion, and what impact these repeated instances have on the emotional and behavioral characteristics of a given relationship. Research on adult relationships and relationship length in coercive relationships focuses on increased financial dependability as a reason for maintaining the relationship (Edwards, Gidycz, and Murphy 2011). However, financial dependability may not be a factor in young adult women's relationships, and subsequent research has suggested time invested in coercive relationships strengthens feelings of relationship quality, satisfaction, and commitment (Edwards, Gidycz, and Murphy 2015). Previous research has centered on adult women's experiences, leaving a gap in the role relationship length plays in adolescent women's relationships with sexual coercion and potentially obscuring our understanding of sexually coercive relationships.

Adolescent relationships normatively increase during the adolescent years, and by adulthood, many young women will have participated in several different partnerships (Connolly and McIsaac 2011), most of which widely vary in their duration and in their content (Collins, Welsh, and Furman 2009; Giordano et al. 2012). Current literature is unclear on how the prevalence of sexual coercion varies depending upon relationship length, and how the impact of this prevalence may have an effect on the emotional and behavioral characteristics of that partnership. Such knowledge is important for the design and success of adolescent-focused public health initiatives designed to reduce sexually coercive experiences (ODPHP 2016; Tharp et al. 2011). Accordingly, the current study examines the impact of relationship length on relationship attributes and behaviors within

adolescent women's romantic relationships with repeated experiences of sexual coercion and compare these associations between age groups.

BACKGROUND

Sexual Coercion

Definition While the majority of adolescent sexual activity develops without issue (Best and Fortenberry 2013; Tolman and McClelland 2011), some young women do experience adverse sexual outcomes, such as sexual coercion. The current study intentionally uses a broad definition of sexual coercion as "monetary, emotional, or physical pressure to participate in an unwanted sexual activity" to recognize the potential impact of coercive sexual experiences (e.g. threats to break up the relationship, displaying anger in response to a refusal of sex, or offering money in exchange for sex) that may be overlooked with narrower definitions of sexual coercion (i.e. forcible rape) (Hamby and Koss 2003).

Prevalence The most current and nationally-representative data show that about 15% of adolescent women have experienced unwanted sexual contact from a romantic or dating partner in the past 12 months (Kann et al. 2016). Nationally representative findings are in line with previous research that shows up to 20% of adolescent and young women experience sexual coercion with a dating partner (Hamby and Turner 2013; Hines 2007; Katz and Myhr 2008; Ybarra et al. 2016). Generally, sexual coercion in previous research is only defined ambiguously as verbal pressure from a partner, so it is difficult to assess the prevalence of different types of sexual coercion. However, a study of over 5,500 college aged young women reported about 20% experiencing verbal pressure to have sex,

and 4% experiencing verbal threats if they refused sex from their dating partners (Hines 2007). It is clear that sexual coercion is prevalent in adolescent women's lives, but previous research's use of a single and vague measure of sexual coercion obscures our knowledge of the possible impact of different types of sexual coercion.

Relationship Context Outcomes The physical and mental health implications, including higher reports of depression, PTSD, thoughts or threats of suicide, and lower self-esteem (Anderson, Hayden, and Tomasula 2015; Jones et al. 2016; Nahapetyan et al. 2014; Silverman et al. 2001; Watkins et al. 2014) of sexual coercion are well understood. Another important effect of sexual coercion is that even a single experience begets more sexually coercive experiences; adolescent women are seven times more likely to experience sexual coercion again after an initial experience (Young and Furman 2008). Thus, an experience of sexual coercion can produce negative health outcomes, but also set a trajectory of repeated experiences, which may compound their negative mental and emotional health. Finally, other research has shown that previous experiences of sexual coercion can impact future romantic relationships by increasing feelings of jealousy and decrease commitment to a single partner (Collibee and Furman 2014). However, it is not clear the impact that sexual coercion has on a current relationship's attributes and partner specific behaviors, which may give us critical insight into how to target interventions to reduce sexual coercion.

A main goal of public health efforts in relation to sexual coercion is to build recognition of healthy relationships and to end abusive and coercive relationships (ODPHP 2016; Tharp et al. 2011). Therefore, understanding different types of

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experiences of sexual coercion and how those experiences impact current relationship attributes and behaviors becomes crucial. With this knowledge, intervention efforts to building healthy relationships can be better defined, and providers can more easily recognize potentially coercive relationships during interactions with their patients.

Age Age is a potentially important influence in the experience of sexual coercion because of distinct transitional periods considered at particular time points. Middle to late adolescence is generally considered between ages of 14-17, in which adolescents are generally in high school and begin developing personal and romantic relationships (Arnett 2014). As of age 18, most of these adolescents experience a transition period in which they become more autonomous by leaving home, going to work full-time, or moving on to college (Arnett 2014). As such, this age is particularly notable because of the autonomy that may be experienced within relationships as well. Further, age 22 marks another important social transition in which they become fully legal citizens (Arnett 2014). Therefore, these transitional periods of ages may represent distinct experiences in relation to romantic relationships and experiences of sexual coercion.

The Role of Relationship Length

Relationship length has the potential to impact how many experiences of sexual coercion occur, as well as impact relationship attributes and behaviors within sexually coercive relationships. Existing research on the role of relationship length within coercive relationships is concentrated in two main areas: maintaining a coercive relationship and relationship length's impact on sexual behaviors. Previous research on maintaining coercive relationships has focused on the role that financial dependability and a desire to

keep a family intact as motivators for remaining in that relationship (Edwards et al. 2011). However, this research has largely focused on adult heterosexual women's experiences within marriage and has overlooked adolescent heterosexual women's experiences.

Consequently, other research has suggested that time investment in relationships also contributes to young adult heterosexual women's desire to maintain abusive and coercive relationships in the absence of financial dependence and having children with their partner (Edwards et al. 2011; Edwards et al. 2012a; Edwards et al. 2012b; Edwards et al. 2015). As more time is invested in the relationship prior to an initial experience of sexual coercion, relationship attributes such as quality, satisfaction, and commitment to the partner increase (Edwards et al. 2015). The growth of these attributes may strengthen the adolescent woman's perceived investment in the relationship and potentially decrease their wanting to end the relationship post-sexual coercion.

The length of a romantic relationship in adolescence has been shown to be an important predictor of several health outcomes, including commitment and condom use (Edwards et al. 2012b; Ku, Sonenstein, and Pleck 1994; Manning et al. 2009; Tanner, Hensel, and Fortenberry 2010). However, relationship length in adolescence has largely not been examined in relation to experiences of sexual coercion. Sexually coercive experiences with a romantic partner may complicate our current understanding of the role of relationship length in predicting sexual behavior outcomes and its impact on relationships. Further, understanding how relationship length can influence or change sexual behaviors, within the context of sexual coercion, may help shape intervention efforts.

Relationship Context

Relationship context are the pieces of a romantic relationship that can influence and shape the experience of that relationship, including attributes (relationship quality, sexual satisfaction, etc.) and behaviors (frequency of vaginal sex, condom use, etc.).

Relationship Attributes Relationship attributes are strong predictors of an adolescent's overall sexual health and their sexual behaviors (Hensel and Fortenberry 2013). Relationship attributes include characteristics that describe the nature of the relationship, such as relationship quality, sexual satisfaction, sexual autonomy, sexual communication, condom use efficacy, and intentions to prevent pregnancy. Together, relationship attributes work to help shape the context of the relationship and work together to impact sexual decision-making within the relationship, such as condom use and frequency of vaginal sex (Hensel and Fortenberry 2013). Thus, changes in these attributes may impact how adolescent women make sexual decisions with their current or future partners.

The impact of sexual coercion on relationship attributes within a partnered relationship remains relatively unknown. Our own research has established that relationship attributes fluctuate surrounding an initial experience of sexual coercion, in that reported levels of these attributes are lower prior to the initial experience, and higher afterward (Muzzey and Hensel 2016). Attribute fluctuations in response to an initial experience of sexual coercion coupled with the knowledge that relationship attributes can effect overall health and sexual decision-making, suggests that attributes of romantic relationship could be impacted by experiences of sexual coercion.

Relationship Behaviors Sexual behaviors in adolescence are important and normative aspects of adolescent romantic relationships, and mostly occur without issue (Tolman and McClelland 2011). However, public health concerns continue with a focus on safe practices of sexual behaviors to reduce risks of STI/HIV and unintentional pregnancies (CDC 2015). Condom use ratio is particularly impactful within public health concerns in that consistent and correct use of condoms help protect from STIs and can reduce the risk of pregnancies (CDC 2015). Sexually coercive experiences have the potential to complicate the enactment of these behaviors with a specific partner due to the inherent power differential that may exist in coercive relationships (Miller et al. 2010). Identifying how sexual coercion can impact these behaviors within relationships can help adolescent health care providers assist adolescent women in making healthy sexual decisions related to their sexual behaviors.

THEORETICAL FRAMEWORK

The theoretical framework guiding this research is sexual script theory. Sexual scripts are akin to a set of directions that a person uses to guide behaviors in sexual situations (Simon and Gagnon 1986). Sexual scripts are complex, and pertinent to heterosexual adolescent women, sexual scripts may have attached behavioral expectations, such as traditional gender roles, or age-related, developmentally appropriate sexual behaviors (Hynie et al. 1998; Laner and Ventrone 2000; Masters et al. 2013; Rose and Frieze 1993; Sakaluk et al. 2014). These scripts are meant to provide guidance when adolescents find themselves in sexual situations.

An individual's sexual script is influenced by three forces: (1) cultural expectations that provide a collective, social idea of what appropriate behavior is (i.e. males are socially expected to initiate sexual intercourse), (2) interpersonally, in which experience with individual people in specific situations influence how a script is edited or altered (i.e. a young woman experiences sexual coercion by being pressured into having unwanted sex, and may anticipate being pressured the next time a sexual situation arises), and (3) intrapsychically, in which scripts are influenced by a person's thoughts, feelings, desires (i.e. a young women may desire a particular type of sexual activity) (Simon and Gagnon 1986).

Sexual scripts are subject to change and adaptation through experiences (Simon and Gagnon 1986). An important feature of sexual scripts is that as experiences are accrued, those experiences become a part of the sexual script (Simon and Gagnon 1986). Interactions with other people also influence how sexual scripts are altered, changed, thrown out, and edited over time (Simon and Gagnon 1986). For instance, a young woman who experiences sexual coercion may believe that a pattern of behaviors (her current sexual script) contributed to the coercive experience and opt to "throw out" her sexual script and either search for a new pattern of behaviors, or look to amend the old ones. Conversely, another young woman experiencing sexual coercion could strengthen the current script and she may learn to believe that coercive experiences are to be anticipated and expected in dating relationships.

Experiences of sexual coercion have the potential to dramatically shift an adolescent women's sexual script by negatively influencing what they expect emotionally as well as behaviorally from a romantic partner. While most of adolescents' partnered

romantic relationships occur without sexual coercion, about 15% occur with sexual coercion (Kann et al. 2016). Even a single sexually coercive experience can begin to have a normalizing effect in coercive and abusive relationships. Unwanted and coercive experiences in adolescence may set in place the idea that these types of experiences are to be expected for future relationships (Hlavka 2014; Gavey 2005), by altering the sexual script an adolescent women has. Reaffirmation of a coercive sexual script may contribute to a normalization of coercive sexual experiences, exacerbating lifetime experiences of sexual coercion within partnered relationships.

RESEARCH QUESTION AND HYPOTHESES

Previous research has established that sexual coercion itself can be a detriment to various health outcomes (Anderson, Hayden, and Tomasula 2015; Jones et al. 2016; Nahapetyan et al. 2014; Silverman et al. 2001; Watkins et al. 2014), and a single experience of sexual coercion increases the odds of repeat experiences (Furman and Young 2008) and negatively impact partner-specific relationship attributes and behaviors (Muzzey and Hensel 2016). Further, sexual script theory posits that it is possible that as more time spent in a relationship with sexual coercion can begin to have a normalizing effect, in that an adolescent women can become accustomed to and expect sexual coercion (Hlavka 2014; Gavey 2005). Relationship length is therefore an important, yet understudied, aspect of sexually coercive relationships. The current study seeks to understand the following research questions:

1. How does relationship length impact relationship attributes, relationship behaviors and sexual risk within adolescent women's romantic relationships with repeated experiences of sexual coercion?

2. Further, how is the potential impact of relationship length on relationship attributes, relationship behaviors and sexual risk different among varying age groups?

To answer these questions, the following hypotheses are posited. Since a single experience of sexual coercion can negatively impact partner-specific relationship attributes and behaviors, as well as set a trajectory of normalizing sexual coercion, we expect that:

Hypothesis 1: During quarters in which repeated partner-specific sexual coercion occurs, longer relationship length will be associated with lower levels of all partner-specific relationship attributes (Figure 1).

Figure 1. Hypothesis 1 Conceptual Regression Model[a]
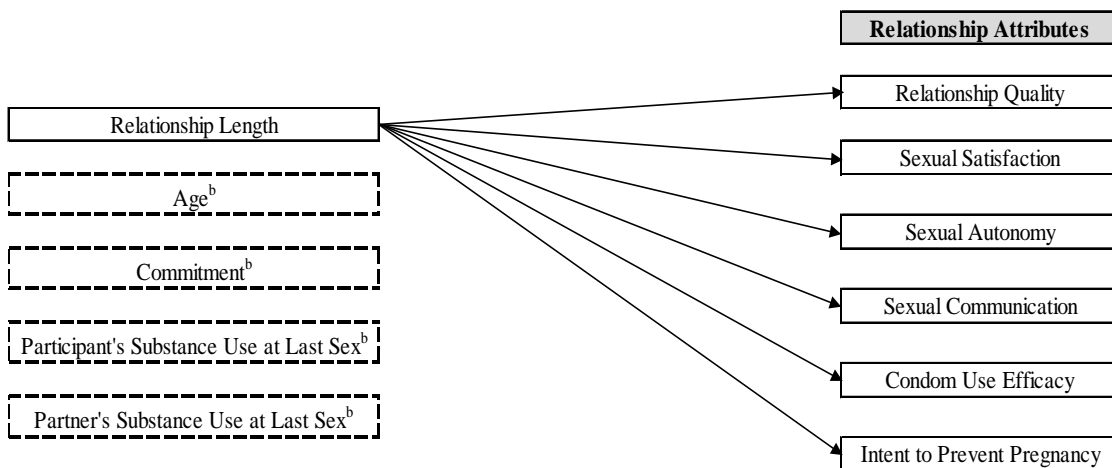
[a] All associations ran within relationships with repeated experiences of sexual coercion
[b] Control variable

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Hypothesis 2: During quarters in which repeated partner-specific sexual coercion occurs, longer relationship length will be associated with relationship behaviors and sexual risk by increasing partner-specific frequency of vaginal sex, number of number of sexual partners, and the likelihood of sexually transmitted infections (STI), and decreasing rates of condom use (Figure 2).

Figure 2. Hypothesis 2 Conceptual Regression Model[a]
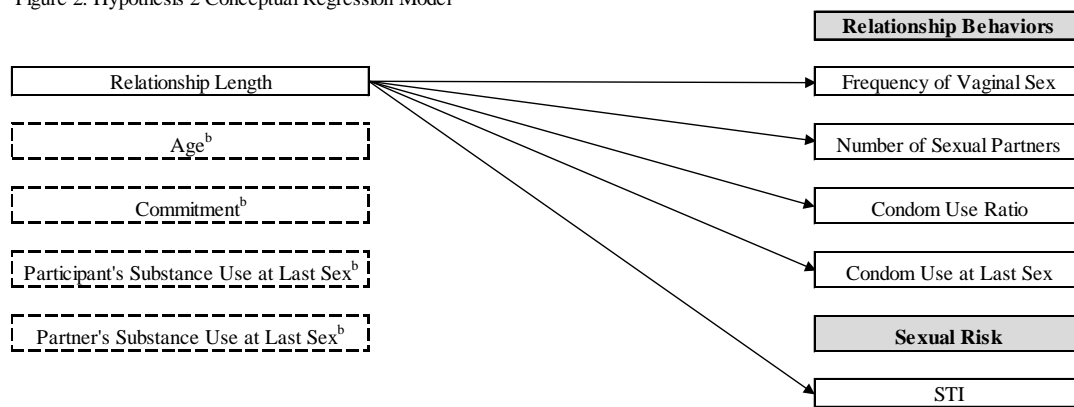
| Relationship Length |
| Age[b] |
| Commitment[b] |
| Participant's Substance Use at Last Sex[b] |
| Partner's Substance Use at Last Sex[b] |

Relationship Behaviors
Frequency of Vaginal Sex
Number of Sexual Partners
Condom Use Ratio
Condom Use at Last Sex
Sexual Risk
STI

[a] All associations ran within relationships with repeated experiences of sexual coercion
[b] Control variable

METHODS

Participants and Study Design

Data for the current study are drawn from a longitudinal cohort study (The Young Women's Project (YWP): 1999-2009), examining sexual relationships, sexual behaviors and STI in middle-to-late aged adolescent women. YWP participants (N=385) were a modified convenience and snowball sample of adolescent women receiving health care as part of the patient population in one of three primary care adolescent health clinics in Indianapolis, IN. These clinics serve lower- and middle-income, multi-ethnic communities typically associated with early onset of sexual activity and high levels of teen pregnancy and STIs.

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Eligibility for YWP included being 14 to 17 years of age, English speaking, and not being pregnant. Neither sexual experience nor sexual orientation were criterion for entry in either study; however, most participants had some degree of partnered sexual activity experience prior to enrollment, and the majority reported opposite-sex partners during the study. This research was approved by the institutional review board of the author's primary institution. Informed consent was obtained from each participant and permission obtained from a parent or legal guardian.

As part of the larger study, participants contributed quarterly quantitative individual- and partner-specific interview data on sexual history, sexual attitudes, sexual behavior and contraception. In each interview, participants could provide information on up to five "partners," identified by initials or first name, including friends, dating partners, boyfriends and sexual partners. While most studies define "partner" in the context of previous vaginal sexual contact, the definition was broadened to include "personal relationships associated with close physical contact (like having sex, kissing, or holding hands) or spending time together." Such a focus permitted understanding of how ongoing relationship-related dynamics impact health and well-being for young women, independent of the relatively static status labels (e.g., "main" or "casual") that may be associated with these relationships. Thus, relationships in this study could either include or exclude different types of sexual contact between a participant and her named partner, and this activity could change by the next interview.

Participants contributed a total of 5151 quarterly interviews; the median number of interviews completed per *participant* was 15 (range 1-47, while the median number completed per *partner* was four (range: 1-27). The number of completed interviews did

not differ by participant baseline age (p=0.229), number of lifetime sexual partners (p=0.282), race/ethnicity (p=0.778), STI status (p=0.979) or coital (vaginal or anal sex: p=0.266-0.923) and non-coital (manual- or oral-genital: p=0.140-0.667) behavior.

Measures

      All items for each measure are provided in full in Appendix A.

Indicator Variables Sexual coercion was assessed with 4 single-item measures, including: "did your partner ever make you have any kind of sex when you didn't want to;" "would your partner get mad if you didn't want to have sex;" "would your partner break up with you unless you had sex;" and "does your partner give you money for any kind of sex." Sexual coercion measures of "would your partner get mad if you didn't want to have sex;" and "would your partner break up with you unless you had sex" were recoded from a 3-point Likert-type scale (Definitely No, Maybe, Definitely Yes) to a dichotomous "yes" (Maybe or Definitely Yes) or no" (Definitely No). Sexual coercion measures of "did your partner ever make you have any kind of sex when you didn't want to" and "does your partner give you money for any kind of sex" were asked dichotomously as "yes" or "no." Each participant answered each measure specifically for a self-identified partner, with the ability to report up to five separate partners in a given quarter. All repeated sexual coercion experiences, among all types of sexual coercion, were coded as a repeated experience and retained for analysis, to create a single indicator variable for any repeated sexual coercion.

Aligned with previous research, age was categorized into three groups (14 – 17 years old, 18 – 21 years old, and 22 - 24 years old). There were no participants with a reported age higher than 24. Age groups were used to stratify the results to assess potential differences during important transitional periods.

Independent Variable Relationship length is measured in months and presented both as actual months for regression models and categorized (three months, middle span, and final three months) for descriptive information. Categorized relationship length was derived from the quarterly interview that the participant reported a specific partner. The first quarterly interview in which a specific partner was reported was the "first three months" of the relationship. The final quarterly interview in which the same specific partner was reported by the participant was the "final three months" of the relationship. If a participant reported a specific partner in only one quarterly interview, then that was coded as the "first and final three months" of the relationship. Finally, quarterly interviews in between the "first three months" and "final three months" of the relationship were coded as the "middle span" of the relationship.

Control Variables The reported age at the time of the quarterly interview (years). Numerical age in years was used as a control variable within the categories of age listed above (14-17 years old, 18-21 years old, and 22-24 years old).

Commitment was assessed with a single item: "How committed are you to this partner?" Possible answers included: not at all, somewhat, mostly, and completely.

Participant's substance use was assessed with two items: "How often does you drink alcohol before you have any kind of sex with him/her?" and "How often does you smoke weed before you have any kind of sex with him/her?" Responses for both substance use items were never, some, and a lot; we recoded each item so that never was "no" substance use and some and a lot was "any" substance use. Both items were combined to create a single-item measure.

Partner's substance use was assessed with two items: "How often does he/she drink alcohol before you have any kind of sex?" and "How often does he/she smoke weed before you have any kind of sex?" Responses for both substance use items were never, some, and a lot; we recoded each item so that never was "no" substance use and some and a lot was "any" substance use. Both items were combined to create a single-item measure.

Outcome Variables Six relationship attributes will be used, including: relationship quality, sexual satisfaction, sexual autonomy, sexual communication, condom use efficacy, and intention to prevent pregnancy.

Relationship quality consisted of a 6-item Likert-type scale (Strongly Disagree, Disagree, Agree, and Strongly Agree [SD, D, A, SA]). Scores ranged from 6-24, with higher scores indicating a higher level of relationship quality. An example item is "I feel happy when we are together" (alpha = .92).

Sexual satisfaction consisted of 5-items using semantic differential scales (worthless to valuable; very bad to very good; very unpleasant to very pleasant; very

negative to very positive; and very unsatisfying to very satisfying). Scores ranged from 5-35, with higher scores indicating higher levels of sexual satisfaction (alpha = .93).

Sexual autonomy consisted of a 3-item Likert-type scale (SD, D, A, SA). Scores ranged from 3-12, with higher scores indicating higher levels of sexual autonomy. An example item is "it's easy for me to say no if I don't want to have sex" (alpha = .86).

Sexual communication consisted of a 3-item Likert-type scale (SD, D, A, SA). Scores ranged from 3-12, with higher scores indicating more ability to communicate about sexual things with their partner. An example item is "I am comfortable talking to him/her about sex" (alpha = .85).

Condom use efficacy consisted of a 4-item Likert-type scale (SD, D, A, SA). Scores ranged from 4-16, with higher scores indicating higher efficacy with condom use. An example item is "it will be easy to use a condom/dental dam if we have sex" (alpha = .83).

Intention to prevent pregnancy consisted of a 3-item Likert-type scale (SD, D, A, SA). Scores ranged from three-12, with higher scores indicating more intention to prevent pregnancy with their partner. An example item is "I am committed to not getting pregnant at this time" (alpha = .60).

Relationship behaviors were: frequency of vaginal sex, condom use ratio, condom use at last sex, and number of sexual partners. Frequency of vaginal sex was assessed with a single-item: "in the past two or three months, how many times did you have sex with your partner," in which a number was provided by the participant. Condom use ratio was assessed by dividing the number of times condoms were reported being used at each coital event by frequency of vaginal sex. Condom use at last sex was a single-item

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(yes/no) report, and number of sexual partners was the number of current sexual partners reported by the participant.

Sexual risk outcomes consisted of report of STI (yes/no of: chlamydia, gonorrhea, or trichomonas).

ANALYSIS

Data Preparation

Data were examined to identify the initial report of sexual coercion in the study among all participants. An initial confirmation to experiencing any type of sexual coercion within a unique partnership was coded as "yes" (1), while all non-affirmative responses were coded as "no" (0). Following the indication of an initial experience of sexual coercion, data were then examined for a second instance of any type of sexual coercion, within unique partnerships, following the same coding as above ("yes = 1" and "no = 0"). Therefore, participants could have multiple initial experiences of sexual coercion, as well as multiple repeat experiences of sexual coercion, if they reported multiple relationships in which sexual coercion began and continued.

As previously discussed, age may represent distinct transitions in life and subsequently may be meaningful for experiences of sexual coercion. Thus, for those that reported their age between 14 and 17 years old at the report of an initial or repeat experience of sexual coercion were classified within the 14-17 years old age group. Similarly, those that reported their age between 18-21 years old or 22-24 years old at the report of an initial or repeat experience of sexual coercion were classified within their respective age groups. Accordingly, we used three age groups (14-17 years old, 18-21 years old, and 22-24 years old) to stratify analyses during this study. Within these age

groups, age (years) was still held as a control variable because of the potential influence of age even within the groupings. For instance, age can still be an influence as a 14 year old may be less experienced as a 17 year old.

Finally, relationship length (numerical months) was used as the independent variable for all regression analyses. However, for descriptive statistics to analyze at which point in the relationship initial and repeat experiences of sexual coercion began, relationship length was categorized. As described previously, the first quarterly interview in which a specific partner was reported was coded as the "first three months" of the relationship. The final quarterly interview in which the same specific partner was reported by the participant was coded as the "final three months" of the relationship. If a participant reported a specific partner in only one quarterly interview, then that was coded as the "first and final three months" of the relationship. Finally, quarterly interviews in between the "first three months" and "final three months" of the relationship were coded as the "middle span" of the relationship.

Statistical Approach

Descriptive statistic techniques (frequency distributions, means and standard deviations, and crosstabulations) were used to assess average scores of all relationship attribute and behavior variables, as well as relationship length within relationships with just initial and repeat experiences of sexual coercion. Chi-square test was used to assess for significant differences at different time points of the relationship (first three months, middle span, final three months, or both the first and last three months) within relationships with an initial and repeat experiences of sexual coercion.

To assess each hypotheses, we ran a series of regression models. Longitudinal datasets, such as the one this study drew its data from, repeat observations over time, creating covariance in measures that violate assumptions of regression analysis (Liang and Zeger 1986; Lindstrom and Bates 1990). A consequence of the correlated estimates is an inflated standard error of estimates (Lindstrom and Bates 1990). To account for the covariance of repeated measures, we used a mixed effects technique for regression analysis. Mixed effects is a regression estimating technique that is useful when working with repeated observations because it provides consistent estimates of the variance and accounts for the correlation seen in responses by correcting the inflation of standard error estimates (Bagiella, Sloan, and Heitjan 2000; Lindstrom and Bates 1990). All mixed effects regression models control for age, commitment to the partner, and participant's and partner's substance use, with relationship length as the single predictor variable, within any repeated sexual coercion indicator variable (Figure 1). All relationship outcome variables measured continuously (attributes: relationship quality, sexual satisfaction, sexual autonomy, sexual communication, condom use efficacy, and intention to prevent pregnancy; behaviors: frequency of vaginal sex and condom use ratio) use mixed effects linear regression. The binary outcome variables (condom use at last sex and report of an STI) use mixed effects logistic regression. For the count outcome variable (number of sexual partners) mixed effects Poisson regression is used.

RESULTS

Participant Characteristics at Study Enrollment

Full characteristics of participants at study enrollment are described in Table 1.

At enrollment, the majority of participants had initiated sexual intercourse (75.6%) and reported their first sexual intercourse having occurred by age 14 (23.9%). Participants reported an average of about three lifetime sexual partners (SD = 2.50) and an average of about two sexual partners in the past two months (SD = 0.94). Very few participants reported having ever been pregnant (Once or Twice: 11.0%). Few reported engaging in sexual behaviors such as giving oral sex (13.0%) and receiving anal sex (6.0%). Conversely, the majority of participants reported having had their breasts touched (81.9%) and engaging in deep kissing (84.2%).

Table 1. Characteristics of Participants at Study Enrollment (N = 385)

	Lifetime	Past Two Months
Age at first sexual intercourse (Median; N, %)	13; 90 (23.9)	-
Number of sexual partners (Mean, SD)	2.81 (2.50)	1.83 (0.94)
Frequency of lifetime pregnancy (N, %)		
Never	97 (89.0)	-
Once	10 (9.2)	-
Twice	2 (1.8)	-
Sexual Behaviors (Yes: N, %)		
Had breasts touched	316 (81.9)	225 (58.7)
Touched partner's genitals	221 (57.3)	155 (40.5)
Partner touched their genitals	260 (67.4)	178 (46.5)
Deep kissing	325 (84.2)	241 (62.9)
Sexual dancing	126 (32.6)	65 (17.0)
Gave oral sex	50 (13.0)	29 (7.6)
Received oral sex	120 (31.2)	75 (19.6)
Received anal sex	23 (6.0)	6 (1.6)
Vaginal sexual intercourse	286 (74.1)	192 (50.1)

Adolescent Women's Relationship Characteristics

Full descriptive statistics for all variables, broken down by all participants, those with no experience of sexual coercion, those with a single experience of sexual coercion, and those with repeat experiences, are described in Table 2. Overall, participants with no

experiences of sexual coercion had a mean age of 17.88 (SD = 2.12), while participants

with a single experience of sexual coercion had a mean age of 17.51 (SD = 1.99) and

those with repeated sexual coercion had a mean age of 18.76 (SD = 2.11). Those with

only an initial experience of sexual were significantly younger (b(se) = -.060 (.024), p <

.05) and those with repeat experiences of sexual coercion were significantly older (b(se)

= .217 (.039), p < .001) than those with no experiences of sexual coercion. The average

length of the relationship for those participants that have never experienced sexual

coercion was about 8 months (SD = 13.95), as compared to about 4 months for those that

reported a single experience of sexual coercion (SD = 9.03) and 21 months for those with

repeated experiences (SD = 18.94).

Table 2. Descriptive Statistics of Adolescent Women's Relationships, Measured Quarterly (N = 5151)

	All Participants (N = 5,151 Quarters)	No Experience of Sexual Coercion (N = 4,686 Quarters)	Single Experience of Sexual Coercion (N = 465 Quarters)	Repeated Experiences of Sexual Coercion (N = 328 Quarters)
Age (Mean, SD)[a]	17.84 (2.11)	17.88 (2.12)	17.51 (1.99)*	18.76 (2.11)***
Age Group (N, %)				
14-17 years old	2726 (52.92)	2452 (52.33)	274 (58.92)	126 (38.41)
18-21 years old	2258 (43.84)	2078 (44.34)	180 (38.71)	178 (54.27)
22-24 years old	167 (3.24)	156 (3.33)	11 (2.37)	24 (7.32)
Relationship Length (Months: Mean, SD)	7.72 (13.63)	8.09 (13.95)	3.91 (9.03)	20.93 (18.94)
Commitment to Partner (Range: 1-4; Mean, SD)	2.97 (1.15)	3.03 (1.13)	2.28 (1.14)	3.04 (1.15)
Substance Use at Last Sex (Yes: N, %)				
Participant	1485 (29.07)	1286 (27.69)	199 (42.89)	149 (45.43)
Partner	2653 (51.95)	2346 (50.53)	307 (66.16)	236 (71.95)
Relationship Attributes (Mean, SD)				
Relationship Quality (Range: 6-24; α = .92)	18.56 (4.32)	18.76 (4.21)	16.58 (4.88)	18.62 (4.44)
Sexual Satisfaction (Range: 5-35; α = .93)	28.70 (7.46)	29.04 (7.20)	24.82 (9.06)	26.55 (7.40)
Sexual Autonomy (Range: 0-12; α = .86)	8.51 (1.54)	8.59 (1.46)	7.69 (2.01)	7.31 (1.88)
Sexual Communication (Range: 0-12; α = .80)	10.11 (1.76)	10.19 (1.70)	9.35 (2.14)	9.75 (1.84)
Condom Use Efficacy (Range: 0-16; α = .69)	12.05 (2.50)	12.12 (2.47)	11.32 (2.77)	10.75 (2.40)
Intention to Prevent Pregnancy (Range: 2-6; α	5.71 (0.78)	5.72 (0.77)	5.59 (0.86)	5.59 (0.83)
Relationship Behaviors (Mean, SD)				
Frequency of Vaginal Sex	12.41 (22.82)	12.62 (23.22)	10.37 (18.42)	21.44 (34.65)
Number of Sexual Partners	1.22 (0.54)	1.20 (0.52)	1.42 (0.73)	1.15 (0.44)
Condom Use Ratio	0.53 (0.44)	0.53 (0.44)	0.50 (0.44)	0.37 (0.40)
Condom Use at Last Sex (Yes: N, %)	2270 (49.02)	2064 (49.17)	206 (47.58)	108 (33.64)
Sexual Risk (Yes: N, %)				
Acquistion of STI	539 (15.27)	497 (15.04)	42 (18.58)	31 (12.76)

[a] Mixed effects generalized linear modeling to test for significant age differences between those with no sexual coercion, those with an initial experience of sexual coercion, and those with repeated sexual coercion.

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

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Frequency and Timing of Sexual Coercion

Table 3 describes the descriptive information of sexual coercion within adolescent women's relationships. When the participant's partner would get mad if the participant tried to refuse sex was the most frequently occurring type overall (M= 2.58, SD=2.7). This was similar, even when broken down by age group, in that their partner would get mad if the participant tried to refuse sex was the most frequently occurring type for all age groups (14-17 years old: M=1.70, SD=1.2; 18-21 years old: M=3.42, SD=3.6; and 22-24 years old: M=4.24, SD=2.7). Particularly, the range of average months until the initial experience of sexual coercion occurred was 4.9 (partner would get mad with the participant) to 7.8 (was pressured to have sex when they didn't want to). However, for repeat experiences of sexual coercion, the range of the average months until the subsequent coercion began was 5.5 (receiving money) to 22.4 (partner threatened to break up with them).

Table 3. Descriptive Information of Relationship Length (Months) and Frequency of Sexual Coercion by Type

	Sexual Coercion Type (Mean, SD; Median)			
	Received money in exchange for sex	Was pressured to have sex when participant didn't want to	Partner would get mad with participant if sex was refused	Partner threatened to break up with participant if sex was refused
Total Reports of Sexual Coercion				
Age Group				
14-17 years old	1.15 (0.3); 1	1.19 (0.5); 1	1.70 (1.2); 1	1.04 (0.2); 1
18 - 21 years old	1.13 (0.4); 1	2.11 (1.8); 1	3.42 (3.6); 2	2.30 (2.7); 1
22 - 24 years old	a	1.00 (0.0); 1	4.24 (2.7); 4	1.33 (0.5); 1
Overall	1.14 (0.4); 1	1.72 (1.5); 1	2.58 (2.7); 1	1.63 (1.9); 1
Relationship Length (Months) Until Initial Experience				
Age Group				
14-17 years old	3.0 (5.5); 0	5.1 (7.5); 3	2.8 (6.1); 0	3.6 (7.4); 0
18 - 21 years old	8.0 (11.5); 3	10.5 (14.5); 3	8.4 (12.8); 1.5	6.8 (12.7); 0
22 - 24 years old	a	4.0 (6.9); 0	5.1 (7.8); 0	23.2 (22.5); 22.5
Overall	6.2 (9.9); 1.5	7.8 (11.9); 3	4.9 (9.5); 0	5.6 (11.1); 0
Relationship Length (Months) Until Repeat Experience				
Age Group				
14-17 years old	12.0 (4.2); 12	21.0 (20.6); 9	20.3 (18.0); 18	4.5 (2.1); 4
18 - 21 years old	42.0 (0.0); 42	40.2 (19.1); 44	51.2 (16.7); 53	38.4 (15.4); 39
22 - 24 years old	a	a	75.2 (10.2); 72	67.5 (6.3); 67
Overall	22.0 (17.5); 15	36.9 (20.4); 42	40.4 (22.8); 42	37.9 (20.0); 39

[a]No reports of sexual coercion

To test for significant differences at which point the initial experiences of sexual coercion began, relationship length was categorized into the first 3 months, the final three months, or the middle span of the relationship. Importantly, there were significant differences in which point the initial experience occurred in their relationship across any type of sexual coercion, for all participants experiencing sexual coercion (χ^2 (df) = 62.151 (3), p < .001). There were also significant difference in which point the initial experience occurred in their relationship across any type of sexual coercion for those in the 14-17 years old group (χ^2 (df) = 24.682 (3), p < .001), 18-21 years old group (χ^2 (df) = 28.210 (3), p < .001), and 22-24 years old group (χ^2 (df) = 8.509 (3), p < .001). Additional significant findings across age groups and sexual coercion types are fully described in Table 4.

Table 4. Relationship Timing of Initial Experience of Sexual Coercion, by Type and Age Group

	Sexual Coercion Type (N, %)				
	Received money in exchange for sex	Was pressured to have sex when participant didn't want to	Partner would get mad with participant is sex was refused	Partner threatened to break up with participant if sex was refused	Any Initial Sexual Coercion
Overall					
0 to 3 Months	5 (16.67)	10 (14.29)	87 (22.89)	15 (14.85)	97 (20.86)
Middle Span	10 (33.33)	29 (41.43)	93 (24.47)	17 (16.83)	127 (27.31)
Final 3 Months	5 (16.67)	11 (15.71)	56 (14.74)	17 (16.83)	127 (27.31)
Both First and Final 3 Months	10 (33.33)	20 (28.57)	144 (37.89)	52 (51.49)	165 (35.48)
χ^2(df) [a]	1.786(3)	1.109(3)	**75.545(3)***	**49.911(3)***	**62.151(3)***
Age Group: 14-17 years old					
0 to 3 Months	3 (27.27)	7 (22.58)	61 (26.18)	9 (15.52)	68 (24.82)
Middle Span	3 (27.27)	14 (45.16)	48 (20.60)	9 (15.52)	63 (22.99)
Final 3 Months	0 (0.00)	2 (6.45)	28 (12.02)	7 (12.07)	33 (12.04)
Both First and Final 3 Months	5 (45.45)	8 (25.81)	96 (41.20)	33 (56.90)	110 (40.15)
χ^2(df) [a]	2.704 (3)	2.263(3)	**28.353(3)***	**21.893(3)***	**24.682(3)***
Age Group: 18-21 years old					
0 to 3 Months	2 (10.53)	3 (8.33)	26 (18.57)	6 (15.38)	29 (16.11)
Middle Span	7 (36.84)	15 (41.67)	44 (31.43)	7 (17.95)	62 (34.44)
Final 3 Months	5 (26.32)	8 (22.22)	26 (18.57)	8 (20.51)	38 (21.11)
Both First and Final 3 Months	5 (26.32)	10 (27.78)	44 (31.43)	18 (46.51)	51 (28.33)
χ^2(df) [a]	2.301(3)	3.826(3)	**34.520(3)***	**28.849(3)***	**28.210(3)***
Age Group: 22-24 years old					
0 to 3 Months	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
Middle Span	0 (0.00)	0 (0.00)	1 (14.29)	1 (25.00)	2 (18.18)
Final 3 Months	0 (0.00)	1 (33.33)	2 (28.57)	2 (50.00)	5 (45.45)
Both First and Final 3 Months	0 (0.00)	2 (66.67)	4 (57.14)	1 (25.00)	4 (36.36)
χ^2(df) [a]	-	9.181(3)*	**14.514(3)****	1.304(3)	**8.509(3)***

[a] Chi-Square test of difference of initial reports of sexual coercion as compared to various time points of the relationship
*p < .05, **p < .01, ***p < .001

Similarly, to test for significant differences at which point the repeat experiences of sexual coercion began, relationship length was categorized into the final three months, or the middle span of the relationship. The first and final three months was omitted because repeat experiences could not be reported in a single interview. As with initial experiences of sexual coercion, there were significant differences in which point the initial experience occurred in their relationship across any type of sexual coercion, for all

participants experiencing sexual coercion (χ^2 (df) = 311.965 (3), p < .001). Remaining

significant findings across both age groups and sexual coercion type are fully described

in Table 5.

Table 5. Relationship Timing of Repeat Experience of Sexual Coercion, by Type and Age Group

	Sexual Coercion Type (N, %)				
	Received money in exchange for sex	Was pressured to have sex when participant didn't want to	Partner would get mad with participant is sex was refused	Partner threatened to break up with participant if sex was refused	Any Repeated Sexual Coercion
Overall					
Middle Span	2 (50.00)	21 (72.41)	244 (76.01)	15 (75.00)	249 (75.91)
Final 3 Months	2 (50.00)	8 (27.59)	77 (23.99)	5 (25.00)	78 (23.78)
χ^2(df)^a	4.422(3)	**17.448(3)****	**300.218(3)*****	**34.536(3)*****	**311.965(3)*****
Age Group: 14-17 years old					
Middle Span	2 (100.00)	3 (60.00)	95 (77.87)	2 (100.00)	99 (78.57)
Final 3 Months	0 (0.00)	2 (40.00)	27 (22.13)	0 (0.00)	27 (21.43)
χ^2(df)^a	3.781(2)	6.243(3)	**153.814(3)*****	**8.443(3)***	**165.117(3)*****
Age Group: 18-21 years old					
Middle Span	0 (0.00)	18 (75.00)	136 (76.84)	12 (75.00)	136 (76.40)
Final 3 Months	2 (100.00)	6 (25.00)	41 (23.16)	4 (25.00)	42 (23.60)
χ^2(df)^a	4.714(3)	**11.816(3)****	**117.686(3)*****	**21.270(3)*****	**121.669(3)*****
Age Group: 22-24 years old					
Middle Span	0 (0.00)	0 (0.00)	13 (59.09)	1 (50.00)	14 (58.33)
Final 3 Months	0 (0.00)	0 (0.00)	9 (40.91)	1 (50.00)	9 (37.50)
χ^2(df)^a	-	-	**14.992(2)****	0.750(2)	**8.500(2)***

^{a} Chi-Square test of difference of first report of repeated sexual coercion between middle span and final 3 months' time points of relationship
*p < .05, **p < .01, ***p < .001

Relationship Length as a Predictor of Relationship Attributes (Hypothesis 1)

Presented in this section and the next are the results of relationship length's

impact on relationship attributes and behaviors. Full models with control variable

information is presented in Appendix B. In partial support of hypothesis 1, mixed effects

linear regression results found that longer relationship length was associated with increased intention to prevent pregnancy (b(se) = .007 (.003), p < .05) for all participants experiencing repeated sexual coercion. There were no significant findings for those in the 14-17 years old age group. For those in the 18-21 years old age group, longer relationship length was associated with increased intention to prevent pregnancy when repeat sexual coercion occurred (b(se) = .009 (.004), p < .05). For those in the 22-24 years old age group, longer relationship length was associated with decreased levels of relationship quality (b(se) = -.091 (.023), p < .001) and intention to prevent pregnancy (b(se) = -.026 (.011), p < .05) when repeat sexual coercion occurred. Among all relationship attributes, we had very few significant findings. Full results for relationship length as a predictor of relationship attributes are described in Table 6.

Relationship Length as a Predictor of Relationship Behaviors and Sexual Risk (Hypothesis 2)

In support of hypothesis 2, longer relationship length was significantly associated with decreased frequency of vaginal sex in age group 22-24 years old when repeat sexual coercion occurred (b(se): -.631 (.253), p < .05), but no significant findings were seen with other age groups. Longer relationship length was significantly associated with decreased condom use ratio in age group 14-17 years old when repeat sexual coercion occurred (b(se): -.011 (.004), p < .05), but no significant findings with condom use ratio were associated with any other group. Longer relationship length was significantly lower odds of using a condom at last sex for all participants in which repeat sexual coercion occurred (OR [95% CI]: 0.98 [0.96 – 0.99], p < .05) and in the 14-17 years old age group (OR

[95% CI]: 0.93 [0.88 – 0.99], p < .05). Contrary to hypothesis 2, longer relationship length was associated with lower incidence of number of sexual partners across all groups, but these findings were not statistically significant. Finally, longer relationship length was significantly associated with higher odds of acquiring an STI among all participants when repeat sexual coercion occurred (OR [95% CI]: 1.03 [1.00 – 1.06], p < .01).

Opposite to hypothesis 2, longer relationship length was associated with decreased frequency of vaginal sex with repeat experiences of sexual coercion among the 22-24 years old age group. However, longer relationship length was associated with the increased odds of acquiring an STI as well as decreased condom use provide support for hypothesis 2. However, while not statistically significant, the findings that longer relationship length was associated with a decreased incidence rate of number of sexual partners when repeat sexual coercion occurs are contrary to hypothesis 2. Full results for relationship length as a predictor of sexual behaviors are presented in Table 7.

DISCUSSION

Overall, about nine percent of reported relationships were marked with at least a single experience of sexual coercion, in line with current estimates of overall prevalence of sexual coercion (Kann et al. 2016). This study is distinct from others in that it did not assess overall prevalence of *individuals* experiencing sexual coercion, but rather, the overall prevalence of *relationships* experiencing sexual coercion, an important distinction, as current research has assessed prevalence among individuals only (Bonomi et al 2013; Olshen et al 2007; Temple and Freemen 2011). Our study adds to this existing

Table 6. Relationship Length as a Predictor of Relationship Attributes, Within Relationships with Repeat Sexual Coercion, By Age Group

Relationship Length	Relationship Attributes b(se)					
	Relationship Quality	Sexual Satisfaction	Sexual Autonomy	Sexual Communication	Condom Use Efficacy	Intention to Prevent Pregnancy
Age Group						
14-17 years old	.048 (.044)	-.056 (.084)	.036 (.022)	-.0005 (.020)	-.039 (.032)	.006 (.009)
18 - 21 years old	.013 (.018)	-.053 (.041)	-.022 (.012)	-.014 (.011)	-.017 (.014)	**.009 (.004)***
22 - 24 years old	**-.091 (.023)*****	.005 (.065)	.012 (.010)	.011 (.012)	.025 (.016)	**-.026 (.011)***
Overall	.004 (.015)	-.022 (.032)	-.009 (.008)	-.002 (.008)	-.002 (.011)	**.007 (.003)***

*p < .05, **p < .01, ***p < .001

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Table 7. Relationship Length as a Predictor of Relationship Behaviors and Sexual Risk, Within Relationships with Repeat Sexual Coercion, By Age Group

Relationship Length	Relationship Behaviors				Sexual Risk
	Frequency of Vaginal Sex b(se)	Condom Use Ratio b(se)	Number of Sexual Partners IRR (95% CI)	Condom Use at Last Sex OR (95% CI)	Acquistion of STI OR (95% CI)
Age Group					
14-17 years old	1.133 (.738)	**-.011 (.004)***	0.98 (0.96 - 1.01)	**0.93 (0.88 - 0.99)***	1.08 (0.98 - 1.19)
18 - 21 years old	.176 (.123)	.0006 (.002)	0.99 (0.98 - 1.00)	0.99 (0.97 - 1.01)	1.02 (0.99 - 1.05)
22 - 24 years old	**-.631 (.253)***	.001 (.003)	0.99 (0.97 - 1.01)	0.95 (0.86 - 1.05)	a
Overall	.116 (.169)	-.001 (.001)	0.99 (0.99 - 1.00)	**0.98 (0.96 - 0.99)***	**1.03 (1.00 - 1.06)*****

a Omitted from analysis for too few cases
*p < .05, **p < .01, ***p < .001

literature in two salient ways: 1) the longitudinal design of this study contributes to the dearth of prospective research on sexual coercion in adolescent women's relationships (Lewis and Fremouw 2001); and 2) by its examination of relationships, not just individuals.

Further, the nearly a quarter (23.9%) of adolescent women in our study had reported initiating sex by the age of 14. However, even though initiation of sexual intercourse generally began by age 14, experiencing any initial experience of sexual coercion did not begin until about the age of 17. Therefore, there is a substantial gap in time before initial reports of sexual coercion begin. This provides a potential timeframe in which interventions seeking to avert any experiences of sexual coercion to influence whether or not the initial experience occurs.

Similar to the time gap that is seen between the initiation of sexual intercourse and an initial experience of sexual coercion, there is a large gap of time before repeat experiences of sexual coercion begin. Across all types of sexual coercion, initial sexual coercion was generally reported in the very beginnings of a relationship (about the first three months). However, there was a generally large gap of time within those relationships in which repeat experiences of sexual coercion began (about 20 months into the relationship). Therefore, there is a time lapse between initial reports of sexual coercion and when repeat experiences begin, patterns that are consistent across age groups.

The research presented here shows that 70% of relationships with an initial experience will report a repeat experience within that relationship, but this finding is nuanced by time. The large gap of at least an average of a year span across most types of

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sexual coercion between the initial and repeat experiences of sexual coercion suggests that interventions can target this time to impart healthy relationship skill building (i.e. increasing sexual self-efficacy, autonomy, and communication). In sum, it should not be assumed that a relationship that experiences an initial experience of sexual coercion is doomed to repeat these experiences. Instead, the time gap before repeat sexual coercion begins suggests an opportune time to target these adolescents with ideas and skills about healthy relationships, in an effort to avert repeat sexual coercion.

Finally, in relation to the specific hypotheses, the findings of this study are conflicting. Of particular note is the impact relationship length has on sexual autonomy within relationships with repeat experiences of sexual coercion. Among 14-17 year olds, sexual autonomy significantly increases as relationship length increases. Conversely, in the 18-21 year olds, sexual autonomy significantly decreases as relationship length increases. Hypothesis 1 suggested that sexual autonomy would decrease within relationships with repeat sexual coercion, regardless of age group. However, sexual autonomy significantly increased in the younger age group before decreasing.

Increased levels of sexual autonomy in younger age groups (14-17 years old) before decreasing in older age groups (18-21 years old) may be indicative of normative sexual development being impacted by experiences of sexual coercion, as indicated by sexual script theory. It is possible that 14-17 year olds, with less romantic relationship experience than 18-21 year olds, enter into these relationships with a higher sense of sexual autonomy. As experience, especially experience with sexual coercion, accrues, the older group may have adjusted their sexual scripts to reflect ones' that are less

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autonomous than the younger group. Sexual autonomy within relationships with repeat sexual coercion should be further examined.

Further, while we hypothesized that adolescent women in relationships with repeat sexual coercion would experience less desire to prevent pregnancy with that partner as relationship length increased, we instead found that, overall, intention to prevent pregnancy increased with relationship length. This may be a reflection of a sexual script that notes a desire to avoid becoming attached to a sexually coercive relationship by having a child with that partner, even though the adolescent women in these relationship did not end the relationship. This findings suggests that there may be an underlying desire to not become "beholden" to the relationship, and be explored more thoroughly in future research.

In support of hypothesis 2, in general, the frequency of vaginal sex in relationships with repeat sexual coercion significantly increased as relationship length increased, with the exception of the oldest age group, 22-24 year olds. Increased sexual frequency is potentially a door to repeat sexual coercion, as the increase in frequency also increases the opportunities for sexual coercion to occur. Further, in support of hypothesis 2, condom use and acquisition of an STI also increased as relationship length increased. These findings show the potential for adverse sexual behaviors that may increase exposure to sexual health concerns of unintended pregnancy and STIs. Therefore, interventions with sexually coercive relationships should consider how these sexual behaviors are impacted by relationship length and target improving these particular behaviors.

STRENGTHS AND LIMITATIONS

Perhaps the most marked strength of this study is its prospective design. Research on how sexual coercion impacts adolescent women's romantic relationships is scant, and of the research that exists, it is largely cross-sectional and retrospective in design (Exner-Cortens 2013; Lewis and Fremouw 2001). The use of a prospective design in this study contributes to the growing need of longitudinal studies to help design more efficacious programs to eliminate coercion in adolescent women's relationships (Lewis and Fremouw 2001). Further, this is the only study that examines, prospectively, how repeat experiences impact current romantic relationships. Second, this study focused on adolescent women heavily concentrated in the 14-17 years old age group. This age range is a hard to reach population, and subsequently understudied, especially as it relates to experiences of sexual coercion. Therefore, the findings presented here give us invaluable knowledge and insight to this population of adolescent women about their experiences with sexual coercion within their romantic relationships.

Despite the strengths of this study, it is not without its limitations. Particularly, there is some ambiguity of some of the measures used in this study. First, due to the use of quarterly interviews for the data, it was not possible to determine the exact "middle span" of relationships. It could only be determined which were the first and final three months of the relationship. Therefore, the "middle span" of the relationship could be three months long, or over a single or several years. Further, sexual coercion here was limited. There are many types of sexually coercive experiences and more inclusive of these types is needed to better understand particular nuances of experiences of sexual coercion.

Second, no measures of dating or intimate partner violence were used in this study. It is well understood that dating and intimate partner violence are often conflated with sexual coercion (Bonomi et al 2012). Therefore, dating or intimate partner violence could be occurring simultaneously and an important confounder in experiences of sexual coercion within adolescent women's romantic relationships.

Next, this study did not ask about prior experiences with sexual abuse or coercion, either outside of previous romantic relationships or within them. Therefore, there are some potentially important control variables that were not assessed here. Childhood sex abuse is a well-known predictor of future sexual victimization (Horner 2010) and would therefore make an important control variable when assessing repeat experiences of sexual coercion.

Finally, while there were strong sample sizes for most types of sexual coercion, receiving money in exchange for sex had a considerably lower sample than other types. Non-significant findings of this type of sexual coercion may be a reflection of low sample sizes rather than true non-significant findings.

FUTURE RESEARCH

Future research in examining repeat experiences of sexual coercion within adolescent women's romantic relationship should consider several implications of the current research. First, ambiguity in some measures should be clarified. For instance, a more comprehensive list of types of sexual coercion is needed to be constructed and validated for future research. Second, potential confounding prior experiences (i.e.

childhood sex abuse) should be considered as potential control variables for future research.

Next, future research should consider comparing relationships marked with repeat sexual coercion to relationships without any experiences of sexual coercion to be able to assess if these findings are unique to adolescent women's relationships with sexual coercion. A study of this sort will further enhance our understanding of relationships with sexual coercion and how interventions can be tailored to eliminating all experiences of sexual coercion for adolescent women.

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APPENDICES

Appendix A: Study Variables' Itemized List

Independent Variable

Relationship Length (numerical value)

    1) Number of months a specific partner was reported on quarterly interviews.

Control Variables

Age (numerical value)

    1) Age at quarterly interview.

Partner's Substance Use before Sex (all never, some, a lot)

    1) How often does he/she drink alcohol before you have any kind of sex?

    2) How often does he/she smoke weed before you have any kind of sex?

Participant's Substance Use before Sex (all never, some, a lot)

    1) How often do you drink alcohol before you have any kind of sex with him/her?

    2) How often do you smoke weed before you have any kind of sex with him/her?

Commitment

    1) How committed are you to this partner? (not at all, somewhat, mostly,

       completely)

Indicator Variables

Sexual Coercion

    1) Does he/she give you money for any kind of sex? (yes/no)

2) Did he/she ever make you have any kind of sex when you didn't want? (yes/no)

3) Would he/she get mad if you didn't want to have sex? (Definitely no, Maybe, and Definitely yes; recoded to definitely no = no, and definitely yes and maybe = yes)

4) Would he/she break up with you unless you would have sex? (Definitely no, Maybe, and Definitely yes; recoded to definitely no = no, and definitely yes and maybe = yes)

Outcome Variables

Relationship Attributes

Relationship Quality (all strongly disagree, disagree, agree, strongly agree)

1) We have a strong emotional relationship.

2) We enjoy spending time together.

3) He/she is a very important person in my life.

4) I think I am in love with him/her.

5) I feel happy when we are together.

6) I think I understand him/her.

Sexual Satisfaction (all semantic differential scales)

These ask your feelings about your sexual relationship in general.

1) Very bad (1) – Very good (7)

2) Very unpleasant (1) – Very pleasant (7)

3) Very negative (1) – Very positive (7)

4) Very unsatisfying (1) – Very satisfying (7)

5) Worthless (1) – Valuable (7)

Sexual Autonomy (all strongly disagree, disagree, agree, strongly agree)

1) It's easy for me to say no if I don't want to have sex.

2) It's easy for him/her to take advantage of me (R).

3) Sometimes things just get out of control with him/her (R).

Sexual Communication (all strongly disagree, disagree, agree, strongly agree)

1) I am comfortable talking to him/her about sex.

2) It is easy to talk to him/her about using condoms/dental dams.

3) It is easy to talk to him/her about using birth control.

Condom Use Efficacy (all strongly disagree, disagree, agree, strongly agree)

1) It will be easy to use a condom/dental dam if we have sex.

2) It will be easy to help him/her put on/use a condom/dental dam if we have sex.

3) I won't have sex with him/her unless we use a condom/dental dam.

4) He/she will have a condom/dental dam if we want to have sex.

Intent to Prevent Pregnancy (all strongly disagree, disagree, agree, strongly agree)

1) I am very committed to not getting pregnant at this time in my life.

2) I'm trying to get pregnant (R).

3) My partner wants me to get pregnant (R).

Relationship Behaviors

Frequency of Vaginal Sex (numerical value)

1) In the past two or three months, how many times did you have sex with your partner?

Condom Use Ratio (numerical value: frequency of condom use divided by frequency of vaginal sex)

1) How many times did you use a condom/dental dam with your partner?

   In the past two or three months, how many times did you have sex with your partner?

Number of Sexual Partners (numerical value)

1) Number of reported sexual partners at each quarterly interview.

Sexual Risk

STI

1) Report of STI (chlamydia, gonorrhea, or trichomonas) (yes/no)

Appendix B: Regression Results with Control Variable Findings

	Relationship Length			
	Overall	**Age Group: 14-17 Years Old**	**Age Group: 18-21 Years Old**	**Age Group: 22-24 Years Old**
Relationship Attributes	**b(se)**	**b(se)**	**b(se)**	**b(se)**
Relationship Quality	.004 (.015)	.048 (.044)	.013 (.018)	**-.091 (.023)***
Age	-.158 (.157)	-.471 (.558)	-.489 (.273)	.730 (.448)
Commitment	**2.350 (.193)***	**2.663 (.384)***	**2.353 (.231)***	.143 (.253)
Participant's Substance Use	-.392 (.497)	.474 (1.058)	-.458 (.585)	-.224 (.668)
Partner's Substance Use	**-1.420 (.568)***	-1.625 (1.048)	**-1.665 (.748)***	.471 (.514)
Sexual Satisfaction	-.022 (.032)	-.056 (.084)	-.053 (.041)	.005 (.065)
Age	-.295 (.327)	-.199 (1.093)	.274 (.586)	-2.208(1.882)
Commitment	**3.088 (.394)***	**2.997 (.745)***	**3.134 (.483)***	**3.745 (1.156)**
Participant's Substance Use	.322 (1.007)	2.357 (2.057)	.066 (1.206)	3.003 (2.776)
Partner's Substance Use	-.736 (1.159)	-1.925 (2.029)	-1.655 (1.587)	-.225 (2.246)
Sexual Autonomy	-.009 (.008)	.036 (.022)	-.022 (.012)	.012 (.010)
Age	.047 (.093)	-.349 (.256)	.155 (.163)	-.234 (.379)
Commitment	**.267 (.103)***	**.688 (.179)***	.129 (.125)	.001 (.274)
Participant's Substance Use	-.214 (.256)	**-.920 (.477), p = .054**	.239 (.305)	-.148 (.586)
Partner's Substance Use	.035 (.303)	-.182 (.488)	-.067 (.425)	.507 (.509)
Sexual Communication	-.002 (.008)	-.0005 (.020)	-.014 (.011)	.011 (.012)
Age	.018 (.086)	-.280 (.246)	.186 (.149)	-.102 (.429)
Commitment	.170 (.095)	.309 (.172)	.202 (.116)	-.306 (.310)
Participant's Substance Use	.077 (.238)	-.692 (.463)	.442 (.283)	-.297 (.663)
Partner's Substance Use	-.052 (.281)	-.527 (.469)	-.413 (.391)	.474 (.576)
Condom Use Efficacy	-.002 (.011)	-.039 (.032)	-.017 (.014)	.025 (.016)
Age	-.023 (.117)	.654 (.408)	.137 (.195)	.616 (.597)
Commitment	-.248 (.136)	-.376 (.281)	-.062 (.154)	**-1.152 (.432)**
Participant's Substance Use	-.068 (.345)	-.991 (.774)	-.019 (.378)	-.230 (.922)
Partner's Substance Use	-.176 (.401)	.900 (.768)	-.735 (.516)	.764 (.801)
Intention to Prevent Pregnancy	**.007 (.003)***	.006 (.009)	**.009 (.004)***	**-.026 (.011)***
Age	-.014 (.037)	.082 (.117)	-.053 (.069)	-.100 (.228)
Commitment	-.051 (.047)	-.072 (.081)	-.061 (.059)	**-.327 (.129)***
Participant's Substance Use	-.117 (.123)	-.142 (.221)	.030 (.149)	**-.758 (.339)***
Partner's Substance Use	-.190 (.139)	-.114 (.222)	-.354 (.190)	**.501 (.261), p = .055**

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| | Relationship Length | | | | | | | | | | | |
| | Overall | | | Age Group: 14-17 Years Old | | | Age Group: 18-21 Years Old | | | Age Group: 22-24 Years Old | | |
Relationship Behaviors	b(se)	OR (95% CI)	IRR (95% CI)	b(se)	OR (95% CI)	IRR (95% CI)	b(se)	OR (95% CI)	IRR (95% CI)	b(se)	OR (95% CI)	IRR (95% CI)
Frequency of Vaginal Sex	.116 (.169)	-	-	1.133 (.738)	-	-	.176 (.123)	-	-	**-.631 (.253)***	-	-
Age	-.482 (1.765)	-	-	-2.647 (8.841)	-	-	.463 (1.735)	-	-	**19.456 (8.918)***	-	-
Commitment	**4.305 (1.942)***	-	-	6.469 (5.972)	-	-	**3.396 (1.430)***	-	-	-2.768 (6.412)	-	-
Participant's Substance Use	-2.945 (4.832)	-	-	1.648 (15.767)	-	-	.685 (3.568)	-	-	**-29.073 (13.750)***	-	-
Partner's Substance Use	10.696 (5.688)	-	-	11.559 (16.134)	-	-	5.331 (4.697)	-	-	20.852 (11.947)	-	-
Condom Use Ratio	-.001 (.001)	-	-	**-.011 (.004)***	-	-	.0006 (.002)	-	-	.001 (.003)	-	-
Age	-.033 (.020)	-	-	.098 (.065)	-	-	-.063 (.035)	-	-	**.193 (.102), p = .058**	-	-
Commitment	-.029 (.024)	-	-	-.049 (.044)	-	-	-.006 (.029)	-	-	-.026 (.065)	-	-
Participant's Substance Use	.038 (.061)	-	-	.229 (.129)	-	-	.012 (.072)	-	-	**.333 (.154)***	-	-
Partner's Substance Use	-.069 (.072)	-	-	-.124 (.125)	-	-	-.137 (.096)	-	-	-.149 (.126)	-	-
Number of Sexual Partners	-	-	0.99 (0.99 - 1.00)	-	-	0.98 (0.96 - 1.01)	-	-	0.99 (0.98 - 1.00)	-	-	0.99 (0.97 - 1.01)
Age	-	-	0.99 (0.93 - 1.07)	-	-	1.09 (0.81 - 1.47)	-	-	0.95 (0.82 - 1.09)	-	-	0.98 (0.48 - 1.98)
Commitment	-	-	**0.89 (0.81 - 0.99)***	-	-	0.90 (0.74 - 1.09)	-	-	0.89 (0.79 - 1.01)	-	-	0.86 (0.54 - 1.37)
Participant's Substance Use	-	-	1.05 (0.80 - 1.37)	-	-	1.03 (0.60 - 1.75)	-	-	1.09 (0.77 - 1.55)	-	-	0.90 (0.30 - 2.64)
Partner's Substance Use	-	-	0.95 (0.71 - 1.28)	-	-	1.08 (0.62 - 1.87)	-	-	0.85 (0.58 - 1.26)	-	-	1.01 (0.39 - 2.59)
Condom Use at Last Sex	-	**0.98 (0.96 - 0.99)***	-	-	**0.93 (0.88 - 0.99)***	-	-	0.99 (0.97 - 1.01)	-	-	0.95 (0.86 - 1.05)	-
Age	-	0.92 (0.78 - 1.08)	-	-	1.68 (0.81 - 3.48)	-	-	**0.62 (0.43 - 0.87)****	-	-	2.46 (0.38 - 15.64)	-
Commitment	-	0.94 (0.74 - 1.19)	-	-	1.07 (0.67 - 1.71)	-	-	0.91 (0.66 - 1.25)	-	-	0.29 (0.04 - 1.88)	-
Participant's Substance Use	-	0.84 (0.45 - 1.57)	-	-	0.67 (0.33 - 2.54)	-	-	0.76 (0.33 - 1.73)	-	-	a	-
Partner's Substance Use	-	0.54 (0.28 - 1.06)	-	-	1.59 (0.43 - 5.93)	-	-	**0.29 (0.11 - 0.73)****	-	-	0.68 (0.02 - 15.80)	-
Sexual Risk												
Acquistion of STI	-	**1.03 (1.00 - 1.06)****	-	-	1.08 (0.98 - 1.19)	-	-	1.02 (0.99 - 1.05)	-	-	a	-
Age	-	0.79 (0.60 - 1.06)	-	-	1.97 (0.26 - 14.49)	-	-	0.67 (0.38 - 1.16)	-	-	-	-
Commitment	-	1.15 (0.70 - 1.89)	-	-	1.93 (0.57 - 6.50)	-	-	1.23 (0.66 - 2.28)	-	-	-	-
Participant's Substance Use	-	0.73 (0.27 - 2.00)	-	-	1.08 (0.08 - 13.09)	-	-	0.99 (0.26 - 3.67)	-	-	-	-
Partner's Substance Use	-	1.83 (0.57 - 5.89)	-	-	1.78 (0.12 - 26.29)	-	-	1.24 (0.29 - 5.29)	-	-	-	-

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Panel Oral Presentations

Muzzey AK, Hensel DJ. "The Impact of Sexual Coercion on Changes in Adolescent Women's Relationship Attributes." Midwest Sociological Society Annual Meeting, March 2016, Chicago, IL. *Accepted – Not Presented*

Muzzey AK, Hensel DJ. "The Role of Intrinsic Religiosity on Factors Associated with Experiences of Sexual Coercion among Adolescent Women." Gender Matters Regional Conference, April 2015, Governors State University, University Park, IL.

Muzzey AK. "Maladaptive Coping and Perceived Social Support as Mediating Variables between Sexually Coercive Experiences, and Sexual and Mental Health." Indiana University Women's and Gender Studies Undergraduate Conference, April 2015, Indiana University East, Richmond, Indiana.

Roundtable/Symposium Oral Presentations

Muzzey AK, Hensel DJ. "The Role of Relationship Length in Sexual Risk During Repeated Sexually Coercive Experiences in Adolescent Women's Romantic Relationships." Society for Adolescent Health and Medicine Annual Meeting, March 2017, New Orleans, LA.

Muzzey AK, Miller E, Zelazny S, McCauley H. "Links between Childhood and Adolescent Relationships among Young Women IPV Survivors who have Sex with Women." Society for Adolescent Health and Medicine Annual Meeting, March 2017, New Orleans, LA.

Muzzey AK, Cope-Barnes D, Hunt A, Zaban L, Hensel DJ, Ott MA. "Incorporating Positive Youth Development into Evidence-Based Teen Pregnancy Prevention Programs in Juvenile Corrections." American Public Health Association Annual Meeting, October 2016, Denver, CO.

Cope-Barnes D, **Muzzey AK**, Hunt A, Zaban L, Hensel DJ, Ott MA. "A Quality Improvement Approach to Adapting Evidence-Based Teen Pregnancy Prevention Programs for Youth in Foster Care and Juvenile Corrections." American Public Health Association Annual Meeting, October 2016, Denver, CO.

Muzzey AK, Hensel DJ. "The Impact of Sexual Coercion on Changes in Adolescent Women's Relationship Attributes." Society for Adolescent Health and Medicine Annual Meeting, March 2016, Washington, D.C.

Poster Presentations

Mscichowski O, **Muzzey AK**, Cope-Barnes D, Hunt A, Ott M. "Primary versus Secondary Prevention in Evidence-Based Pregnancy Prevention Programs for System-involved Adolescents." Society for Adolescent Health and Medicine Annual Meeting, March 2017, New Orleans, LA.

Wagner SL, **Muzzey AK**, Hensel DJ, Zaban L, Ott MA. "The Influence of Environmental ACEs on Sexual Health Outcomes Among System-Involved Youth."

Society for Adolescent Health and Medicine Annual Meeting, March 2017, New Orleans, LA.

Muzzey AK, Hensel DJ. "The Impact of Sexual Coercion on Three Dimensions of Adolescent Women's Relationships." Scholars Day, April 2016, Indiana University School of Medicine, Indianapolis, IN.

Muzzey AK, Hensel DJ. "The Relationship between Sexually Coercive Experience Frequency, Coping, Social Support and Sexual and Mental Health in Adult Women." Research Day, April 2015, Indiana University Purdue University Indianapolis, Indianapolis, IN.

Professional Organization Memberships

Midwest Sociological Association   **2015 - Current**

Awards and Honors

Medical Humanities & Health Sciences Student Essay Award   **April 2016**
Medical Humanities & Health Studies Program, Indiana University Purdue University Indianapolis
For "The Relationship between Sexually Coercive Experience Frequency, Coping, Social Support, Sexual and Mental Health in Adult Women"

Women's Studies Undergraduate Research Award   **April 2015**
Department of Women's Studies, Indiana University Purdue University Indianapolis
For "The Role of Intrinsic Religiosity on Factors Associated with Experiences of Sexual Coercion among Adolescent Women"

Outstanding Individualized Major   **April 2015**
School of Liberal Arts, Indiana University Purdue University Indianapolis

Training

Leadership Education in Adolescent Health (LEAH)
2015-2016

2016-2017
- Department of Pediatrics, Indiana University School of Medicine, Fellow

Service

Trainee Ambassador
2016-2017
- Trainee Ambassador Group, Maternal and Child Health Bureau

Research Abstract Publications

Muzzey, A. K., & Hensel, D. J. (2017). The Role of Relationship Length in Sexual Risk During Repeated Sexually Coercive Experiences in Adolescent Women's Romantic Relationships. *Journal of Adolescent Health*, *60*(2), S36-S37.

Muzzey, A. K., Miller, E., Zelazny, S., & McCauley, H. (2017). Links Between Childhood and Adolescent Relationships Among Young Women IPV Survivors Who Have Sex With Women. *Journal of Adolescent Health*, *60*(2), S26-S27.

Mscichowski, O., **Muzzey, A.**, Cope-Barnes, D., Hunt, A., & Ott, M. (2017). Primary Versus Secondary Prevention in Evidence-Based Pregnancy Prevention Programs for System-Involved Adolescents. *Journal of Adolescent Health*, *60*(2), S97-S98.

Wagner, S. L., **Muzzey, A. K.**, Hensel, D. J., Zaban, L., & Ott, M. A. (2017). The Influence of Environmental Aces on Sexual Health Outcomes Among System-Involved Youth. *Journal of Adolescent Health*, *60*(2), S102-S103.

Muzzey, A. K., & Hensel, D. J. (2016). The Impact of Sexual Coercion on Changes in Adolescent Women's Relationship Attributes. *Journal of Adolescent Health, 58*(2), S33.

Ott, M. A., Hunt, A., **Muzzey, A.**, & Cope-Barnes, D. (2016). Adapting an Evidence-based Teen Pregnancy Prevention Program for Adolescents With Adverse Childhood Experiences. *Journal of Adolescent Health*, *58*(2), S35.