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Associations Between Latent Classes of Interpersonal Polyvictimization and Polyperpetration and Sexual Risk Behaviors among Young Pregnant Couples: A Dyadic Analysis

Abstract

Purpose—Interpersonal violence victimization and perpetration has been associated with sexual risk behaviors among adolescents and young adults, but research is lacking on: 1) how patterns of interpersonal polyvictimization and polyperpetration is associated with sexual risk among young pregnant couples, and 2) how individual and *partners* experiences of violence differentially impact sexual risk.

Methods—The current analyses uses baseline data from a longitudinal study that followed 296 pregnant young couples from pregnancy to 12-months postpartum. Couples were recruited at obstetrics and gynecology clinics, and an ultrasound clinic in the U.S. Latent class analysis identified subgroups based on polyvictimization and polyperpetration. Using the Actor-Partner Interdependence Model, path analyses assessed actor-partner effects of class membership on sexual risk.

Results—Three latent classes were used for women: Class 1: *Polyvictim-Polyperpetrator*, Class 2: *Nonvictim-Nonperpetrator*, and Class 3: *Community and Prior IPV Victim*. Four latent classes were used for men: Class 1: *Community and Prior IPV Victim*, Class 2: *Polyvictim-Nonpartner Perpetrator*, Class 3: *Prior IPV and Peer Victim*, and Class 4: *Nonvictim-Nonperpetrator*. Path analyses revealed that females in Class 2: *Nonvictim-Nonperpetrator* and their male partners had higher condom use than females in Class 3: *Community and Prior IPV Victim*. Males in Class 2: *Polyvictim-Nonpartner Perpetrator* had more sexual partners than males in Class 1: *Community and Prior IPV Victim class*. Among non-monogamous couples, males in Class 2: *Nonvictim-Nonperpetrator* were less likely to be involved with a female partner reporting unprotected sex than males in Class 1: *Community and Prior IPV Victim*. Among non-monogamous couples, females in Class 2: *Polyvictim-Polyperpetrator* had more acts of unprotected sex than females in Class 1: *Community and Prior IPV Victim*. Males in Class 4: *Nonvictim-Nonperpetrator* were less likely to have concurrent sexual partners compared to males in Class 1: *Community and Prior IPV Victim*.

Conclusions—Risk reduction interventions should address both victimization and perpetration. Additional research is needed to understand how mechanisms driving differential sexual risk by patterns of interpersonal polyvictimization and polyperpetration.

Conflict of Interest: The author declare that they have no conflict of interest.

Ethical Approval: “All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.”

Keywords

Adolescents; Young pregnant couples; Violence; Latent class analysis; Sexual risk

Introduction

Engaging in sexual risk behaviors during pregnancy places young pregnant couples at a greater risk for poor sexual health and infant health. Some studies estimate that more than one in three (39%) young pregnant women test positively for Chlamydia, Trichomoniasis, or Gonorrhea, of which 19% were either new infections or re-infections during pregnancy (Meade & Ickovics, 2005). In addition to STI (sexually transmitted infections) prevalence, young mothers are also twice as likely to acquire an incident STI compared to non-pregnant, sexually active peers (Meade & Ickovics, 2005). Having an STI during pregnancy can increase the chances of pregnancy complications such as low birth weight, stillbirths, and physiological infections in the infant (Akoh et al., 2017). Young pregnant couples are more likely to engage in sexual risk behaviors compared to their non-pregnant peers (Meade & Ickovics, 2005), and research is needed to examine predictors of sexual risk behaviors during pregnancy in order to reduce the likelihood of poor sexual and infant health among young couples.

Violence and Sexual Risk

Violence victimization and perpetration across multiple domains have been independently associated with sexual risk behaviors among adolescents and young adults. Several studies indicate that adolescents and young adults who experience family, community, peer, or intimate partner violence (IPV) victimization are more likely to report sexual risk behaviors such as inconsistent condom use and multiple sexual partners (Rivera et al., 2015; Rosario et al., 2014; Silverman, Raj, & Clements, 2004; Voisin, 2005). Further, young men who perpetrate IPV are more likely to report increased sexual risk behaviors (Decker et al., 2009; Raj et al., 2013; Santana, Raj, Decker, La Marche, & Silverman, 2006). There are several potential mechanisms that can explicate the relationship between violence and sexual risk behaviors (Brown et al., 2014; Casey et al., 2016; Senn, Walsh, & Carey, 2016; Voisin, Hotton, & Neilands, 2016). For instance, poor mental health and negative peer influences may mediate the association between community violence victimization and adolescent sexual risk behaviors (Voisin et al., 2016). Low relationship power, condom use self-efficacy, and fear to negotiate condoms may also mediate the association between IPV victimization and inconsistent condom use among African-American female adolescents (Brown et al., 2014). In the context of perpetration, some research uses the theory of gender and power to suggest that sexual risk behaviors are tactics used by perpetrators of IPV to maintain gender-based power imbalances in relationships (Casey et al., 2016).

Despite extensive research examining associations between violence and sexual risk behaviors, young pregnant couples remain overlooked. Although research is lacking, some studies on violence and adolescent pregnancy supports the hypothesis that a significant positive association exists between violence and sexual risk behaviors among young pregnant couples. In particular, adolescent girls who experience IPV victimization are more

likely to become pregnant (Haynie et al., 2013; Silverman et al., 2004; Silverman, Raj, Mucci, & Hathaway, 2001). Adolescents and young adults who engage in sexual risk behaviors in the context of an abusive relationship before pregnancy, may continue to engage in these behaviors if this abusive relationship remains intact during pregnancy and the postpartum period. To date, no study has examined the sexual health implications of other forms of violence (i.e., community, peer, and family) among young pregnant couples, regardless of the research linking violence and sexual risk behaviors among non-expecting adolescents and young adults.

The Potential Role of Interpersonal Polyvictimization and Polyperpetration

Interpersonal polyvictimization and polyperpetration may be an important correlate of sexual risk behavior among young pregnant couples. Interpersonal polyvictimization and polyperpetration is defined as experiencing multiple victimizations and engaging in multiple perpetration acts within the interpersonal context category (e.g., peer violence victimization and perpetration) (Willie, Powell, Lewis, Callands, & Kershaw, 2017). Polyvictimization builds from research on cumulative adversity and traumatic stress theory. Research on cumulative adversity suggest that victimizations may cumulate in certain environments (Tseloni & Pease, 2004). Further, traumatic stress theory suggests that victimization is more complicated than a single event such that an individual experiences a pattern of ongoing and multiple victimizations (Finkelhor, Ormrod, & Turner, 2007). A pattern of ongoing and multiple victimizations can lead to complex trauma (Cook, Blaustein, Spinazzola, & Van der Kolk, 2003) and have damaging health effects. For example, some studies found that adolescents who experienced polyvictimization were more likely to experience poor mental health (Ford, Wasser, & Connor, 2011).

To date, the majority of research on polyvictimization and polyperpetration focuses on mental health and very little research examines sexual risk behaviors (Walsh, Senn, & Carey, 2012). Similarly, research examining the implications of violence victimization and perpetration on sexual risk behaviors primarily examines the independent effects of specific categories of violence. Recent research suggests that the etiology of different forms of violence are similar and focusing on the co-occurrence of violent types can provide a more comprehensive understanding of the impact of one's collective encounter with violence (Hamby & Grych, 2013). Further, some research on polyvictimization uses the ecological-transactional model to understand how ecological domains at varying levels of proximity can differentially influence an individual's health (Butcher, Holmes, Kretschmar, & Flannery, 2016). The ecological domain at which the violence occurred could have different effects on a person's health and behavior. Given the previous work on violence and sexual risk behaviors but under this nuanced conceptual framework of violence co-occurrences, interpersonal polyvictimization and polyperpetration may impact sexual risk behaviors such that polyvictims and polyperpetrators report more sexual risk behaviors than nonvictims and nonperpetrators.

Interpersonal polyvictimization and polyperpetration may influence sexual risk behaviors among young pregnant couples, but some key research gaps exist. Burgeoning research uses latent class analysis to examine polyvictimization among adolescents, but only one study has

used this approach among young pregnant couples. This study found three different subgroups for females and four subgroups for males based on experiences of victimization and perpetration (Willie et al., 2017). Females and males in classes characterized as polyvictims-polyperpetrators had a greater risk of experiencing IPV in their current relationship compared to females and males in nonviolent classes. This study is an example of heterogeneity in interpersonal polyvictimization and polyperpetration and its impact of behaviors in romantic relationships among young pregnant couples. Building on these findings, an examination of the associations between latent classes of interpersonal polyvictimization and polyperpetration and sexual risk behaviors can help identify subgroups of young pregnant couples at increased risk for suboptimal sexual health. Next, sexual risk often involves two people within a romantic relationship, but research on adolescent sexual risk tends to focus on the individual and not the dyad (Kershaw, Arnold, Gordon, Magriples, & Niccolai, 2012). Similarly, previous work suggests that individual and *partner's* history of violence can impact subsequent behaviors (Fritz, Slep, & O'Leary, 2012). Therefore, investigating how an individual and their *partner's* latent class membership is associated with engagement in sexual risk behaviors is needed. Focusing on both the individual- and partner-level effects of latent class membership will provide a deeper understanding of how histories of violence influence sexual risk among this vulnerable group.

The Current Study

The previously described study on latent classes among young pregnant couples provides a unique opportunity to investigate whether latent classes of interpersonal polyvictimization and polyperpetration is associated with engagement in sexual risk behaviors (i.e., condom use and unprotected sex in past 30 days, sexual partner concurrency, and number of sexual partners in past 6 months). To our knowledge, no study has examined associations between interpersonal polyvictimization and polyperpetration and couple's sexual health, especially young pregnant couples. Building upon research on cumulative abuse and sexual risk among young women, we hypothesize that women and men in the latent class with the highest probability of victimization and perpetration would be more likely to engage in sexual risk behaviors. We also hypothesize that actor and partner effects of membership in latent class characterized with experiences of victimization and/or perpetration would be associated with engagement in sexual risk behaviors. An actor effect refers to the association of one's own characteristic on one's outcome (e.g., women's latent class on women's concurrent partners). A partner effect refers to the association of a partner's characteristic on one's outcome (e.g., women's latent class on men's concurrent partners).

Methods

Participants

The current study uses baseline data from a longitudinal study designed to assess the effects of relationship changes on the sexual, reproductive, and maternal health of young pregnant couples (Kershaw et al., 2012). Between July 2007 and February 2011, 296 pregnant couples (N= 592 participants) were recruited from obstetrics and gynecology clinics and an ultrasound clinic in four university-affiliated hospitals in Connecticut. Interested participants

were screened for eligibility. Inclusion criteria for the study included: (a) females in their second or third trimester of pregnancy, (b) both partners reporting being biological parents of the unborn baby and in a romantic relationship with each other, (c) females between the age of 14-21 years old and male partners aged at least 14 years, (d) both partners agreed to participate in the study, and (e) able to speak English or Spanish. Eligible participants were provided study information and the research staff answered any questions. If the biological father or mother was absent at the screening, research staff asked for permission to contact their partner to explain the study. The participation rate was 72%. The only difference between those who enrolled in the study versus those who did not was that those who refused to participate were on average 2 week further along in their pregnancy compared to those who participated ($p < .05$).

Procedure

At the baseline interview, research members obtained written informed consent from participants. Informed consent was obtained from all individual participants included in the study. Each partner of the couple completed structured interviews by audio computer-assisted self-interviews separately. Participants were remunerated \$25 and provided with a list of community resources including those for employment, mental health treatment, and violence-related services. All procedures were approved by the study clinics and host institution's Institutional Review Boards.

Measures

Five sexual risk outcomes were measured: 1) condom use in the past 30 days across all sexual partners; 2) unprotected sex in the past 30 days across all sexual partners, 3) total number of sexual partners in the past 6 months, 4) sexual partner concurrency, and 5) biological STI diagnosis. Participants were asked for each sexual partner, "In the past month, how many times did you have sexual intercourse?" and "Of those times you had sexual intercourse, how many times did you use a condom?" The percentage of condom use was calculated by dividing the number of times a participant had sex by the number of times the participant used a condom across all sexual partners, and multiplying by 100. The number of unprotected sexual acts was calculated by subtracting the number of times the participant used a condom from the number of times the participant had sex across all sexual partners. The number of sexual partners in the past 6 months was assessed by asking participants "In the past 6 months, how many partners did you have sex with?" Sexual partner concurrency in the relationship was assessed by asking "Have you ever had sexual intercourse with someone else during the time you have been in a relationship with the mother/father of the baby?" Participants that answered in the affirmative were coded as "had a concurrent sexual partner." Participants that answered in the negative were coded as "being in a mutually monogamous relationship." Biological STI diagnosis was assessed at baseline via laboratory testing using urine-based nucleic-acid amplification tests for *Chlamydia trachomatis* and *Neisseria gonorrhoeae*. Urine samples were collected during study visits and analyzed at Quest Diagnostics Laboratory in Connecticut. Participants that received a positive diagnosis were coded as "having a biological STI at baseline."

Latent classes were drawn from the previously described study (Willie et al., 2017). These classes were derived from physical and/or sexual forms of eight violence indicators: family violence victimization, community violence victimization, peer violence victimization, prior IPV victimization, family violence perpetration, community violence perpetration, peer violence perpetration, and prior IPV perpetration. Two physical violence items (e.g. ever shoved, punched, hit, slapped, or physically hurt) were derived from the revised Conflict Tactics Scale -2 (Straus, Hamby, Boney-McCoy, & Sugarman, 1996) and five sexual violence items (e.g. ever forced them to have sex) were derived from the Sexual Experiences Survey (Koss & Oros, 1982). Participants who answered affirmatively to the victimization and/or perpetration questions, were asked to report whether that person was either: a family member, partner's family member, friend, acquaintance, stranger, or previous partner. In this paper, family violence was reported if the participant selected a family member or their partner's family member. Community violence was reported if the participant selected an acquaintance or stranger. Peer violence was reported if the participant selected a friend. Prior IPV was reported if the participant reported a previous romantic or dating partner.

Participants self-reported age, race and ethnicity, sex, years of education, and household income, and length of the relationship with mother/father of baby.

Data Analysis

A latent class analysis was conducted separated for women and men. Models were selected based on the following fit statistics: lowest values for the Akaike Information Criterion and adjusted Bayesian Information Criteria; and an entropy greater than or equal to 0.80. Latent classes were named based upon whether or not the probability of reporting violence indicator was at least 0.50. Additional details can be found at Willie et al. (2017).

Descriptive statistics were calculated to describe sample characteristics (frequencies, means, standard deviations). ANOVAs, chi-square, and Fisher exact tests were conducted to examine between-group differences in socio-demographics and sexual risk outcomes by latent class membership. Tukey's HSD was performed to examine significant pairwise comparisons. These analyses were performed by SPSS 21 (IBM SPSS Statistics, 2012).

Three path models were conducted to examine the actor-partner effects of latent class membership on four sexual risk outcomes: 1) total number of sexual partners, 2) percentage of condom use, 3) number of unprotected sex acts, and 4) sexual partner concurrency. Since some of the sexual risk variables were measured either dichotomously or continuously, separate path models were conducted. The first path model used weighted least squares estimation to model a logistic regression for the binary outcome (i.e., sexual partner concurrency). The second path model used full information maximum likelihood estimation for the count outcomes (i.e., total number of sexual partners, and percentage of condom use). The third path model used full information maximum likelihood estimation for the unprotected sex act count outcome, but this model was conducted in two ways: with and without mutually monogamous couples.

The path analyses were conducted using the Actor-Partner Interdependence Model (APIM). The APIM is a powerful analytic framework used in several studies focusing on adolescent

and young couples (Kershaw et al., 2012; Kershaw, Arnold, Lewis, Magriples, & Ickovics, 2011). This model examines responses from both dyad members by investigating both actor and partner effects (Kenny, Kashy, & Cook, 2006). To take into account the interdependence of the dyadic data, correlations of all pairs of variables (e.g., female's household income with male's household income) and error disturbances (e.g., female's condom use with male's condom use) were included in the model (Kenny et al., 2006). The models controlled for age, race and ethnicity, length of relationship, and household income. Categorical variables were dummy coded (i.e., race and ethnicity and latent classes). The path model predicting continuous outcomes was evaluated for good fit with: 1) a RMSEA less than .08, and 2) a CFI around .90, and SMR less than .05 (Bollen, 1998). The effects are presented as unstandardized regression coefficients (their standard errors) because standardized coefficients do not accurately reflect the actor-partner approach (Kenny et al., 2006). R-square values were calculated to determine the amount of variance that the predictors accounted for in the outcomes. Path modeling was conducted in Mplus 7.0 (Muthén & Muthén, 2012).

Results

Fit statistics and full description of the latent classes for females and males can be found in Willie et al. (2017). In summary, a three-class and four-class model was used for females and males, respectively (Figure 1 and 2). For females, Class 1 or *Polyvictim-Polyperpetrator* class (3.4%) had high probabilities of reporting prior IPV and family violence victimization, in addition to reporting aggression towards prior intimate partners, family, community, and peers. Class 2 or *Nonvictim-Nonperpetrator* (62%) had the lowest probabilities of all forms of victimization and perpetration. Class 3 or *Community and Prior IPV Victim* class (34.7%) had high probabilities of reporting IPV with a prior intimate partner and community violence victimization. For males, Class 1 or *Community and Prior IPV Victim* class (13.8%) had high probabilities of reporting prior IPV and community violence victimization. Class 2 or *Polyvictim-Nonpartner Perpetrator* class (5.8%) had high probabilities of reporting victimization by prior intimate partners, community, family, and peers, in addition to using aggression towards family, peers, and community members. Class 3 or *Prior IPV and Peer Victim* class (4.5%) had high probabilities of reporting victimization by prior intimate partners and peers. Class 4 or *Nonvictim-Nonperpetrator* class (75.9%) had the lowest probabilities of reporting victimization and perpetration.

There was one significant difference in socio-demographics across latent classes (Table 1). Male's latent class membership was significantly associated with relationship length, $F(3, 290) = 3.48, p < .01$. Males in Class 1: *Community and Prior IPV Victim* had a shorter average relationship length ($M = 18.6$ months, $SD = 12.5$) than males in Class 2: *Polyvictim-Nonpartner Perpetrator* ($M = 33.9, SD = 25.8$) and Class 4: *Nonvictim-Nonperpetrator* ($M = 28.4, SD = 20.5$).

There were two significant differences in sexual risk across latent classes (Table 2). Female's latent class membership was significantly associated with unprotected sex, $F(2, 293) = 5.69, p < .01$. Females in Class 1: *Polyvictim-Polyperpetrators* reported more unprotected sex in the past 30 days ($M = 17.80, SD = 19.78$) than females in Class 2: *Nonvictim-Nonperpetrator*

($M=7.99$, $SD=10.36$). Male's latent class membership was significantly associated with sexual partner concurrency, $\chi^2(3, N = 296) = 13.41$, $p < .01$. Further examination of the cell chi-square values suggest that most of the association is due to more males in Class 3: *Prior IPV and Peer Victim* (cell $\chi^2 = 3.45$) and Class 2: *Polyvictim-Nonpartner Perpetrator* (cell $\chi^2 = 4.22$) with concurrent sexual partners.

Table 3 and 4 shows the results for the path models with actor-partner effects of latent class membership predicting each sexual risk outcome while accounting for age, race and ethnicity, household income, and relationship length for both females and males. The fit statistics for the path model predicting the total number of sexual partners in the past six months, and percentage of condom use in past 30 days across all sexual partners indicates that the model was an adequate fit to the data (CFI = .90; RMSEA = .04; SMR = .03). The fit statistics for the path model predicting and unprotected sex in the past 30 days across all sexual partners indicates that the model was adequate fit to the data (for mutually monogamous couples: CFI = 1.00; RMSEA = .00; SMR = .00) and (for non-monogamous couples: CFI = 1.00; RMSEA = .00; SMR = .00). Without demographic covariates in the model, the amount of variance accounted for in the model was: 4% and 2% of females' and males' total number of sexual partners; 4% and 6% of females' and males' percentage of condom use; and 8% and 9% of females' and males' STI diagnosis. Without demographic covariates in the model, the amount of variance accounted for unprotected sex acts was: 11% and 6% of females and males (mutually monogamous couples) and 35% and 19% of females and males (non-monogamous couples).

There were four significant actor effects and two significant partner effects on sexual risk among females and males. Females in Class 2: *Nonvictim-Nonperpetrator* were more likely to report higher condom use ($B (SE) = 9.98 (4.66)$, $p < .05$) and also be involved with a male partner reporting higher condom use in the past 30 days ($B (SE) = 12.42 (5.53)$, $p < .05$) compared to females in Class 3: *Community and Prior IPV Victim*. Among non-monogamous couples, females in Class 1: *Polyvictim-Polyperpetrator* were more likely to report more acts of unprotected condomless sex in the past 30 days ($B (SE) = 29.31 (5.48)$, $p < .001$) compared to females in Class 3: *Community and Prior IPV Victim*. Among non-monogamous couples, males in Class 4: *Nonvictim-Nonperpetrator* were less likely to be involved with a female partner reporting unprotected condomless sex in the past 30 days ($B (SE) = -5.57 (2.71)$, $p < .05$) compared to males in Class 3: *Community and Prior IPV Victim*. Males in Class 2: *Polyvictim-Nonpartner Perpetrator* were more likely to report more sexual partners in the past six months ($B (SE) = 0.92 (0.42)$, $p < .05$) compared to males in Class 1: *Community and Prior IPV Victim*. Males in Class 4: *Nonvictim-Nonperpetrator* were less likely to have concurrent sexual partners ($B (SE) = -1.03 (0.42)$, $p < .01$) compared to males in Class 1: *Community and Prior IPV Victim*.

Discussion

Pregnancy represents a window of opportunity to implement primary sexual health interventions to reduce poor sexual health among young couples (Meade & Ickovics, 2005) and the current study illustrates the importance of interpersonal polyvictimization and polyperpetration for young pregnant couple's sexual risk. In particular, females and males in

the victim-perpetrator classes were at greatest risk for unprotected condomless sex and partner concurrency, respectively. Further, females and males with no reported victimization and perpetration were protected against sexual risk behaviors. Consistent with previous research (Rivera et al., 2015; Rosario et al., 2014; Silverman et al., 2004; Silverman et al., 2001; Voisin, 2005), our study found an association between violence and adolescent sexual risk, but our study builds this previous work by including the co-occurrence of victimization and perpetration across multiple domains; demonstrating the relevance of the violence-sexual risk link for young pregnant couples; and showing how individual and *partners* experience of violence impacts sexual risk within the couple. Sexual health interventions and programs may benefit from tailoring components to the unique individual and partner experiences of interpersonal polyvictimization and polyperpetration reported by young couples.

Victim-perpetrators were more likely to engage in sexual risk compared to the victim-only classes. In particular, female polyvictim-polyperpetrators were at greatest risk for unprotected condomless sex and male polyvictim-polyperpetrators were at greatest risk for concurrent sexual partners. There are some potential explanations for these findings. First, these findings may support previous research indicating that poor mental health such as posttraumatic stress symptoms and substance abuse mediate the violence-sexual risk link (Senn et al., 2016), especially since victim-perpetrators are at increased risk for poor mental health (Ulloa & Hammett, 2016). Second, victim-perpetrators may exhibit difficulty regulating behaviors and being impulsive (Hamby & Grych, 2013), which can heighten engagement in sexual risk (Crockett, Raffaelli, & Shen, 2006). Future research is needed to examine mechanisms linking interpersonal polyvictimization and polyperpetration to sexual risk among young pregnant couples.

Consistent with previous research, females and males in the nonviolent classes were less likely to engage in sexual risk behaviors and less likely to have risky sexual partners compared to the victim-only classes. The victim-only classes experienced community and intimate partner violence in a past relationship, which may relate to antecedents of sexual risk such as negative peer attitudes about safe sex and poor mental health (Voisin et al., 2016). While young females and males can experience negative peer attitudes about safe sex and poor mental health, these factors may not be as influential to females and males in the nonviolent classes. Also, females in the nonviolent class were more likely to have a male partner who reported higher condom use. Females in this class may feel comfortable negotiating condom use and other safer sex practices in their relationship. It would be useful for future research to investigate protective factors of sexual risk such as promoting nonviolent attitudes and behaviors among young couples.

In general, female latent classes tended to be associated with condom use and male latent classes tended to be associated with multiple sexual partners. Some research suggest that sexual partner concurrency is more prevalent among heterosexual males than females (Warren et al., 2015) and women in monogamous relationships are less likely to use condoms due in part to the perception that condom use signals mistrust and casual sex (Towner, Dolcini, & Harper, 2015). Gendered differences in sexual risk may stem from heterosexual scripting norms, norms guiding sexual behaviors in heterosexual relationships

(Byers, 1996; Dworkin, Beckford, & Ehrhardt, 2007). These norms portray: males as possessing strong sexual needs and pursuing dates, and females as seeing sex as a means of love and commitment (Byers, 1996). Emerging research indicates a positive relationship between sexual scripting norms and IPV perpetration (Willie, Khondkaryan, Callands, & Kershaw, 2018), and it is possible that differences in sexual risk appeared to due to stronger adherence to these norms among victim-perpetrators and weaker adherence among nonviolent peers. Future research should further explore prospective relationships between experiences of violence and gendered sexual risk among young pregnant, heterosexual couples.

Limitations

This is the first study to examine victimization and sexual risk among young pregnant couples, but findings should be interpreted under these study limitations. The analyses are cross-sectional, thus causal inferences cannot be deduced (e.g., sexual risk behaviors might influence violence victimization and perpetration). Some of the latent classes had a small prevalence (<10%) and some caution should be taken when make strong inferences about these subgroups. Additional research is needed with larger sample sizes to have a more representative sample and to support these conclusions. All the measures were self-reported and could be influenced by social desirability, leading to under-reporting. However, audio computer assisted self-interviews methods were used to help minimize the effect of this bias. This study examined the association between past experiences of interpersonal victimization and perpetration and does not examine the effects of current victimization (such as IPV). Sexual risk could be influenced by current victimization and future studies should build upon our findings to examine whether a relationship exists between current victimization and sexual risk among young pregnant couples. Finally, this study represents a racially and ethnically diverse population of young pregnant couples and our findings may not be generalizable to nonexpectant couples.

Conclusion

These findings may have some implications for interventions. To date, very few interventions have been designed to address the health consequences of victimization and perpetration among young pregnant couples, but the effectiveness of current sexual health interventions may be strengthened by addressing experiences of interpersonal victimization and perpetration for both dyad members. Moreover, future research is needed to understand whether interventions could be tailored based on specific subgroups of victimization and perpetration. In particular, the efficacy of couple-based sexual health interventions may have differential effects based on an individual or their partner's latent class membership. Further, our results provide some evidence that existing sexual health interventions should screen for victimization and perpetration across multiple domains (e.g., peer violence, past IPV) for both dyad members. These screening methods should emphasize a trauma-informed approach. This can include remaining sensitive to reports of victimization and perpetration and creating a safe space for adolescents to report and discuss their experiences in rooms separate from their partner. Young pregnant couples are an important vulnerable population and future interventions are needed to help young, violence-exposed pregnant couples

reduce sexual risk behaviors during pregnancy in order to protect not only their health but the health of their baby as well.

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Figure 1. Prevalence of Violence Victimization and Perpetration Indicators by Female's Latent Class Membership

Figure 2. Prevalence of Violence Victimization and Perpetration Indicators by Male's Latent Class Membership

Table 1

Sample Demographics by Latent Class Membership

	Female's Latent Classes					Male's Latent Classes				
	Class 1: Polyvictim- Perpetrator	Class 2: Nonvictim- Nonperpetrator	Class 3: Community- Prior IPV Victim	Class 1: Community- Prior IPV Victim	Class 2: Polyvictim- Nonpartner Perpetrator	Class 3: Prior IPV- Peer Victim	Class 4: Nonvictim- Nonperpetrator	<i>F</i> or χ^2	<i>M</i> (<i>SD</i>)	<i>F</i> or χ^2
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)			
Overall ^h	3.4 (10)	62 (183)	34.7 (103)	13.8 (40)	5.8 (17)	4.5 (13)	75.9 (224)			
Age	18.2 (1.9) ^a	18.7 (1.7) ^b	18.8 (1.5) ^c	21.9 (4.8) ^g	21.1 (4.1) ^e	21.3 (4.1) ^d	21.2 (3.7) ^f	0.70	21.2 (3.7) ^f	0.73
Education	11.7 (1.9) ^a	11.7 (1.7) ^b	11.8 (1.7) ^c	11.3 (1.6) ^g	12.2 (2.1) ^e	12.0 (1.8) ^d	11.9 (1.9) ^f	0.20	11.9 (1.9) ^f	0.27
Relationship Length	23.6 (14.5) ^a	28.3 (19.5) ^b	23.6 (19.8) ^c	18.6 (12.5) ^g	33.9 (25.8) ^g	25.5 (15.4) ^d	28.4 (20.5) ^g	1.90	28.4 (20.5) ^g	3.48
Income	16,388 (11,326) ^a	14,088 (16,732) ^b	12,102 (13,327) ^c	14,737 (13,927) ^g	20,823 (18,543) ^e	15,769 (9,485) ^d	17,760 (23,311) ^f	0.70	17,760 (23,311) ^f	0.40
Race/Ethnicity ^h								11.90		9.11
Black	50 (5)	42 (78)	35 (34)	53 (21)	65 (11)	54 (3)	47 (105)		54 (3)	
White	10 (1)	14 (27)	22 (22)	15 (6)	12 (2)	23 (3)	9 (20)		23 (3)	
Hispanic	30 (3)	41 (77)	38 (37)	28 (11)	24 (3)	23 (3)	40 (90)		23 (3)	
Another race	10 (1)	3 (6)	5 (5)	5 (2)	0 (0)	0 (0)	5 (11)		0 (0)	

Note. Bolded values are statistically significant at $p < .05$. *M*, mean; *SD*, standard deviation. Shared superscripts are significantly different at the .05 level according to the Tukey's HSD.

^hColumn percentages (N), may not equal 100 due to rounding. Fisher's Exact tests were conducted to derive p-values.

Table 2

Differences in Sexual Risk by Latent Class Membership

	Condom Use		Unprotected Sex		# of Sexual Partners		Concurrent Sex Partners		STI Diagnosis	
	M (SD)	F	M (SD)	F	M (SD)	F	N (%) ^e	χ^2	N (%) ^e	χ^2
Female's Latent Classes		2.01		5.69**		0.48		0.42		0.82
Class 1: Polyvictim-Polypetrator	11.25 (31.82)		17.80 (19.78) ^{ab}		0.90 (0.32)		2 (20.00)		0 (0)	
Class 2: Nonvictim-Nonpetrator	9.48 (26.60)		7.99 (10.36) ^{ba}		1.11 (0.77)		31 (16.49)		6 (6.25)	
Class 3: Community and Prior IPV	3.49 (15.17)		11.11 (10.90) ^c		1.11 (0.49)		19 (19.39)		9 (4.84)	
Male's Latent Classes		0.99		2.30		1.42		13.41**		5.14
Class 1: Community and Prior IPV	9.11 (26.78)		11.50 (12.29)		1.10 (0.44)		13 (32.50)		1 (2.56)	
Class 2: Polyvictim-Nonpartner Polypetrator	2.14 (7.12)		19.11 (44.45)		2.06 (1.89)		9 (52.94)		2 (13.33)	
Class 3: Prior IPV and Peer Victim	4.21 (13.31)		9.62 (9.70)		1.30 (1.03)		7 (53.85)		2 (16.67)	
Class 4: Nonvictim-Nonpetrator	13.89 (31.34)		8.83 (12.92)		1.30 (1.75)		51 (22.57)		11 (5.14)	

Note. M, mean; SD, standard deviation. Shared superscripts are significantly different at the .05 level according to the Tukey's HSD.

^eData represent % (N) and Fisher's Exact tests were conducted.

* $p < .05$;

** $p < .01$

Table 3
Actor-Partner Effects of Interpersonal Polyvictimization and Polyperpetration Latent Classes on Condom Use, Unprotected Sex, and Sexual Partners

	Condom Use		Unprotected Sex (mutually monogamous couples)		Unprotected Sex (non-monogamous couples)		# of Sexual Partners	
	Female	Male	Female	Male	Female	Male	Female	Male
	B (SE)	B (SE)	B (SE)	B (SE)	B (SE)	B (SE)	B (SE)	B (SE)
Female's Latent Classes								
Class 1: Polyvictim-Polyperpetrator	7.58 (12.77)	13.78 (15.09)	-5.59 (4.96)	-5.65 (5.86)	29.31 (5.48)***	14.53 (11.24)	-0.32 (0.24)	0.32 (0.51)
Class 2: Nonvictim-Nonperpetrator	9.98 (4.66)*	12.42 (5.53)*	-3.02 (1.66)	-2.70 (1.96)	-1.40 (2.12)	0.74 (4.35)	0.01 (0.09)	0.20 (0.19)
Male's Latent Classes								
Class 2: Polyvictim-Nonpartner Polyperpetrator	10.46 (10.69)	13.05 (12.64)	-0.36 (4.41)	1.22 (5.21)	-5.11 (4.28)	7.24 (8.78)	-0.06 (0.20)	0.92 (0.42)*
Class 3: Prior IPV and Peer Victim	-13.89 (11.59)	0.26 (13.71)	-5.54 (5.29)	0.14 (6.26)	-5.82 (4.16)	-1.72 (8.54)	-0.02 (0.22)	0.20 (0.46)
Class 4: Nonvictim-Nonperpetrator	-2.70 (6.49)	0.46 (7.67)	0.11 (2.50)	1.31 (2.95)	-5.57 (2.71)*	-8.27 (5.56)	0.01 (0.12)	0.05 (0.26)

Note. All latent classes are compared to the Community and Prior IPV class for women and men, respectively. Covariates included in the model are age, household income, race, and relationship length. Coefficients are unstandardized. The effects are presented as unstandardized regression coefficients (their standard errors) because standardized coefficients do not accurately reflect the actor-partner approach (Kenny et al., 2006). Bolded values are significant.

* $p < .05$;

** $p < .01$;

*** $p < .001$. IPV=Intimate partner violence.

Table 4
Actor-Partner Effects of Interpersonal Polyvictimization and Polyperpetration Latent
Classes on Concurrent Sex Partners and STI Diagnosis

	Concurrent Sex Partners		STI Diagnosis	
	Female	Male	Female	Male
	B (SE)	B (SE)	B (SE)	B (SE)
Female's Latent Classes				
Class 1: Polyvictim-Polyperpetrator	-0.07 (0.89)	0.51 (0.82)	-10.01 (169.86)	-9.89 (173.71)
Class 2: Nonvictim-Nonperpetrator	-0.29 (0.35)	0.36 (0.33)	-0.19 (0.61)	-0.38 (0.56)
Male's Latent Classes				
Class 2: Polyvictim-Nonpartner Polyperpetrator	-1.05 (0.91)	0.53 (0.65)	1.63 (1.17)	2.04 (1.33)
Class 3: Prior IPV and Peer Victim	0.06 (0.81)	0.62 (0.69)	1.12 (1.38)	2.47 (1.37)
Class 4: Nonvictim-Nonperpetrator	-0.37 (0.47)	-1.03 (0.42) **	0.46 (0.89)	1.12 (1.12)

Note. All latent classes are compared to the Community and Prior IPV class for women and men, respectively. Covariates included in the model are age, household income, race, and relationship length. Coefficients are unstandardized. The effects are presented as unstandardized regression coefficients (their standard errors) because standardized coefficients do not accurately reflect the actor-partner approach (Kenny et al., 2006). Bolded values are significant.

*
 $p < .05$;

**
 $p < .01$ IPV=Intimate partner violence.