

**Exploring Intimate Partner Violence and Its Associations with Minority Stress and
Depression among YMSM Dyads**

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Abstract

Intimate partner violence (IPV) disproportionately affects young men who have sex with men (YMSM) compared to young heterosexual males, and at rates similar to young heterosexual females. Still, there are concerns with underreporting of IPV among YMSM, and more information is needed about how IPV relates to minority stress and mental health outcomes like depression. This dissertation utilized a subset of data from YMSM dyads in RADAR, an ongoing longitudinal cohort study of YMSM and transgender women in Chicago. The first analysis examined IPV prevalence via self-report and dyad-report, finding that 19.3% of the sample reported perpetrating IPV and 24.1% reported IPV victimization. When utilizing dyad reports, 12.2% of the sample was inferred to be IPV perpetrators based on their partners' reports of victimization, and 7.4% of the sample was inferred to be IPV victims based on their partners' reports of perpetration. The second analysis examined the association between minority stress and IPV, finding that LGBT victimization was associated with both IPV victimization and IPV perpetration in both univariate and multivariate models. The third analysis investigated whether IPV serves as a moderator for the relationship between minority stress and depression symptoms among YMSM. Multivariate models did not show any significant interaction effects between LGBT victimization and IPV perpetration or IPV victimization. The results of these analyses suggest that dyad-level data is essential for understanding IPV among sexual minority populations, and that further research is needed around relationship dynamics that may impact the mental health of YMSM.

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Preface

I would like to begin by thanking my colleagues at Northwestern for allowing me to utilize their data for my dissertation analyses. I would also like to thank the youth who participate in RADAR for contributing their lived experiences to public health research. I am also indebted to my dissertation committee for their support and feedback that not only challenged me, but helped me to grow as a public health researcher. Navigating writing a dissertation while working a full-time job during a global pandemic certainly complicated the process, but we pushed through while allowing ourselves the flexibility required to create a project in which we could all take pride.

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1.0 Introduction

1.1 Intimate Partner Violence in the United States

Intimate partner violence refers to physical, sexual, or psychological violence perpetrated by one or both members of a relationship. In the context of this definition, relationships range from casual sexual encounters to long-term partnerships (Breiding, Basile, Smith, Black, & Mahendra, 2015). The Centers for Disease Control and Prevention (CDC) developed a Uniform Definition Guide for IPV surveillance to “promote consistency in the use of terminology and data collection related to IPV” (Breiding et al., 2015, p. 2). According to their guide, **physical violence** is “the intentional use of physical force with the potential for causing death, disability, injury, or harm.” Examples of physical force include shoving, choking, or using a weapon. **Sexual violence** is “a sexual act that is committed or attempted by another person without freely given consent of the victim or against someone who is unable to consent or refuse.” Sexual IPV may include rape, unwanted sexual contact other than penetration, or even non-contact sexual experiences, such as exposing one’s genitals to an unwilling party. **Psychological violence** is the “use of verbal and non-verbal communication with the intent to: a) harm another person mentally or emotionally, and/or b) exert control over another person.” This type of violence, which is sometimes parsed out into ‘emotional IPV,’ ‘monitoring IPV,’ and ‘controlling IPV,’ may be more difficult to identify than physical or sexual IPV. It includes actions such as: limiting access to money, friends or family; expressive aggression, or name-calling or other forms of humiliation; or threats of physical or sexual IPV (Breiding et al., 2015).

In 2010, the Centers for Disease Control and Prevention (CDC) conducted the first iteration of the National Intimate Partner and Sexual Violence Survey (NISVS) in order to better understand the prevalence and consequences of IPV in a nationally representative sample of adults in the United States. The CDC developed the NISVS based on the National Violence Against Women Survey (Tjaden & Thoennes, 2000), utilizing input from a federally sponsored workshop for building data systems to monitor violence against women (Centers for Disease Control and Prevention, 2000). This workshop brought together individuals from the United States Department of Justice and U.S. Department of Health and Human Services, along with academic researchers from around the country to develop recommendations for describing and tracking violence, share information about current practices in data collection for IPV, and identify gaps and limitations with the current data collection systems (Centers for Disease Control and Prevention, 2000). The CDC later developed its questionnaire to examine violence against both women and men, and they conducted a pilot methods study in 2007, convening an expert panel at the conclusion of the study to make recommendations pertaining to the survey (Black et al., 2011). The CDC continues to conduct the NISVS every 5 years.

The NISVS asks questions about victimization in the following domains: sexual violence (including questions about experiences with romantic or sexual partners, and experiences outside of these relationships), stalking tactics, and intimate partner violence. The survey further breaks down intimate partner violence into expressive aggression, coercive control, control of reproductive and sexual health, and physical violence. While many surveys rely on single questions for each type of IPV (e.g. – the Youth Behavior Risk Survey [YRBS] uses one question to measure physical IPV, which asks how often the respondent has been physically hurt by a dating partner in the past 12 months), the NISVS asks questions about ten acts of physical violence. First,

the questionnaire asks the respondent how many of their romantic/sexual partners had ever: slapped them; pushed or shoved them; hit them with a fist or something hard; kicked them; hurt them by pulling their hair; slammed them against something; tried to hurt them by choking or suffocating them; beaten them; burned them on purpose; or used a knife or gun on them. Interviewers then asked for initials or a nickname for every perpetrator, and then asked how many times each perpetrator had ever committed any of the 10 violent acts that the respondent identified. They then asked if any perpetrator had committed each violent act in the past three years and followed up by asking for the perpetrator's initials and how many times they had committed the violent act. They then asked for prevalence and frequency in the past 12 months.

The first report published using data from the NISVS indicated that 35.6% of women and 28.5% of men in the United States had been victims of some form of IPV in their lifetime. Within respondents who indicated lifetime IPV victimization, almost 70% of women and 53% of men reported having their first encounter with IPV before the age of 25. One third of female victims reported experiencing multiple forms of IPV, while over 90% of male victims reported only experiencing physical IPV (Black et al., 2011). The CDC released an updated data brief with data from 2015, with similar prevalence estimates: 36.4% of women and 33.6% of men experienced some form of physical or sexual IPV in their lifetime. Over one-third of women (36.4%) and men (34.2%) reported experiencing psychological IPV in their lifetime as well (Smith et al., 2018).

A critical literature review in 2012 examined heterosexual IPV studies published in 1990 or later that reported both unidirectional (one victim and one perpetrator in the couple) and bidirectional (both partners are reported as being a victim and perpetrator) violence (Langhinrichsen-Rohling, Misra, Selwyn, & Rohling, 2012). They found that bidirectional violence was a common occurrence in instances where any IPV was reported, and that in

unidirectional violence situations, rates of female-to-male IPV were higher than rates of male-to-female IPV. While unidirectional female-to-male violence may be more prevalent, male-to-female violence has been shown to be more severe (Hamberger & Larsen, 2015). These reviews demonstrate the complexity of IPV; victims can also be perpetrators, and while women may be more likely than men to perpetrate violence, men are more likely to inflict more severe violence on their partners. Researchers must examine IPV thoroughly, including violence directionality and severity, in order to obtain a more complete understanding of the problem.

Another literature review examined correlates of IPV perpetration (Neal & Edwards, 2017). The review authors found that individuals who perpetrate physical and psychological IPV often cite issues of control, anger, self-defense, attention-seeking, and an inability to communicate verbally, while those who perpetrate sexual IPV may attribute it to dominance or hedonism. The review authors also found that victims of IPV, when asked about why their partner perpetrated violence, attributed the violence to many of the same partner characteristics. They attributed physical violence to control, anger, jealousy, and drug use; psychological violence to personality, relationship, alcohol, and jealousy; and sexual violence to the belief that the perpetrator thought the victim was willing, or that the perpetrator did it out of love. Research also demonstrated an indirect association between adverse childhood experiences (which includes physical or psychological abuse by a parent or guardian, and sexual abuse by any adult more than five years older than the victim) and IPV, mediated by psychosocial factors including depression, anxiety, and impulsivity (Mair, Cunradi, & Todd, 2012). In other words, ACEs are associated with individual experiences of depression, anxiety, and impulsivity, and these experiences are associated with an increased likelihood of experiencing IPV. These findings from the expansive

heterosexual IPV literature provide insight into some of the methodologies and associations that will be seen in the IPV literature for sexual minority men.

1.2 Prevalence of IPV among YMSM

According to a report on IPV among sexual minorities in the 2010 NISVS, 26% of gay men, 37% of bisexual men, and 29% of heterosexual men reported experiencing some form of IPV in their lifetime. While the report indicated that there was not a statistically significant difference between these overall prevalence rates, they did find that gay and bisexual men reported significantly higher prevalence of sexual violence other than rape (which includes sexual coercion, unwanted sexual contact, and non-contact unwanted sexual experiences) and of expressive aggression (which includes name calling or humiliation) by intimate partners when compared to heterosexual men (Walters, Chen, & Breiding, 2013).

Early prevalence estimates for same-sex IPV among men were derived from convenience samples, like the study published by Waldner-Haugrud, Vaden Gratch, and Magruder that used snowball sampling to survey 283 gay and lesbian individuals (1997). Utilizing the Conflict Tactics Scale (CTS) to assess both physical violence victimization and perpetration, they found that 47.5% of lesbians and 29.7% of gay men reported IPV victimization, and 38% of lesbians and 21.8% of gay men reported IPV perpetration (Waldner-Haugrud et al., 1997). The CTS is a prominent scale in the IPV literature, as it can be used to assess both prevalence and severity of violence. The CTS was developed based on the theory that conflicts are an inherent feature of human interactions, while violence as a response to these conflicts is not (M. A. Straus, Hamby, Boney-McCoy, & Sugarman, 1996). The original CTS included versions for husbands and wives – there was also a

version for parent-child relationships – and asked an individual about the frequency of various responses to conflict in the past year. The conflict responses ranged from innocuous (“I tried to discuss the issue relatively calmly”) to violent (“Hit [or tried to hit] her with something hard”) and were asked in that order. For each conflict response, respondents indicated whether they reacted in that manner: never; once; two or three times; often, but less than once per month; once per month; or more than once per month. Later editions of the CTS also had respondents indicate whether their partner engaged in each conflict response. Responses can then be scored to create measures for three conflict tactics: Reasoning, verbal aggression, and violence (M. A. Straus, 1979). The revised CTS, abbreviated as CTS2, modified some aspects of the CTS. First, it eliminated the male/female pronouns, instead addressing the respondents’ partner as “my partner.” It also added more response options for frequency and rearranged the items so that they were no longer in order of severity. The CTS2 included revised scales: physical assault; psychological aggression; negotiation; injury; and sexual coercion. The negotiation scale included two subscales: emotional and cognitive. The other scales included minor and severe subscales, allowing for researchers to better distinguish severity of conflict responses within each scale (M. A. Straus et al., 1996). In expanding the scales, the CTS2 increased the number of items from 19 to 78. There is also a short form of the CTS2, abbreviated as CTS2S, which features two items for each of the scales (one item from each subscale), for a total of 10 items, or 20 questions since each question is asked for both the respondent and their partner (M. Straus & Douglas, 2004). All of these variations of the Conflict Tactics Scale provide researchers options for exploring frequency and severity of physical, sexual, and psychological violence.

Tjaden et al. sought to expand on the same-sex IPV literature by using a nationally representative sample to provide IPV victimization estimates. The National Violence Against

Women (NVAW) survey was a phone-based national survey in the United States that utilized random digit dialing from November 1995 to May 1996 to create its sample. The survey did not explicitly ask participants for their sexual identity, but rather asked whether they currently lived or had ever lived with a same-sex intimate partner. Sexual orientation can be classified by three different characteristics: identity, attraction, and behavior. This method utilizes data related to behavior for its analysis, which may yield different results when compared to studies that use data related to identity or attraction. The samples of male and female participants in the NVAW survey who indicated current or former same-sex cohabitation were 65 men (0.8% of men sampled, $n = 8000$ men) and 79 women (1.0% of women sampled, $n = 8000$ women). The researchers took a random subsample of the respondents who only indicated opposite-sex cohabitation to develop their comparison group. They found that 23.1% of same-sex cohabitating men reported being raped and/or physically assaulted by a partner over their lifetimes, compared to 7.7% of opposite-sex cohabitating men, 39.2% of same-sex cohabitating women, and 20.3% of opposite-sex cohabitating women (Tjaden, Thoennes, & Allison, 1999). These studies, conducted over 20 years ago, represent early explorations into same-sex IPV. Research into IPV prevalence in male same-sex relationships since this time has improved in the rigor of recruitment, with studies now directly asking participants about their sexual orientation.

One such survey is the Youth Risk Behavior Survey (YRBS), a biennial survey for high school students conducted by the CDC. The YRBS asks participants to respond to questions not only about their sexual identity and sexual behavior, but about whether they have been the victim of either physical or sexual IPV in the past 12 months. The 2017 YRBS estimates that, among the survey participants who dated others in the 12 months prior to responding to the survey (approximately 68% of the sample), 6.9% indicated sexual IPV victimization and 8.0% indicated

physical IPV victimization in the past 12 months. Among male participants, 2.8% of the sample reported sexual IPV while 13.5% of gay or bisexual-identified males reported sexual IPV. Similarly for physical IPV, while 6.5% of male participants reported physical violence victimization, the prevalence increased to 16.8% for gay or bisexual-identified males (Kann et al., 2018).

1.3 Utilizing Male Dyads to Measure IPV Prevalence

Research on IPV among sexual minority males includes some data analyses using dyads. These studies begin laying the groundwork for future work into IPV reporting at the dyad level. Landolt and Dutton published one exploration of IPV among male same-sex dyads in 1997. The purpose of this study was to better understand the power dynamics among male same-sex couples and whether these dynamics affect psychological abuse. They collected data from 52 couples, including information on relationship power dynamics, borderline personality organization, anger, attachment, physical abuse, and emotional abuse. They found that 21 out of 52 couples had at least one member of the dyad who reported one or more physical IPV events in the past year. They found a high correlation between self-reported perpetration by one partner and self-reported victimization by the other partner ($r = .72, p < .001$). Additionally, they conducted pairwise intraclass correlations to examine violence directionality, and for both psychological abuse ($r = .57, p < .001$) and physical abuse ($r = .57, p < .001$), if one member of the dyad reported perpetration, it was more likely than not that his partner also reported perpetration (Landolt & Dutton, 1997). This study provided an important glimpse into the research questions we can answer using dyad-level data.

Two more recent studies utilized data from male dyads in Atlanta, Boston, and Chicago to explore IPV victimization and perpetration (Rob Stephenson et al., 2019; Suarez et al., 2018). They recruited 160 male couples from these three cities through targeted social media advertisements and flyers posted at local venues. Couples took the baseline survey at the same time in separate rooms. The survey included the IPV-GBM scale (R. Stephenson & Finneran, 2013) to identify past-year prevalence of physical/sexual, emotional, controlling, and monitoring IPV. Researchers looked at individual reports of IPV as well as whether one or both members of a dyad reported IPV. The first analysis found that in the past year, 45.6% of individuals reported any IPV victimization, with 33.6% reporting emotional IPV victimization. Additionally, 33.8% of dyads reported bidirectional violence, 25% reported unidirectional violence, and 41% reported no experience with IPV in the past year (Suarez et al., 2018). The second analysis explored IPV reporting concordance within dyads. They found low levels of dyad agreement on the occurrence of IPV, as well as a higher proportion of men reporting IPV perpetration compared to IPV victimization (Rob Stephenson et al., 2019). Further research into IPV at the dyad level can attempt to further elucidate some of the dynamics behind violence directionality, as well as the correlates associated with male same-sex IPV.

1.4 Minority Stress and IPV

The Minority Stress Model provides a population-specific lens with which to examine male same-sex IPV, as well as important points for intervention. The Minority Stress Model posits that individuals who identify as a minority experience a unique set of stressors, which in turn can uniquely affect their physical and mental wellbeing (Meyer, 1995). For sexual minorities

specifically, Meyer proposes that the primary stressors include internalized homophobia (more recently described as ‘internalized stigma’), perceived stigma, and discrimination/violence (2003). It is important to note that in this model, “discrimination/violence” is a broad category, and the initial operationalization of the concept focused on experiences with anti-gay prejudice, not IPV. Meyer’s initial work on minority stress explored the effects of these three stressors on mental health outcomes, including suicidal ideation, demoralization, and issues pertaining to sexual desire among gay men. This study controlled for intimate partnerships, however it did not assess for the quality of these relationships beyond duration and whether or not each member of the couple recognized the other as his partner. Meyer found that all three stressors on their own, as well as in an additive model including all three stressors, contributed to increased psychological distress among gay men (Meyer, 1995).

The Minority Stress Model is now used by researchers as a framework for understanding health disparities for sexual minority populations. This includes research on IPV. Much of the research examines how minority stress factors may be determinants for increased risk of IPV among sexual minority individuals (K. M. Edwards & Sylaska, 2013; R. Stephenson & Finneran, 2017a). Minority stressors activate general internal psychological processes as a way to process and react to those stressors, and some of these processes may be maladaptive in nature, to where they increase the individual’s risk for negative mental health outcomes. In other words, an individual who experiences constant stigma related to their sexual orientation will continuously attempt to regulate their emotional responses to this stigma or engage in other coping strategies to maintain their sense of self. If that individual then experiences conflict with their dating partner, their ability to cope with that conflict could be compromised, either due to depleted capacity to regulate emotion or to the maladaptive coping skills they have employed, which increases their

risk of violence. One study recruited an online sample of 391 individuals from colleges across the United States who reported a current same-sex romantic relationship to examine the relationship between minority stress and IPV perpetration. Participants were asked about current physical, sexual, and psychological abuse victimization and perpetration, as well as internalized stigma, sexual identity concealment, sexual identity stigma, and sexual orientation-related victimization. Researchers found a positive association between physical and sexual violence perpetration and internalized stigma, and between physical violence perpetration and sexual identity concealment, when controlling for concurrent victimization (K. M. Edwards & Sylaska, 2013).

Similarly, in Atlanta, researchers recruited a sample of 1,075 gay and bisexual men who took a 20-minute online survey to better understand the relationship between minority stress and IPV victimization and perpetration. Participants responded to questions on their experiences with IPV through a 22-item scale specifically developed to examine IPV among gay and bisexual men (R. Stephenson & Finneran, 2013). The scale includes items in five domains: physical/sexual IPV, monitoring IPV, controlling IPV, HIV-related IPV, and emotional IPV. Respondents were asked each item twice, once for perpetration and once for victimization in the past 12 months. In addition to the IPV items, respondents were asked questions about internalized homophobia, homophobic discrimination, and racial discrimination. Almost half of the sample (47.8%) reported at least one form of IPV in the past 12 months, with emotional violence as the most common form (29.4%), followed by physical/sexual violence (25.9%). One third of the sample (33.6%) reported perpetrating IPV in the past 12 months, with emotional violence as the most common form (18.1%), followed by monitoring violence (17.6%). Researchers found that homophobic discrimination, internalized homophobia, and racial discrimination were associated with increased odds of reporting any form of IPV victimization in the past 12 months. Homophobic discrimination

and internalized homophobia were also associated with increased odds of reporting any IPV perpetration (R. Stephenson & Finneran, 2017a). These studies demonstrate an association between experiencing minority-related stressors and experiencing IPV for individuals, both as a victim and a perpetrator.

1.5 IPV and Depression

There is an established association between IPV and depression among the general population (A. L. Coker et al., 2002; Randle & Graham, 2011). While a number of longitudinal studies examining IPV and depression sampled female participants and showed a strong positive association between IPV and incident depression, as well as a positive association between depressive symptoms and incident IPV, relatively few longitudinal studies included male participants, though the studies that have been conducted also demonstrate an association between IPV and incident depressive symptoms (Devries et al., 2013). Researchers also demonstrated this association among sexual minority men. One study in Chicago looked at the risk correlates and health outcomes of IPV for gay and bisexual men (Houston & McKirnan, 2007). There were 817 men in the study, and they were asked about their experience with sexual, physical, and verbal IPV victimization in a current or past relationship. Participants were also asked about their experience with depression using a 12-item Center for Epidemiological Studies' Depression Scale (CES-D). In this study, 32.4% of participants reported experiencing any type of IPV in a current or past relationship, with 20.6% of participants reporting experiencing verbal abuse. These numbers are in line with other lifetime prevalence estimates for MSM. Approximately 12.5% of the sample also reported experiencing any form of IPV in a current relationship. For their statistical analyses,

the authors separated their sample into men who reported experiencing any abuse ever (32.4% of the sample) and men who did not report any abuse. Men who reported experiencing abuse were more likely than men who did not report abuse to also report current depression (OR: 1.59, CI: 1.14, 2.21), and relating back to the previous section, men who reported experiencing abuse were more likely to also report at least one CAI episode in the past six months (OR: 1.61, CI: 1.18, 2.21) (Houston & McKirnan, 2007). While this study begins to elucidate the association between IPV and depression among sexual minority men, future work is necessary to better understand the relationship. More specifically, understanding whether current abuse may have a stronger association with depression, or whether there is a temporal relationship between IPV and depression. The current study collapsed experiencing physical, sexual, or psychological IPV, at any point in time, into one variable in order to assess the relationship between IPV and depression. This means that individuals who experienced violence years ago and individuals who currently experience violence in their dating relationship are analyzed in the same group, treating IPV as a general experience rather than understanding the temporal effects of a recent or current IPV incident.

A longitudinal study by Reuter et al. (2017) established a more temporal relationship between IPV and depression. In their sample of 172 individuals indicating a current relationship (36.5% of whom identified as male), 18.6% reported experiencing physical IPV in the past 6 months. Physical IPV victimization during that wave was not associated with concurrent depression, but it predicted depression one year later. Future longitudinal research should further explore this relationship, including with a larger sample so that the effects can be parsed out by sexual orientation and gender identity.

Much of the research among sexual minority men that includes IPV and depression operationalizes them as correlates for a health outcome, rather than exploring the explicit relationship between IPV and depression. This is primarily seen in the HIV syndemics literature, where depression and experiencing IPV in the past year are considered separate epidemics whose synergy creates worse health outcomes (Dyer et al., 2012; Herrick et al., 2013). More research is needed to better understand how depression or other mental health issues may increase one's chance of experiencing IPV, or how the experience of IPV may cause poor mental health outcomes. Additionally, the relationship between depression and IPV perpetration should be explored.

1.6 Conclusion

IPV is a significant public health problem for YMSM. Prevalence of IPV among YMSM rivals that of heterosexual female youth and far surpasses that of heterosexual male youth (Kann et al., 2018). More research is needed to better understand IPV and its impact on YMSM, especially research that utilizes dyad-level data. Previous studies of male dyads indicated low levels of agreement on the presence of IPV, and that a higher proportion of men reported IPV perpetration compared to IPV victimization (Rob Stephenson et al., 2019). These low levels of agreement may mean that estimates of IPV among MSM, which are already large, are underestimates. In addition to looking at reporting agreement, studies can examine differences between those who do report violence and those who do not report violence, when their partner reports violence.

Dyad data can also be used to explore the impacts of minority stress on IPV, and to further our understanding of the relationship between IPV, minority stress, and depression. With an

interpersonal public health issue like IPV, dyad data analysis is an important contribution to our understanding of the underlying dynamics that may lead to violence within dyads.

2.0 Current Dissertation Research

This dissertation attempts to address some of the gaps in the IPV literature for YMSM, particularly around reporting agreements, the association between minority stress and IPV, and the relationship among minority stress, IPV, and depression. Study data came from RADAR, an ongoing longitudinal cohort study of YMSM and transgender women in Chicago, Illinois. Participants from two previously-developed longitudinal cohorts – Project Q2 and Crew 450 – were eligible to participate in the RADAR Study, recruited initially in 2007 and 2011, respectively (B. Mustanski, Garofalo, & Emerson, 2010; Michael E. Newcomb, Daniel T. Ryan, Robert Garofalo, & Brian Mustanski, 2014). Beginning in 2015, RADAR recruited a new cohort to build a multi-cohort, accelerated longitudinal design (Duncan, Duncan, & Hops, 1996). Participants in each of the cohorts of origin were recruited through a combination of in-person recruitment (e.g., LGBTQ events, clinic-based recruitment), online advertising via social media, and peer-incentivized recruitment (Gerend, Newcomb, & Mustanski, 2017). In the time of enrollment into their original cohort, participants were between 16 and 20 years old, assigned male sex at birth, spoke English, and either identified as gay, bisexual, or transgender, or indicated having had a sexual encounter with a man in the previous year. Additionally, all participants recruited into RADAR were asked to recruit their serious romantic partners to the study if their partners were assigned male sex at birth. Members of the cohort could also refer their peers to the study, and romantic partner and peer recruits had to meet all previously-described eligibility criteria and be aged 16-29 to match the age range of the 3 cohorts that compose RADAR (Gerend et al., 2017). Romantic partners who were aged 30 or older could complete a one-time study visit but were not eligible for enrollment in the cohort.

The first analysis explores IPV prevalence within the sample, both through individual self-report and dyad-report, to better understand the importance of dyad-level data when estimating IPV prevalence. The second analysis then examines the association between minority stress and IPV, utilizing a multilevel statistical analysis that takes both partners' minority stress into account. The third analysis investigates whether IPV moderates the relationship between minority stress and depression among YMSM.

This dissertation's strength is in its use of data from YMSM dyads to explore how prevalence estimates may change when both members of a dyad are asked about IPV rather than one member. The later analyses rely on the dyad-level IPV estimates and have implications for how IPV among YMSM is conceptualized.

2.1 Analysis 1: Aims and Hypotheses

Aim 1.1: To explore IPV prevalence and dyad IPV reporting congruence among YMSM dyads.

Hypothesis 1.1: IPV prevalence in the sample will mirror national estimates as seen in the 2017 YRBS. Their estimates were approximately 13% for sexual IPV and 17% for physical IPV, and so as the current study will combine all types of IPV into one estimate, the hypothesized range is between 13-17%.

Hypothesis 1.2: There will be a low rate of IPV reporting congruence within YMSM dyads.

Aim 1.2: To explore associations between IPV and minority stress among YMSM dyads, as well as how these associations differ depending on the use of self-report or total-report (self-report and inferred-report, based on partner reports) IPV prevalence.

Hypothesis 1.3: IPV perpetration and victimization will be associated with internalized stigma, microaggressions, and LGBT victimization among study participants.

Hypothesis 1.4: The associations between IPV and the minority stress variables will be stronger when using self-report IPV prevalence compared to total-report IPV prevalence.

2.2 Analysis 2: Aims and Hypotheses

Aim 2.1: To explore the association between an individual's levels of minority stress and their risk of IPV victimization and IPV perpetration among a sample of YMSM dyads.

Hypothesis 2.1: All minority stressors (internalized stigma, microaggressions, and LGBT victimization) will be associated with risk of both IPV perpetration and IPV victimization.

Aim 2.2: To explore the association between an individual's partner's levels of minority stress and the individual's risk of IPV victimization and IPV perpetration among a sample of YMSM dyads.

Hypothesis 2.2: All partner minority stressors (internalized stigma, microaggressions, and LGBT victimization) will be associated with risk of both IPV victimization and perpetration.

Aim 2.3: To examine the difference in associations between minority stress and IPV victimization and IPV perpetration when using self-report IPV compared to total-report IPV.

Hypothesis 2.3: Since this analysis will account for partner levels of minority stress, I expect the associations between total-report IPV and minority stress to be stronger than the associations between self-report IPV and minority stress.

2.3 Analysis 3: Aims and Hypotheses

Aim 3.1: To determine whether the presence of IPV victimization or perpetration modifies the relationship between LGBT victimization and depression symptoms among YMSM in dyads.

Hypothesis 3.1: IPV victimization will moderate the relationship between LGBT victimization and depression symptoms, such that those who are victims of IPV will show a stronger association between LGBT victimization and depression symptoms compared to those who are not victims of IPV.

Hypothesis 3.2: IPV perpetration will moderate the relationship between LGBT victimization and depression symptoms, such that those who are perpetrators of IPV will show a weaker association between LGBT victimization and depression symptoms compared to those who are not perpetrators of IPV.

3.0 Intimate partner violence reporting discrepancies within YMSM dyads

3.1 Introduction

Intimate partner violence (IPV) affects sexual minority populations at higher rates than the general population (Dank, Lachman, Zweig, & Yahner, 2014; Katie M Edwards, Sylaska, & Neal, 2015). Prevalence rates vary based on the type of violence (e.g. – physical, sexual, emotional) and the time frame (e.g. – past six months, lifetime). Over 30% of young men who have sex with men (YMSM) in one study reported any IPV perpetration, while almost 40% reported any IPV victimization in their lifetimes (Stults, Javdani, Greenbaum, Kapadia, & Halkitis, 2016). Among gay and bisexual male youth who participated in the 2017 Youth Risk Behavior Survey (YRBS), 13.5% reported sexual violence victimization and 16.8% reported physical violence victimization in the past 12 months (Kann et al., 2018). The prevalence of intimate partner violence within this population is alarming. These rates are even more concerning given that, among YMSM, IPV is associated with higher odds of sexually transmitted infections, including HIV (M. E. Newcomb, D. T. Ryan, R. Garofalo, & B. Mustanski, 2014; R. Stephenson & Finneran, 2017b), as well as with higher odds of negative mental health outcomes, such as depression (Houston & McKirnan, 2007; Reuter et al., 2017), and substance use and misuse (Davis, Kaighobadi, Stephenson, Rael, & Sandfort, 2016; Stults, Javdani, Kapadia, & Halkitis, 2019; Whitton, Newcomb, Messinger, Byck, & Mustanski, 2019).

In addition to the violence that they may experience in their own partnerships, YMSM often must deal with stressors based on their sexual orientation. The minority stress model posits that those with a minority status, including sexual orientation, experience a unique set of stressors

based on that status, which can impact their physical and mental wellbeing (Meyer, 1995). These unique stressors may include internalized stigma, sexual identity concealment, and victimization based on perceived sexual identity (Meyer & Frost, 2013). Recent research has applied this model when looking at potential predictors of IPV among YMSM. Evidence suggests that minority stressors such as internalized stigma and homophobic discrimination are associated with IPV perpetration, and stressors such as sexual identity concealment, homophobic or racial discrimination, and internalized stigma are associated with IPV victimization in men who have sex with men (MSM) (K. M. Edwards & Sylaska, 2013; R. Stephenson & Finneran, 2017a). The Psychological Mediation Framework provides more context to the minority stress model, suggesting the mechanisms that lead from minority stressors to negative health outcomes involve intermediary steps (Mark L. Hatzenbuehler, 2009). The framework proposes that the experience of minority stress takes a toll on an individual's coping strategies for general stress, which increases their propensity for engaging in negative coping strategies such as substance use, or enduring negative mental health outcomes such as depression (Mark L. Hatzenbuehler, 2009).

A concern that is present in the broader IPV literature is underreporting of violence, which may occur due to social desirability bias or imperfect measurement tools (Stults et al., 2019; Whitton et al., 2019). Social desirability bias may cause YMSM to feel apprehensive about disclosing sensitive information about violence in their relationships, especially when these data are collected via in-person surveys where they may feel that the information they disclose is less anonymous than it would be if the survey was administered online (R. Stephenson & Finneran, 2017a). While some measurement tools for IPV are specific and capture data on multiple types and severities of IPV, such as the Conflict Tactics Scale (CTS) (M. Straus & Douglas, 2004) and the MSM-specific IPV-GBM Scale (R. Stephenson & Finneran, 2013), frequently measurement

of IPV is limited to the use of one or two broad questions, such as the questions used on the YRBS. The YRBS has just one question for sexual IPV and one for physical IPV (Kann et al., 2018). The use of non-specific questions to capture IPV runs the risk of missing cases of IPV where the survey participants do not feel that the violence they experienced fits in with the definition of IPV provided by the survey (Whitton et al., 2019). Similarly, vague questions about IPV may encourage overreporting of violence by including prompts around perceptions of violence (Stults et al., 2019). Consider a survey question that asks participants if they had ever physically abused a partner without providing examples of what constitutes physical violence. Some participants may underreport their physical violence perpetration because they do not perceive their past behavior as violent, perhaps they shoved their partner during an argument, but their partner was not hurt in the process. Other participants may overreport because they are sensitive to the prospect of hurting their partner, perhaps they playfully shoved their partner in a moment of jest and accidentally injured their partner. Using specific language in questions about IPV can address some of these reporting issues.

To address other issues with underreporting, some researchers collect data on IPV from both members of a couple (dyad) (Suarez et al., 2018). This methodology may help to account for underreporting of experience with IPV; an analysis of studies that collected IPV data from different-sex dyads found that there was often a low percentage of agreement on the presence and severity of violence within the dyad (Schafer, Caetano, & Clark, 2002). To date, only one published study addressing MSM IPV collected dyad-level data and explored reporting discrepancies, similarly finding low rates of agreement within dyads; out of the 160 dyads in their sample, 75 couples (46.8%) agreed on whether or not there was any violence present in their relationship (Rob Stephenson et al., 2019). Further exploration of these reporting discrepancies is

warranted, especially as a mechanism to understand differences between individuals who report violence and individuals whose partners report violence on their behalf.

The current study utilized data from YMSM dyads to explore IPV prevalence. The first aim was to measure prevalence of IPV based on self-report as well as dyad-report, and to examine reporting congruence among dyads in the sample. It was hypothesized that IPV prevalence in the sample would mirror national estimates for IPV among gay and bisexual youth from the 2017 YRBS, approximately 13-17%. It was also hypothesized that there would be a low rate of IPV reporting congruence among dyads in the sample. The second aim was to explore associations between IPV and minority stress among YMSM dyads, as well as whether these associations differed depending on the use of self-report or dyad-report prevalence. The hypothesis for this analysis was that both IPV perpetration and victimization would be associated with minority stress variables in the sample, and that these associations would be stronger for self-report compared to dyad-report IPV.

3.2 Methods

3.2.1 Study sample and population

Study data came from RADAR, an ongoing longitudinal cohort study of YMSM and transgender women in Chicago, Illinois (current N > 1200). Participants from two previously-developed longitudinal cohorts – Project Q2 and Crew 450 – were eligible to participate in the RADAR Study, recruited initially in 2007 and 2011, respectively (B. Mustanski et al., 2010; Michael E. Newcomb et al., 2014). Beginning in 2015, RADAR recruited a new cohort to build a

multi-cohort, accelerating longitudinal design. Participants in each of the cohorts of origin were recruited through a combination of in-person recruitment (e.g., LGBTQ events, clinic-based recruitment), online advertising via social media, and peer-incentivized recruitment (Gerend et al., 2017). In the time of enrollment into their original cohort, participants were between 16 and 20 years old, assigned male sex at birth, spoke English, and either identified as gay, bisexual, or transgender, or indicated having had a sexual encounter with a man in the previous year. Additionally, all participants recruited into RADAR were asked to recruit their serious romantic partners to the study if their partners were assigned male sex at birth. Members of the cohort could also refer their peers to the study, and romantic partner and peer recruits had to meet all previously-described eligibility criteria and be aged 16-29 to match the age range of the 3 cohorts that compose RADAR (Gerend et al., 2017). Romantic partners who were aged 30 or older could complete a one-time study visit but were not eligible for enrollment in the cohort. The current study used data from each dyad's first visit ($n = 576$ individuals, or 288 dyads).

3.2.2 Measures

3.2.2.1 Intimate Partner Violence

Outcome variables. Participants were asked about their previous experience with sexual, verbal, and physical violence with their current partner. For each type of violence participants answered one question about whether they were ever a victim of that type of violence, and those who indicated an experience answered a follow up question about whether they were a victim of that type of violence in the past six months. This two-question pattern was repeated for perpetration of each type of violence. Violence types included verbal violence (“called/been called names, insulted them, or treated them disrespectfully in front of others”); physical violence (“hit, slapped,

punched, or physically hurt you”); and sexual violence (“forced you to have vaginal, anal, or oral sex when you did not want to”). The current study collapsed all types of violence into one IPV victimization variable and one IPV perpetration variable.

3.2.2.2 Minority Stress variables

Predictor Variables. These measures include perceived stress, internalized stigma, microaggressions, and LGBT victimization.

3.2.2.2.1 Perceived Stress

Participants were asked to complete the Perceived Stress Scale (Roberti, Harrington, & Storch, 2006). This ten-item scale assessed the frequency of feelings of a lack of control in the past month. Items include “how often have you been upset because of something that happened unexpectedly?” and “how often have you been able to control irritations in your life?” Response options were on a scale from zero to four, with zero indicating “never” and four indicating “very often.” Responses to four of the ten items were reverse scored, and then item scores were summed; scores ranged between 0 and 40, with higher scores indicating higher perceived stress.

3.2.2.2.2 Internalized Stigma

Participants were asked the eight-item Desire to be Heterosexual subscale of the Internalized Homophobia Scale (Puckett et al., 2017). Participants were asked the extent to which they agreed with eight prompts, with their response options including “strongly disagree,” “disagree,” “agree,” and “strongly agree.” Prompts included, “Sometimes I wish I were not gay,” “if there were a pill to make me straight I would take it,” and “I have tried to stop being attracted to men.” Responses were averaged across items.

3.2.2.2.3 Microaggressions

Participants were asked questions from two subscales of the Sexual Orientation Microaggression Inventory (Swann, Minshew, Newcomb, & Mustanski, 2016). The first subscale measured anti-gay attitudes and expressions, and the second measured denial of homosexuality. Participants indicated the frequency with which they encountered six scenarios on a five-point scale, ranging from “never” to “about every day.” Scenarios included, “you heard someone say ‘that’s so gay’ in a negative way” and “someone said, ‘you are not like those gay people.’” Responses were averaged across items, and no data were missing for this construct. The second subscale from the Sexual Orientation Microaggressions Inventory asked about denial of homosexuality. This subscale had three questions, including “you were told you just haven’t found the right person of the opposite sex,” “you were told that being gay is just a phase,” and “a family member expressed disappointment about you being gay, lesbian, or bisexual.” Responses were averaged across items.

3.2.2.2.4 LGBT Victimization

Participants were asked six questions on their experiences with violence in the past six months due to their perceived sexual orientation. They were asked the frequency with which they were 1) threatened with physical violence, 2) the victim of a thrown object, 3) punched, kicked, or beaten, 4) threatened with a weapon, 5) chased or followed, or 6) the victim of property damage in the past six months because they were thought to be gay, bisexual, or transgender. The four response options were 1) never, 2) once, 3) twice, or 4) three or more times (Feinstein, McConnell, Dyar, Mustanski, & Newcomb, 2018). Responses were averaged across the six items.

3.2.2.3 Depression Symptoms

Predictor variable. Participants were asked the eight-item PROMIS Depression short form. For each item, participants indicated the frequency with which they experienced the emotion over the past seven days. Emotions included feeling: worthless; having nothing to look forward to; helpless; sad; like a failure; depressed; unhappy; and hopeless. Response options, scored 1 through 5, included: never; rarely; sometimes; often; and always. Responses to these eight items were summed to create the raw score (range: 8 to 40).

3.2.2.4 Demographics

Covariates. Participants indicated their age, relationship length, and race/ethnicity. Age was measured in years and relationship length was measured in months. Response options for race/ethnicity included White, Black, Hispanic, and Other.

3.2.3 Statistical Analysis

All analyses were conducted in SPSS v.26 (IBM SPSS Statistics, 2019). Of the original 288 individuals in the sample, I removed 63 dyads where one or both members were already present in the sample. I also removed 57 dyads where one or both members were missing data for any of the IPV outcomes. This created an analytic sample of 168 dyads with 336 individuals. To describe the prevalence of IPV reporting discrepancy in the sample, I compared reports of violence within dyads. Individuals who reported victimization or perpetration of violence were recorded as individual reports of violence. Individuals who did not report violence, but whose partners reported victimization or perpetration of violence were recorded as inferred reports of perpetration or victimization of violence, respectively. Individual reports and inferred reports of victimization and

perpetration were combined to create estimates for total reports of IPV perpetration and victimization. I utilized a crosstab to compare reports of victimization to reports of perpetration and computed a kappa score to understand the extent to which individuals agreed on the presence of violence.

To examine differences between self-reported violence and inferred violence, I re-ran the descriptive analyses on the continuous demographic and minority stress variables for the subsample with IPV victimization experience and the subsample with IPV perpetration experience. In each case, the descriptive statistics were stratified by IPV report type, either self-report or inferred report.

To examine the impact of utilizing individual reports of violence compared to dyad reports, I ran multilevel logistic regression analyses, with individuals nested within dyads. Utilizing 1) self-report victimization, 2) total victimization, 3) self-report perpetration, and 4) total perpetration as outcomes, I ran four models for each outcome to assess the individual impacts of the minority stress variables, for a total of 16 models. Each model adjusted for age, relationship length, and race/ethnicity.

The sample included individuals who did not identify their current gender identity as male (27 individuals in 25 dyads), individuals over the age of 29 (28 individuals in 26 dyads), and dyads where more than 30 days lapsed between partner 1 and partner 2 completing the survey (56 individuals in 28 dyads). I conducted separate sensitivity analyses for each of these variables to determine whether they impacted the results of the multilevel models.

3.3 Results

Table 3-1 provides demographic information for the sample. The average age of the sample was 23.5 years. Approximately 35% (n= 120) of the sample identified as Black, followed by 29.2% (n = 98) identifying as Hispanic, and 27.1% (n=91 identifying as White. Average relationship length in the sample was 13.2 months, with a range from 0 to 113 months. The average score on the PROMIS depression scale was 15.1 (range: 8 - 40), which is below the cutoff of 17 for mild depression. Sixty five individuals (19.3% of the sample) reported IPV perpetration, 81 individuals (24.1% of the sample) reported IPV victimization, and 52 individuals reported both victimization and perpetration (15.5% of the sample; 80.0% of perpetration reports; 64.1% of victimization reports).

Table 3-1: Sample demographic frequencies (n = 336)

Demographics	
Continuous Variables	M (SD)
Age (years)	23.51 (4.65)
Average Relationship Length (months)	13.24 (15.74)
Depression (PROMIS Score)	15.10 (7.10)
Perceived Stress	16.57 (6.19)
Stigma	1.62 (0.65)
Microaggressions	1.93 (0.74)
LGBT Victimization	0.16 (0.35)
Categorical Variables	n (%)
Race/Ethnicity	
Black	120 (35.7)
Hispanic	98 (29.2)
White	91 (27.1)
Other	27 (8.0)
Any IPV	
Total Reports of Perpetration	106 (31.5)
Individual Reports of Perpetration	65 (19.3)
Inferred Reports of Perpetration	41 (12.2)
Total Reports of Victimization	106 (31.5)
Individual reports of Victimization	81 (24.1)
Inferred Reports of Victimization	25 (7.4)
Bidirectional Violence	
Individual Report	52 (15.5)
Dyad Report	76 (22.6)

Table 3-2: IPV prevalence among YMSM and their partners in RADAR (n = 336)

	Individual Reports	Inferred Reports	Total Reports
Perpetration	65 (19.3%)	41 (12.2%)	106 (31.5%)
Victimization	81 (24.1%)	25 (7.4%)	106 (31.5%)

Table 3-2 shows individual reports of perpetration and victimization, as well as the prevalence of inferred reports and the total reports within the sample. While 19.3% of the sample reported perpetrating violence, 12.2% of the sample was inferred to be perpetrators of violence due to a report of victimization by their partner. Similarly, 24.1% of the sample reported being a victim of violence, and 7.4% of the sample was inferred to be victims of violence due to a report of perpetration by their partner. This increased the reports of perpetration and victimization within

the sample to 106 reports each (31.5% of the sample). There were 40 instances where both members of the dyad agreed on the presence of violence, which was 61.5% of the 65 reports of perpetration and 49.3% of the 81 reports of victimization, and 37.7% of the total reports utilizing dyad data. Cohen’s kappa indicated moderate agreement between partners about the presence of violence, $\kappa = 0.42$, $p < .001$.

Table 3-3: Comparison of demographic and minority stress variables among RADAR participants indicated as victims in their current relationships

Variable	Individual reports	Inferred reports
	(n= 81) M (SD)	(n = 25) M (SD)
Age (years)	24.12 (5.31)	24.08 (5.47)
Depression	18.77 (7.72)	14.00 (6.70)
Relationship length (months)	19.41 (23.17)	16.50 (17.86)
Perceived Stress	18.48 (6.40)	15.72 (5.92)
Internalized Stigma	1.86 (0.69)	1.64 (0.71)
Microaggressions	2.20 (0.84)	2.01 (0.46)
LGBTQ Victimization	0.29 (0.49)	0.25 (0.38)

Table 3-4: Comparison of demographic and minority stress variables among RADAR participants indicated as perpetrators in their current relationships

Variable	Individual reports	Inferred reports
	(n= 65) M (SD)	(n = 41) M (SD)
Age (years)	24.02 (5.23)	23.22 (4.63)
Depression	18.45 (7.16)	15.05 (6.78)
Relationship length (months)	20.72 (25.11)	15.56 (15.61)
Perceived Stress	18.60 (6.08)	15.83 (6.16)
Internalized Stigma	1.78 (0.76)	1.60 (0.58)
Microaggressions	2.14 (0.75)	1.78 (0.75)
LGBTQ Victimization	0.26 (0.47)	0.26 (0.50)

Tables 3-3 and 3-4 compare those who reported violence to those who are inferred to be victims or perpetrators of violence based on their partner’s report. Compared to those who reported victimization, it appears that inferred victims reported lower depression scores. Similarly, inferred

perpetrators reported lower depression scores, as well as lower perceived stress scores and microaggressions scores compared to individuals who reported IPV perpetration.

Table 3-5: Associations between IPV and minority stress among YMSM (n = 336)

	Victimization		Perpetration	
	Individual Report	Total Report	Individual Report	Total Report
	aOR (95% CI)	aOR (95% CI)	aOR (95% CI)	aOR (95% CI)
Perceived Stress	1.07 (1.02, 1.11)	1.03 (0.99, 1.07)	1.05 (1.01, 1.09)	1.00 (0.97, 1.04)
Internalized Stigma	1.84 (1.23, 2.73)	1.55 (1.08, 2.24)	1.24 (0.77, 2.00)	0.84 (0.57, 1.23)
Microaggressions	1.78 (1.29, 2.47)	1.63 (1.25, 2.13)	1.20 (0.88, 1.66)	0.77 (0.58, 1.01)
LGBTQ Victimization	2.92 (1.49, 5.74)	2.29 (1.43, 3.68)	1.43 (0.62, 3.26)	1.41 (0.88, 2.24)

Note: All models adjusted for age, average relationship length, and race/ethnicity; aOR: adjusted odds ratio; CI: confidence interval

Table 3-5 shows adjusted odds ratios for associations between minority stress and IPV victimization and perpetration. For IPV victimization reported by individuals, higher levels of any minority stress variable are associated with higher odds of reporting victimization in the past six months. For total reports, the effect of perceived stress on likelihood of reporting victimization disappears, but the effects for the other minority stress variables remain significant. For IPV perpetration reported by individuals, higher levels of perceived stress (aOR: 1.05; CI: 1.01, 1.09) are associated with higher odds of reporting IPV perpetration. For total reports of perpetration, none of the minority stress variables were significantly associated with the likelihood of IPV perpetration.

Table 3-6: Associations between IPV and minority stress among partnered RADAR participants in dyads

where both partners identify as male (n = 286)

	Victimization		Perpetration	
	Individual Report	Total Report	Individual Report	Total Report
	aOR (95% CI)	aOR (95% CI)	aOR (95% CI)	aOR (95% CI)
Perceived Stress	1.08 (1.03, 1.13)	1.04 (0.99, 1.08)	1.05 (1.01, 1.10)	1.00 (0.96, 1.04)
Internalized Stigma	1.68 (1.10, 2.60)	1.58 (1.10, 2.26)	1.28 (0.81, 2.04)	0.80 (0.54, 1.18)
Microaggressions	1.94 (1.34, 2.82)	1.71 (1.27, 2.30)	1.27 (0.92, 1.76)	0.72 (0.52, 1.00)
LGBTQ Victimization	3.89 (1.61, 9.38)	2.94 (1.73, 4.99)	1.91 (0.78, 4.66)	1.08 (0.62, 1.86)

Note: All models adjusted for age, average relationship length, and race/ethnicity; aOR: adjusted odds ratio; CI: confidence interval

Table 3-7: Associations between IPV and minority stress among partnered RADAR participants who completed surveys within 30 days of their partners (n = 280)

	Victimization		Perpetration	
	Individual Report	Total Report	Individual Report	Total Report
	aOR (95% CI)	aOR (95% CI)	aOR (95% CI)	aOR (95% CI)
Perceived Stress	1.08 (1.03, 1.13)	1.04 (1.00, 1.08)	1.05 (1.01, 1.09)	0.99 (0.96, 1.03)
Internalized Stigma	1.84 (1.19, 2.85)	1.62 (1.12, 2.32)	1.18 (0.70, 1.96)	0.78 (0.52, 1.17)
Microaggressions	1.89 (1.32, 2.70)	1.68 (1.26, 2.25)	1.28 (0.88, 1.85)	0.76 (0.55, 1.04)
LGBTQ Victimization	2.79 (1.37, 5.70)	2.20 (1.48, 3.28)	1.30 (0.54, 3.16)	1.26 (0.88, 1.82)

Note: All models adjusted for age, average relationship length, and race/ethnicity; aOR: adjusted odds ratio; CI: confidence interval

Table 3-8: Associations between IPV and minority stress among partnered RADAR participants under the age of 30 (n = 284)

	Victimization		Perpetration	
	Individual Report	Total Report	Individual Report	Total Report
	aOR (95% CI)	aOR (95% CI)	aOR (95% CI)	aOR (95% CI)
Perceived Stress	1.08 (1.03, 1.12)	1.04 (1.00, 1.08)	1.04 (1.00, 1.09)	1.00 (0.96, 1.04)
Internalized Stigma	1.90 (1.25, 2.90)	1.52 (1.04, 2.22)	1.29 (0.78, 2.15)	0.91 (0.59, 1.39)
Microaggressions	1.73 (1.22, 2.45)	1.64 (1.21, 2.21)	1.16 (0.80, 1.70)	0.73 (0.51, 1.04)
LGBTQ Victimization	2.58 (1.28, 5.19)	1.91 (1.15, 3.19)	1.18 (0.46, 2.97)	1.76 (1.04, 2.96)

Note: All models adjusted for age, average relationship length, and race/ethnicity; aOR: adjusted odds ratio; CI: confidence interval

Tables 3-6, 3-7, and 3-8 show the results of the sensitivity analyses. Removing dyads where one or both members did not identify as male (Table 3-6) or where individuals completed the survey more than 30 days apart (Table 3-7) did not change the significance of the results. Removing dyads where one or both partners was over the age of 29 (Table 3-8) removed the significant association between perceived stress and individual-report IPV perpetration, and the association between LGBTQ victimization and total-report perpetration became significant. The direction of the associations, regardless of significance, did not change between the analyses.

3.4 Discussion

The current study shows a moderate rate of agreement about the occurrence of IPV in the past six months among YMSM dyads. Sixty-five individuals indicated perpetrating IPV in the past six months, while 81 indicated being a victim of IPV. Of those reports, there were only 40 cases where dyads agreed about violence (i.e. – partner A said that they were a victim, and partner B said that they were a perpetrator). These 40 cases represented three-fifths of the perpetration reports, almost half of the victimization reports, and slightly more than one third of the total reports where any victimization or perpetration was attested. Adding inferred reports of IPV to individual reports resulted in significantly higher rates of both perpetration and victimization in the sample. Lastly, microaggressions, internalized stigma, and LGBT victimization were all significantly and positively associated with self-reported IPV victimization and total-reported IPV victimization. Comparing individuals who reported IPV to those who were inferred to have experience with IPV based on their partners' reports, inferred victims and inferred perpetrators reported lower levels of depression symptoms compared to individuals who reported IPV victimization and IPV perpetration, respectively. Inferred perpetrators also reported lower levels of perceived stress and microaggressions compared to those who reported IPV perpetration. Measuring IPV among YMSM dyads improves our understanding of the extent to which IPV affects YMSM, and allows for further exploration of factors that may be associated with IPV reporting.

Dyadic data provide multiple options for estimating prevalence rates of violence. The first option is individual self-report, where 65 individuals (19.3% of the sample) reported perpetration and 81 individuals (24.1% of the sample) reported victimization in the past six months. The second option is more conservative, counting only the cases where both members of a dyad agree on the occurrence of violence and assuming that cases where one partner reports violence and the other

partner does not report violence are cases of overreporting. In this case, there were 40 instances where both members of a dyad agreed that violence took place in the past six months, which means 11.9% of the sample reported perpetration and 11.9% of the sample reported victimization. The third option is more expansive and assumes that cases where an individual does not report violence when their partner reports violence are cases of nonreporting. When including partner reports of violence, 28% of the sample is indicated as perpetrators of violence, and 28% of the sample is indicated as victims of violence. It is likely that the true IPV prevalence estimate lies between the conservative and robust estimates. Further research with YMSM dyads, particularly qualitative research, can improve our understanding of whether prevalence estimates for IPV skew towards overreporting or underreporting, and the factors that influence this skew.

The low rate of agreement within dyads about the prevalence of IPV mirrors the only other study measuring IPV agreement rates among MSM dyads (Rob Stephenson et al., 2019). There may be reasons why individuals do not report violence while their partner does, varying from not wanting to admit being a victim or perpetrator, to not remembering the incident, to not perceiving the incident as “violence.” Further qualitative work is needed to better understand why discrepant IPV reporting happens, and further quantitative work is necessary to determine if there are differences between individuals who report violence and individuals who withhold information on the violence they may experience.

Individuals who reported victimization reported significantly higher depression scores compared to individuals who were identified as victims by their partners. Individuals who reported perpetration also reported significantly higher depression, stress, and microaggressions scores compared to those who were identified as perpetrators by their partners. This could be a systematic underreporting of adverse events by respondents who do not want to acknowledge negative

experiences in their lives, or it could be a coping mechanism for dealing with these negative experiences. Another potential explanation is that these individuals believe that they were not victims or perpetrators of violence, or that any episodes of violence fell outside of the six-month recall period. It is possible that the individuals who positively identify themselves as victims or perpetrators, in processing their experiences of violence, triggered internal coping measures that increased their levels of perceived stress or depression. Prior research suggests that denial may be a coping mechanism for male IPV victims (Artime, McCallum, & Peterson, 2014; Tsui, Cheung, & Leung, 2010). Further study into perceptions of IPV among YMSM may clarify how denial, and whether it is the denial of being involved in violence or the denial of any sort of IPV label, can facilitate improved mental health outcomes.

Future research should also explore the characteristics of those who do not report violence when there are other indicators that violence may be present in their relationships. The current analysis indicates that these individuals report lower depression and stress scores compared to those who report violence. This may indicate that these individuals possess some protective factor that allows them to cope with stress and violence more easily, or it may be further evidence of social desirability bias.

3.4.1 Limitations

This study is not without limitations. It utilizes cross-sectional data, which means that we cannot infer causality. Future research could examine longitudinal data among dyads to see if patterns of discrepant reporting exist, and which factors may be associated with them. Next, we collapsed the three types of IPV into “any IPV” variables, so even in cases where there are congruent reports of violence, it is possible that the members of the dyad were referring to different

instances of violence. More work can be done by examining reporting discrepancies by type of violence, as well as asking multiple questions about each type of violence. Lastly, our robust measures of IPV victimization and perpetration assume that all discrepant reports of violence are due to underreporting by one member of the dyad. Since most dyads did not take the survey at the same time (average time between completions within dyads was 14.35 days, with a range of 0 to 100 days), it is possible that some have discrepant reporting due to different recall periods. Dyad data collection where both members complete the survey at the same time can reduce the risk of non-overlapping recall periods but may not completely get rid of the limitation.

3.5 Conclusion

Despite these limitations, our study highlights the importance of collecting dyad-level data on IPV. Improving prevalence estimates of IPV among YMSM populations is important for a better understanding of the problem and the factors that are associated with IPV. Additionally, associations between IPV and minority stress indicate that more research is needed to better understand this relationship. Intervention work for IPV in YMSM populations should focus on interpersonal relationships, encouraging healthy dating relationships, as well as structural and environmental changes, to address minority stressors that YMSM may face in their communities.

4.0 Actor and Partner Effects of Minority Stress on Intimate Partner Violence among YMSM Dyads

4.1 Introduction

Intimate partner violence (IPV) is a serious public health risk for young men who have sex with men (YMSM). Violence can vary in type and severity, from physical assault to sexual coercion to verbal violence (Breiding et al., 2015). The negative consequences of violence also vary, and may include physical or psychological impacts, such as physical injury or post-traumatic stress disorder (A. L. Coker et al., 2002; Randle & Graham, 2011). An emerging body of literature indicates a significant burden of IPV perpetration and victimization among YMSM (Freedner, Freed, Yang, & Austin, 2002; Reuter et al., 2017; Stults et al., 2016), a pattern that continues into adulthood (R. Stephenson & Finneran, 2017b; Suarez et al., 2018). The 2017 Youth Risk Behavior Surveillance Survey (YRBS) estimates that, among high school survey participants who dated in the 12 months prior to responding to the survey (approximately 68% of the sample), 6.9% reported sexual IPV victimization and 8.0% reported physical IPV victimization in the prior 12-month period. Among male participants in the YRBS, while 2.8% of the sample reported sexual IPV, 13.5% of gay or bisexual males reported sexual violence. Similarly for physical IPV, 6.5% of male participants indicated physical IPV victimization, and the prevalence increased to 16.8% for gay and bisexual males (Kann et al., 2018). A prospective cohort study of YMSM in New York City found that mean prevalence of any IPV victimization in the past six months across their follow up visits was 11.2%, and mean prevalence of any IPV perpetration was 9.3%, and that there was a strong correlation between reports of IPV victimization and IPV perpetration (Stults et al., 2019).

One challenge for IPV research is the presence of measurement biases that tend to favor underreporting of both IPV victimization and perpetration (Rollè, Giardina, Caldarera, Gerino, & Brustia, 2018; Stults et al., 2019). Systematic errors may be introduced when utilizing measurement tools that do not fully capture IPV (e.g.- defining physical IPV with a non-exhaustive list of potential violent actions). Additionally, random error may occur when respondents indicate that they were not a victim or perpetrator of violence because they do not perceive past violent actions as such. While IPV is an interpersonal issue, few studies explore IPV with couple-level data, instead relying on the responses of one individual in the dyad to determine whether violence is present (Landolt & Dutton, 1997; Suarez et al., 2018). One recent study examined IPV reporting discrepancies among male dyads, finding a low rate of agreement on the occurrence of IPV within dyads and highlighting one of the strengths of couple-level data in quantifying the prevalence of IPV (Rob Stephenson et al., 2019). Creating scales specific to the population may alleviate some of the systematic errors that occur and assessing couple-level IPV from partners' reports may reduce the likelihood of random error (R. Stephenson & Finneran, 2013; Rob Stephenson et al., 2019).

In addition to an increased burden of IPV, YMSM encounter unique stressors due to their sexual orientation. Minority stress theory suggests that these unique identity-related stressors lead to negative mental and physical health outcomes (Meyer, 1995; Meyer & Frost, 2013). These unique stressors are in addition to the everyday stressors that non-minority people may also face, such as those that are job- or partnership-related. Internalized stigma, victimization due to one's sexual minority identity, and microaggressions are associated with IPV among YMSM (K. M. Edwards & Sylaska, 2013; R. Stephenson & Finneran, 2017a). One study of 1,075 gay and bisexual men in Atlanta found that homophobic discrimination, internalized homophobia, and

racial discrimination were associated with increased odds of reporting any form of IPV victimization in the past 12 months. Homophobic discrimination and internalized homophobia were also associated with increased odds of reporting any IPV perpetration (R. Stephenson & Finneran, 2017a). Another study that recruited youth involved in same-sex romantic relationships on college campuses, found a positive association between physical and sexual violence perpetration and internalized stigma, and between physical violence perpetration and sexual identity concealment, all when controlling for concurrent victimization (K. M. Edwards & Sylaska, 2013).

The current study utilizes cross-sectional data from a sample of young male dyads embedded within a large cohort study of YMSM and transgender women to explore the minority stress levels of each partner within a dyad and their associations with IPV victimization and perpetration. The current study also juxtaposes the utilization of individual report IPV and dyad report IPV as outcomes to better understand whether dyad data collection can improve our understanding of IPV among YMSM. I hypothesize that an individual's levels of minority stress are associated with their experiences of IPV victimization and IPV perpetration. I also hypothesize that an individual's partner's levels of minority stress are associated with the individual's experiences of IPV victimization and perpetration. I also anticipate that using dyad-reported IPV as an outcome will provide more robust results than using individual-reported IPV.

4.2 Methods

Study data came from RADAR, an ongoing longitudinal cohort study of YMSM and transgender women in Chicago, Illinois (current N > 1200). Participants from two previously-

developed longitudinal cohorts – Project Q2 and Crew 450 – were eligible to participate in the RADAR Study, recruited initially in 2007 and 2011, respectively (B. Mustanski et al., 2010; Michael E. Newcomb et al., 2014). Beginning in 2015, RADAR recruited a new cohort to build a multi-cohort, accelerating longitudinal design. Participants in each of the cohorts of origin were recruited through a combination of in-person recruitment (e.g., LGBTQ events, clinic-based recruitment), online advertising via social media, and peer-incentivized recruitment (Gerend et al., 2017). In the time of enrollment into their original cohort, participants were between 16 and 20 years old, assigned male sex at birth, spoke English, and either identified as gay, bisexual, or transgender, or indicated having had a sexual encounter with a man in the previous year. Additionally, all participants recruited into RADAR were asked to recruit their serious romantic partners to the study if their partners were assigned male sex at birth. Members of the cohort could also refer their peers to the study, and romantic partner and peer recruits had to meet all previously-described eligibility criteria and be aged 16-29 to match the age range of the 3 cohorts that compose RADAR (Gerend et al., 2017). Romantic partners who were aged 30 or older could complete a one-time study visit but were not eligible for enrollment in the cohort. The current study used data from each dyad’s first visit (n = 576 individuals, or 288 dyads).

4.2.1 Measures

4.2.1.1 Intimate partner violence

Outcome variables. Participants were asked about their previous experience with sexual, verbal, and physical violence with their current partner. For each type of violence participants answered one question about whether they were ever a victim of that type of violence, and those who indicated an experience were presented with a follow up question about whether they were a

victim of that type of violence in the past six months. This two-question pattern was repeated for perpetration of each type of violence. Violence types included verbal violence (“called/been called names, insulted them, or treated them disrespectfully in front of others”); physical violence (“hit, slapped, punched, or physically hurt you”); and sexual violence (“forced you to have vaginal, anal, or oral sex when you did not want to”). The current study collapsed all types of violence into one IPV victimization variable and one IPV perpetration variable.

The current study also utilizes robust estimates of IPV victimization and perpetration constructed from dyad data. An individual was recorded as experiencing IPV victimization if 1) the individual reported experiencing IPV victimization in the past six months, or 2) the individual’s partner reported perpetrating violence against their current partner in the past six months. Similarly, an individual was recorded as experiencing IPV perpetration if 1) the individual reported perpetrating violence against their current partner in the past six months, or 2) the individual’s partner reported being a victim of violence by their current partner in the past six months. These reports are called “dyad reports” as they take information from both members of the dyad into account.

4.2.1.2 Minority Stress

Predictor Variables. These measures include perceived stress, internalized stigma, microaggressions, and LGBT victimization.

4.2.1.2.1 Perceived Stress

Participants were asked to complete the Perceived Stress Scale (Roberti et al., 2006). This ten-item scale assessed the frequency of feelings of a lack of control in the past month. Items include “how often have you been upset because of something that happened unexpectedly?” and

“how often have you been able to control irritations in your life?” Response options were on a scale from zero to four, with zero indicating “never” and four indicating “very often.” Responses to four of the ten items were reverse scored, and then item scores were summed; scores ranged between 0 and 40, with higher scores indicating higher perceived stress. Perceived stress is itself not considered a minority stressor, but is included in minority stress analyses as a stress control variable.

4.2.1.2.2 Internalized Stigma

Participants were asked the eight-item Desire to be Heterosexual subscale of the Internalized Homophobia Scale (Feinstein et al., 2018). Participants were asked the extent to which they agreed with eight prompts, with their response options including “strongly disagree,” “disagree,” “agree,” and “strongly agree.” Prompts included, “Sometimes I wish I were not gay,” “if there were a pill to make me straight I would take it,” and “I have tried to stop being attracted to men.” Responses were averaged across items.

4.2.1.2.3 Microaggressions

Participants were asked questions from two subscales of the Sexual Orientation Microaggression Inventory (Swann et al., 2016). The first subscale measured anti-gay attitudes and expressions, and the second measured denial of homosexuality. Participants indicated the frequency with which they encountered six scenarios on a five-point scale, ranging from “never” to “about every day.” Scenarios included, “you heard someone say ‘that’s so gay’ in a negative way” and “someone said, ‘you are not like those gay people.’” Responses were averaged across items, and no data were missing for this construct. The second subscale from the Sexual Orientation Microaggressions Inventory asked about denial of homosexuality. This subscale had

three questions, including “you were told you just haven’t found the right person of the opposite sex,” “you were told that being gay is just a phase,” and “a family member expressed disappointment about you being gay, lesbian, or bisexual.” Responses were averaged across items.

4.2.1.3 LGBT Victimization

Participants were asked six questions on their experiences with violence in the past six months due to their perceived sexual orientation. They were asked the frequency with which they were 1) threatened with physical violence, 2) the victim of a thrown object, 3) punched, kicked, or beaten, 4) threatened with a weapon, 5) chased or followed, or 6) the victim of property damage in the past six months because they were thought to be gay, bisexual, or transgender. The four response options were 1) never, 2) once, 3) twice, or 4) three or more times (Feinstein et al., 2018). Responses were averaged across the six items.

4.2.1.4 Demographics

Covariates. Participants indicated their age, relationship length, and race/ethnicity. Age was measured in years and relationship length was measured in months. Response options for race/ethnicity included White, Black, Hispanic, and Other.

4.2.2 Statistical Analysis

All analyses were conducted in SPSS v26 (IBM SPSS Statistics, 2019). Some participants returned at future waves with new romantic partners, and so I removed dyads where one or both partners were already part of the sample, leaving only the first instance of all individuals in the sample. This reduced the sample from 288 dyads with 576 individuals to 225 dyads with 450

unique individuals. I also removed dyads where one or both members were missing data for any of the IPV outcomes (57 dyads or 114 individuals), leaving an analytic sample of 168 dyads with 336 individuals. Three individuals were missing relationship length responses. There was a strong correlation between relationship length responses within dyads ($r = 0.79, p < .001$), so I used the dyad's average relationship length in my analysis instead of individual reports. I conducted a basic descriptive analysis of all variables I would be using. Twenty-six individuals were missing data for the internalized stigma; these individuals were only excluded from the analyses utilizing this variable. I also conducted bivariate correlations between the minority stress variables and calculated intraclass correlations using one-way random models for each minority stress variable, comparing responses within dyads.

To examine the effects of minority stress on IPV, I ran a general estimating equation (GEE) model, with individuals nested within dyads. This analysis follows the tenets of the Actor-Partner Interdependence Model (APIM), which explores the effects of not only an individual's characteristics on their outcome, or the "actor effect", but also the effects of their partner's characteristics, the "partner effect" (Kenny, Kashy, & Cook, 2006). Previous studies have confirmed the appropriateness of GEE when exploring the APIM with dichotomous outcomes (Loeys, Cook, De Smet, Wietzker, & Buysse, 2014). I ran separate models for self-report IPV victimization, self-report IPV perpetration, dyad-report IPV victimization, and dyad-report IPV perpetration as outcomes. Each minority stress variable (perceived stress, internalized stigma, microaggressions, and LGBT victimization) was tested one at a time per outcome, which resulted in 16 models, each controlling for age, relationship length, and race/ethnicity. I then ran multivariate models with all stressors included, one model for dyad-report IPV victimization and one model for dyad-report IPV perpetration.

4.3 Results

Table 4-1 contains summary statistics for the sample. The average age of the sample was 23.5 years with a range of 16 to 54 years old, and the average relationship length was 13.2 months, with a range of 0 to 113 months. Slightly more than one-third of the sample (35.7%, n = 120) identified as Black, followed by 29.2% (n = 98) identifying as Hispanic/Latinx, and 27.1% (n = 91) identifying as White.

Table 4-1: Sample demographic frequencies (n = 336)

Demographics	
Continuous Variables	M (SD)
Age (years)	23.5 (4.6)
Average Relationship Length (months)	13.2 (15.7)
Perceived Stress	16.6 (6.2)
Internalized Stigma	1.6 (0.6)
Microaggressions	1.9 (0.7)
LGBT Victimization	0.2 (0.3)
Categorical Variables	n (%)
Race/Ethnicity	
Black	120 (35.7)
Hispanic	98 (29.2)
White	91 (27.1)
Other	27 (8.0)
Any IPV	
Total Reports of Perpetration	106 (31.5)
Individual Reports of Perpetration	65 (19.3)
Partner Reports of Victimization	41 (12.2)
Total Reports of Victimization	106 (31.5)
Individual reports of Victimization	81 (24.1)
Partner Reports of Perpetration	25 (7.4)
Bidirectional Violence	
Individual Report	52 (15.5)
Dyad Report	76 (22.6)

Sixty-five individuals (19.3%) reported perpetrating any IPV in the past six months, and 81 individuals (24.1%) reported being a victim of any IPV in the past six months. Fifty-two individuals (15.5%) reported both victimization and perpetration in the past six months. Combining reports from both members of the dyads, in addition to the 65 individuals who

indicated perpetrating violence, 41 other individuals did not indicate perpetrating violence while their partners indicated being a victim of violence. This resulted in 106 individuals (31.5%) being indicated as perpetrators of violence in the sample. Similarly for victimization, 81 individuals reported being victims of violence and 25 individuals did not indicate being victims of violence while their partners indicated perpetrating violence, resulting in 106 individuals (31.5%) being indicated as victims of violence in the past six months. Based on the dyad reports of victimization and perpetration, 76 individuals (22.6%) were indicated as both victims and perpetrators.

Table 4-2: Means, standard deviations, intraclass correlations, and individual-level bivariate correlations of minority stress variables

Variable	1	2	3	4
Stressors				
1. Perceived Stress	-			
2. Internalized Stigma	0.317**	-		
3. Microaggressions	0.270**	0.326**	-	
4. LGBT Victimization	0.226**	0.177**	0.308**	-
Mean	16.57	1.62	1.93	0.16
Standard Deviation	6.19	0.65	0.74	0.35
Range	0 – 35	1 – 4	1 – 5	0 – 2
ICC	0.06	0.18	0.05	0.16

** - $p < .001$; ICC – Intraclass Correlation Coefficients; Ranges for minority stressors: Perceived Stress 0-40; Internalized stigma 1-4; Microaggressions 1-5; LGBT Victimization 0-3

Table 4-2 describes correlations between all minority stress variables. While all bivariate correlations were significant, they were primarily weak correlations, ranging from $r=0.177$ to $r=0.326$. The low intraclass correlation coefficients demonstrate that much of the variance in minority stress variables occurs between individuals, as opposed to between dyads. This indicates a lack of uniformity among minority stress scores within dyads.

Tables 4-3 and 4-4 show the results of the general estimating equation models. Table 4-3 utilizes self-report IPV perpetration and self-report IPV victimization as outcomes, while Table 4-4 uses dyad-report IPV perpetration and dyad-report IPV victimization.

Table 4-3: Actor and partner effects of minority stress on intimate partner violence, individual report (n = 336)

Predictor	Actor Effect	Partner Effect
	aOR (95% CI)	aOR (95% CI)
	Perpetration	
Perceived Stress	1.06 (1.01, 1.11)	1.03 (0.98, 1.08)
Internalized Stigma	1.29 (0.80, 2.09)	1.40 (0.87, 2.26)
Microaggressions	1.53 (1.07, 2.18)	1.72 (1.24, 2.40)
LGBT Victimization	2.17 (0.98, 4.77)	3.01 (1.51, 6.00)
	Victimization	
Perceived Stress	1.07 (1.02, 1.12)	1.01 (0.96, 1.05)
Internalized Stigma	1.81 (1.20, 2.73)	1.05 (0.69, 1.60)
Microaggressions	1.81 (1.30, 2.52)	1.06 (0.74, 1.49)
LGBT Victimization	3.30 (1.63, 6.68)	2.08 (1.01, 4.30)

Note: All odds ratios are adjusted for dyad relationship length, individual age, and individual race/ethnicity; aOR: adjusted odds ratio; CI: Confidence Interval

Table 4-4: Actor and partner effects of minority stress on intimate partner violence, dyad report

Predictor	Actor Effect	Partner Effect
	aOR (95% CI)	aOR (95% CI)
	Perpetration	
Perceived Stress	1.02 (0.99, 1.07)	1.04 (1.00, 1.09)
Internalized Stigma	1.10 (0.75, 1.62)	1.73 (1.15, 2.58)
Microaggressions	1.08 (0.78, 1.48)	1.76 (1.27, 2.44)
LGBT Victimization	2.68 (1.45, 4.93)	3.96 (1.95, 8.01)
	Victimization	
Perceived Stress	1.05 (1.01, 1.10)	1.03 (0.99, 1.08)
Internalized Stigma	1.69 (1.13, 2.52)	1.15 (0.78, 1.68)
Microaggressions	1.71 (1.24, 2.35)	1.08 (0.78, 1.50)
LGBT Victimization	3.70 (1.82, 7.48)	2.54 (1.35, 4.77)

Note: All odds ratios are adjusted for dyad relationship length, individual age, and individual race/ethnicity; aOR: adjusted odds ratio; CI: Confidence Interval

In the self-report analysis, higher values for an actor’s perceived stress (aOR: 1.06; CI: 1.01, 1.11) or an actor’s experiences with microaggressions (aOR: 1.53; CI: 1.07, 2.18) were both associated with an increased likelihood of reporting perpetrating IPV in the past six months. For partner effects, higher values for a partner’s experiences of microaggressions (aOR: 1.72; CI: 1.24, 2.40) and for LGBT victimization (aOR: 3.01; CI: 1.51, 6.00) were associated with an increased likelihood of an actor reporting perpetrating IPV in the past six months (Table 3). For self-reported victimization, all actor minority stress variables were positively associated with the likelihood of

reporting IPV victimization, while only partner-reported LGBT victimization (aOR: 2.08; CI: 1.01, 4.30) was positively associated with actor-reported IPV victimization. Higher levels of actor-reported perceived stress (aOR: 1.06; CI: 1.01, 1.12), microaggressions (aOR: 1.67; CI: 1.17, 2.38), and LGBT victimization (aOR: 3.02; CI: 1.33, 6.83) were significantly associated with an increased likelihood of reporting bidirectional violence, and higher levels of partner-reported microaggressions (aOR: 1.63; CI: 1.19, 2.23) and LGBT victimization (aOR: 3.16; CI: 1.48, 6.79) were significantly associated with an increased likelihood of actor-reported bidirectional violence.

In the analyses of dyad-reports, all partner-reported minority stressors were positively and significantly associated with IPV perpetration, and all actor-reported minority stressors were positively and significantly associated with IPV victimization (Table 4-4). Additionally, higher levels of actor-reported LGBT victimization were associated with an increased likelihood of IPV perpetration (aOR: 2.68; CI: 1.45, 4.93), and higher levels of partner-reported LGBT victimization were associated with an increased likelihood of actor-reported IPV victimization (aOR: 2.54; CI: 1.35, 4.77).

Overall, the self-report and the dyad-report analyses yield similar results; the same associations between actor and partner minority stressors and IPV victimization are identified in the different analyses. The only similarities between the self-report and dyad-report analyses for IPV perpetration are the positive associations between partner-reported microaggressions and partner-reported LGBT victimization and actor IPV perpetration. The self-report analysis found positive associations for actor-reported perceived stress and actor-reported microaggressions and actor IPV perpetration, neither of which were identified in the dyad-report analysis. The dyad-report analysis found positive associations for actor-reported LGBT victimization, partner-

reported perceived stress, and partner-reported internalized stigma and actor IPV perpetration, none of which were identified in the self-report analysis.

Table 4-5: Actor and partner effects of minority stress on intimate partner violence, multivariate analysis

Predictor	Actor Effect	Partner Effect
	Odds Ratio (95% CI)	Odds Ratio (95% CI)
	Perpetration	
Perceived Stress	1.02 (0.97, 1.08)	1.02 (0.97, 1.08)
Internalized Stigma	1.05 (0.69, 1.60)	1.52 (0.97, 2.38)
Microaggressions	0.85 (0.57, 1.28)	1.36 (0.94, 1.98)
LGBT Victimization	3.48 (1.64, 7.40)	2.81 (1.22, 6.47)
	Victimization	
Perceived Stress	1.03 (0.98, 1.08)	1.03 (0.98, 1.09)
Internalized Stigma	1.47 (0.95, 2.28)	1.10 (0.72, 1.66)
Microaggressions	1.29 (0.91, 1.81)	0.84 (0.56, 1.24)
LGBT Victimization	2.53 (1.07, 5.96)	3.05 (1.49, 6.23)

Note: All odds ratios are adjusted for dyad relationship length, individual age, and individual race/ethnicity; aOR: adjusted odds ratio; CI: Confidence Interval

Table 5 presents the results of the multivariate analyses. When all stress variables were included in the analysis, the actor and partner effects for LGBT victimization remained significantly associated with both IPV victimization and IPV perpetration.

4.4 Discussion

In this study I utilized dyad-level data to examine the effects of actor and partner minority stress on IPV. In order to address concerns about underreporting of IPV (Stults et al., 2016), I constructed a more robust estimate of IPV using reporting from both members of the dyad and ran my analyses twice, first with individual-reported IPV and then with dyad-reported IPV to explore the differences. In the context of individual-reported violence, higher odds of actor-reported IPV perpetration were associated with higher levels of actor-reported perceived stress and microaggressions, and partner-reported microaggressions and LGBT victimization. Higher odds

of actor-reported IPV victimization were associated with higher levels of all actor-reported minority stressors and partner-reported LGBT victimization. Higher odds of actor-reported bidirectional violence were associated with higher levels of actor-reported perceived stress, microaggressions, and LGBT victimization, as well as partner-reported microaggressions and LGBT victimization. In the context of dyad-reported violence, higher odds of actor IPV perpetration were associated with higher levels of all partner-reported minority stressors and actor-reported LGBT victimization, and higher odds of actor IPV victimization were associated with higher levels of all actor-reported minority stressors and partner-reported LGBT victimization. These results are consistent with previous literature on the association between an individual's levels of minority stress and their risk of IPV among MSM (K. M. Edwards & Sylaska, 2013; Feinstein et al., 2018; R. Stephenson & Finneran, 2017a). The results also indicate that when an individual's partner experiences higher levels of minority stress, that individual is more likely to be violent against their partner.

Some associations between minority stressors and IPV were significant in either the self-report analysis or the dyad-report analysis, but not both. This was the case for the associations between IPV perpetration and actor-reported perceived stress, microaggressions, and LGBT victimization, and IPV perpetration and partner-reported perceived stress and internalized stigma. The significance of associations between IPV victimization and all actor and partner minority stressors were the same for individual and dyad reported IPV. The inclusion of individuals identified by their partners as perpetrators of violence impacted the results of the analysis. In collecting IPV data from individuals rather than dyads, we are only capturing half the story and likely undercounting IPV prevalence, especially among those less likely to report their own

experiences of IPV perpetration and victimization. Collecting IPV data from dyads rather than individuals can improve our understanding of IPV and its effects on YMSM.

The association between minority stress and risk of IPV victimization, which was significant in both univariate and multivariate analyses, suggests adverse relationship dynamics for IPV victims that extend beyond these experiences of violence. Prior research links minority stressors with negative relationship interactions, which includes communication behavior, among young male dyads (Feinstein et al., 2018; Mohr & Fassinger, 2006). These negative relationship interactions may exacerbate interpersonal conflicts and manifest in experiences of IPV. Additionally, experiences of minority stress may affect an individual's sense of self-worth (R. Stephenson & Finneran, 2017a). YMSM who experience what they perceive as societal pressure in the form of minority stress may be willing to accept IPV victimization because they do not want another mark against them in society (Kubicek, McNeeley, & Collins, 2015). In turn, these individuals are less discerning when identifying potential romantic partners. Future research should explore this relationship between minority stress and IPV among YMSM dyads longitudinally, to better understand the mechanism and whether one construct influences the other.

4.4.1 Limitations

The current study has several limitations. As previously mentioned, the data used in this study are cross-sectional, which limits the ability to make any causal or directional claims with the results. Additionally, while the dyad-level IPV variables were created to address underreporting of violence, it is possible that there is further underreporting of IPV in the sample due to social desirability bias, where dyads engage in behaviors that would be considered IPV as defined in the study but neither partner reports it on the survey. There are also many other forms of IPV that are

not captured in the study data, such as psychological or controlling IPV. This means that the prevalence of violence in the sample may be higher than reported. Regardless, the analyses for the individual level reports and the dyad level reports convey similar results.

4.5 Conclusion

The current study offers a unique contribution to the literature in its exploration of how external and internal minority stressors affect both members of a YMSM dyad and their experiences of IPV. The association between IPV perpetration and partner minority stress highlights how experiences of minority stress exacerbate relationship dynamics for victims of IPV. More research is needed to better understand the mechanisms that underlie the association between minority stress and IPV victimization within male dyads. Intervention work among heterosexual youth covers many facets of healthy dating relationships, from improved interpersonal communication to identifying what IPV looks like, both within one's own relationship and as a bystander (Foshee et al., 1996; Miller, Jones, & McCauley, 2018; Miller et al., 2012). Future interventions looking to address IPV among YMSM should address minority stress, including ways to cope when these stressors occur, in addition to healthy dating habits. Addressing both IPV and minority stress among YMSM can reduce future prevalence of IPV among MSM, while also reducing some of the other mental health disparities these youth may face as a result of minority stress.

5.0 Minority Stress, Intimate Partner Violence, and Depression: A Moderation Analysis

5.1 Introduction

Young men who have sex with men (YMSM) are at higher risk for depression compared to their heterosexual peers (Marshal et al., 2011; B. Mustanski et al., 2010; Shearer et al., 2016). Depression in YMSM has been linked to both intimate partner violence (IPV) and minority stress (Baams, Grossman, & Russell, 2015; Reuter et al., 2017; Whitton et al., 2019). Depression, IPV, and minority stress create a unique constellation of adverse health outcomes for these youth, putting them at higher risk for suicidality (Marshal et al., 2013). Exploring the lived experiences of YMSM, and the ways in which these lived experiences increase their risk for adverse mental health outcomes, can improve public health responses seeking to address depression risk among YMSM.

One aspect of the lived experiences of YMSM that influences their risk for depression is their experience with sexual orientation-related minority stressors. Minority Stress Theory posits that sexual minority youth endure unique stressors based on their perceived sexual orientation, and these stressors (i.e., internalized homophobia and sexual orientation-based violence) increase their risk for adverse health outcomes (Meyer, 1995; Meyer & Frost, 2013). Previous research demonstrates an association between sexual orientation-based victimization and depression among YMSM (Baams et al., 2015). Additionally, identity concealment and internalized homophobia are associated with IPV perpetration, and homophobic discrimination and internalized homophobia are associated with IPV victimization among YMSM (K. M. Edwards & Sylaska, 2013; R. Stephenson & Finneran, 2017a). Research into the broad effects that minority stress has on sexual

minority individuals increasingly suggests that minority stress should be considered as a social determinant of health (Eldahan et al., 2016; M. L. Hatzenbuehler & Pachankis, 2016). Research and interventions that address minority stress may have a larger public health impact on sexual minority populations than research and interventions focused on specific health outcomes, such as depression.

While YMSM are at risk for minority stress and its effects on their health, they are also at increased risk for IPV compared to heterosexual young adults (Kann et al., 2018). The Youth Risk Behavior Survey (YRBS) estimates that, among the survey participants who dated others in the 12 months prior to responding to the survey (approximately 68% of the sample), 6.9% indicated sexual IPV victimization and 8.0% indicated physical IPV victimization in the past 12 months. Among male participants, 2.8% of the sample reported sexual IPV while 13.5% of gay or bisexual-identified males reported sexual IPV. Similarly for physical IPV, while 6.5% of male participants reported physical violence victimization, the prevalence increased to 16.8% for gay or bisexual-identified males (Kann et al., 2018). Research shows that for YMSM populations, as with general populations, experience with IPV may be linked to the onset of depression (Houston & McKirnan, 2007; Whitton et al., 2019).

With sexual minority populations not only at higher risk for IPV, but at risk for sexual-orientation-related minority stress as well, and with the associations between IPV, minority stress, and depression, understanding how these constructs may relate to one another outside of univariate associations can further our understanding of sexual minority health. One potential mechanism is that the association between minority stress and depression is moderated by experiencing IPV. Prior research indicates that parental acceptance of one's sexual orientation moderates the relationship between internalized homonegativity and depression symptoms. For individuals who

indicated low rates of parental acceptance, there was a positive association between internalized homonegativity and depression symptoms. For individuals who indicated higher rates of parental acceptance, this association was not present (Feinstein, Wadsworth, Davila, & Goldfried, 2014). Another study found that, for sexual minority college students, internalized homophobia was associated with depression for students with lower levels of social support, operationalized as peer-group interaction. The association was not present for students with moderate or high levels of social support (Bissonette & Szymanski, 2019). Similar to how parental and peer support may impact the effects of minority stress, research suggests that there may be dyadic coping strategies that protect individuals in same-sex dyads from the effects of minority stress (Feinstein, Latack, Bhatia, Davila, & Eaton, 2016; Rostosky & Riggle, 2017; Whitton, Dyar, Newcomb, & Mustanski, 2018). In dyads where violence is present, the protective aspects of the relationship may be compromised, instead indicating an opportunity for the association between minority stress and depression symptoms to be strengthened.

The current study seeks to understand whether IPV moderates the relationship between minority stressors and depression among YMSM currently in relationships. We expect to see a positive association between minority stress and depression symptoms, and that this relationship will be strengthened for those who are victims of IPV in their current relationships. Improving our understanding of the dynamics between IPV, minority stress, and depression can enhance future intervention work with this population to more effectively address the unique factors that influence depression for YMSM.

5.2 Methods

Study data came from RADAR, an ongoing longitudinal cohort study of YMSM and transgender women in Chicago, Illinois (current $N > 1200$). Participants from two previously-developed longitudinal cohorts – Project Q2 and Crew 450 – were eligible to participate in the RADAR Study, recruited initially in 2007 and 2011, respectively (B. Mustanski et al., 2010; Michael E. Newcomb et al., 2014). Beginning in 2015, RADAR recruited a new cohort to build a multi-cohort, accelerated longitudinal design (Duncan et al., 1996). Participants in each of the cohorts of origin were recruited through a combination of in-person recruitment (e.g., LGBTQ events, clinic-based recruitment), online advertising via social media, and peer-incentivized recruitment (Gerend et al., 2017). In the time of enrollment into their original cohort, participants were between 16 and 20 years old, assigned male sex at birth, spoke English, and either identified as gay, bisexual, or transgender, or indicated having had a sexual encounter with a man in the previous year. Additionally, all participants recruited into RADAR were asked to recruit their serious romantic partners to the study if their partners were assigned male sex at birth. Members of the cohort could also refer their peers to the study, and romantic partner and peer recruits had to meet all previously-described eligibility criteria and be aged 16-29 to match the age range of the 3 cohorts that compose RADAR (Gerend et al., 2017). Romantic partners who were aged 30 or older could complete a one-time study visit but were not eligible for enrollment in the cohort. The current study used data from each dyad's first visit ($n = 576$ individuals, or 288 dyads).

5.2.1 Measures

5.2.1.1 Depression Symptoms

Outcome variable. Participants were administered the eight-item PROMIS Depression short form (Cella et al., 2019). For each item, participants indicated the frequency with which they experienced certain thoughts over the past seven days. Thoughts included feeling: worthless; having nothing to look forward to; helpless; sad; like a failure; depressed; unhappy; and hopeless. Response options, scored 1 through 5, included: never; rarely; sometimes; often; and always. Responses to these eight items were summed to create the raw score (range: 8 to 40). Responses were dichotomized to indicate whether participants were or were not experiencing mild or worse depression symptoms. No data were missing for this variable.

5.2.1.2 Intimate partner violence

Predictor variables. Participants were asked about their experiences with sexual, verbal, and physical violence with their current partner. For each type of violence participants answered one question about whether they were ever a victim of that type of violence. Those who responded affirmatively to an experience were presented with a follow-up question about whether they were a victim of that type of violence in the past six months. This two-question pattern was repeated for perpetration of each type of violence. Violence types included verbal violence (“called/been called names, insulted them, or treated them disrespectfully in front of others”); physical violence (“hit, slapped, punched, or physically hurt you”); and sexual violence (“forced you to have vaginal, anal, or oral sex when you did not want to”). The current study collapsed all types of violence into one IPV victimization variable and one IPV perpetration variable.

The current study also utilizes robust estimates of IPV victimization and perpetration constructed from dyad data. An individual was recorded as experiencing IPV victimization if 1) the individual reported experiencing IPV victimization in the past six months, or 2) the individual's partner reported perpetrating violence against their current partner in the past six months. Similarly, an individual was recorded as experiencing IPV perpetration if 1) the individual reported perpetrating violence against their current partner in the past six months, or 2) the individual's partner reported being a victim of violence by their current partner in the past six months. Using dyad-level IPV reporting rather than solely relying on self-report to addresses concerns of under-reporting, commonly seen in survey assessments of IPV (Rollè et al., 2018; Stults et al., 2019). Using dyad-level reporting results in matching prevalence rates of IPV perpetration and IPV victimization. We also used dyad-level reports to calculate the prevalence of bidirectional violence within the sample.

5.2.1.3 Minority Stress

Predictor Variables. For the current study, we utilized one measure of minority stress, LGBT victimization, as well as a measure of perceived general stress. In our previous analysis, both actor and partner reports of LGBT victimization were associated with dyad-reported IPV victimization and perpetration in both univariate and multivariate analyses. Including perceived stress allows for exploration of the unique contribution of LGBT victimization to depression symptoms beyond that for which general stress may account.

5.2.1.3.1 LGBT Victimization

Participants were asked six questions on their experiences with violence in the past six months due to their perceived sexual orientation. They were asked the frequency with which they

were 1) threatened with physical violence, 2) the victim of a thrown object, 3) punched, kicked, or beaten, 4) threatened with a weapon, 5) chased or followed, or 6) the victim of property damage in the past six months because they were thought to be gay, bisexual, or transgender. The four response options were 1) never, 2) once, 3) twice, or 4) three or more times (Feinstein et al., 2018). Responses were averaged across the six items, scores ranged from 0 to 3, and no data were missing for this construct.

5.2.1.3.2 Perceived Stress

Participants were asked to complete the Perceived Stress Scale (Roberti et al., 2006). This ten-item scale assessed the frequency of certain thoughts and feelings in the past month. Prompts included “how often have you felt that you were unable to control important things in your life,” and “how often have you felt difficulties were piling up so high that you could not overcome them?” Response options were on a scale from zero to four, with zero indicating “never” and four indicating “very often.” Responses to four of the ten items were reverse scored, and then item scores were summed; scores ranged between 0 and 40, with higher scores indicating higher perceived stress. No data were missing for this scale.

5.2.1.4 Demographics

Covariates. Participants indicated their age, relationship length, and race/ethnicity. Age was measured in years and relationship length was measured in months. Response options for race/ethnicity included White, Black, Hispanic, and Other.

5.2.2 Statistical Analysis

All analyses were conducted in SPSS v26 (IBM SPSS Statistics, 2019). Some participants returned at future waves with new romantic partners. Dyads were removed where one or both partners were already part of the sample, leaving only the first dyad for all individuals in the sample (63 dyads) or where one or both partners were missing data for any IPV outcomes (57 dyads). This reduced the sample from 288 dyads with 576 individuals to 168 dyads with 336 unique individuals. The perceived stress and LGBT victimization variables were both grand-mean centered. Three individuals were missing relationship length responses. Due to a strong correlation between relationship length responses within dyads ($r = 0.79, p < .001$), the average relationship length reported within dyads was used in the current analysis instead of individual reports. We conducted a basic descriptive analysis of all variables.

To address the research question, we conducted multilevel binary logistic regressions, with individuals nested within dyads. First, we conducted univariate analyses to examine associations between perceived stress and depression as well as LGBT victimization and depression. Each of these analyses looked at both the actor (the individual being studied) and partner (that individual's partner) minority stress variables. Next, we examined associations between IPV victimization and depression, and IPV perpetration and depression. After this, we built four univariate models with unique combinations of the stressor and IPV variables (perceived stress and IPV victimization; perceived stress and IPV perpetration; LGBT victimization and IPV victimization; LGBT victimization and IPV perpetration). For each of these models, we ran another model that included two interaction terms; one between the IPV variable and the actor minority stress variable, and one between the IPV variable and the partner minority stress variable. We then conducted the interaction analysis with two multivariate models, one for IPV perpetration and one for IPV

victimization, including perceived stress and LGBT victimization and all interaction terms in each model. All significant interactions from the univariate and multivariate analyses were probed with simple slopes analyses.

5.3 Results

Table 5-1 shows the demographic variables within the sample. Average age within the sample was 23.5 years, and the average relationship length was 13.2 months. Within the sample, 35.7% of respondents were Black, 29.2% were Hispanic, 27.1% were White, and 8.0% identified as Other. Respondents on average reported moderate perceived stress ($M = 16.6$) and low levels of LGBT victimization ($M = 0.2$). The average score on the depression symptoms scale was 15.1, below the cutoff of 17 for mild depression symptoms. Based on dyad reports, 31.5% of the sample either indicated perpetrating IPV or had a partner who indicated being a victim of IPV, which also meant that 31.5% of the sample either indicated being a victim of IPV or had a partner who indicated perpetrating IPV. There were 76 individuals in 38 dyads where both partners were indicated as both perpetrators and victims of IPV.

Table 5-1: Sample Demographic Frequencies (n = 336)

Demographics	
Continuous Variables	M (SD)
Age (years)	23.5 (4.6)
Average Relationship Length (months)	13.2 (15.7)
Depression Symptoms (PROMIS Score)	15.1 (7.1)
Perceived Stress	16.6 (6.2)
LGBT Victimization	0.2 (0.3)
Categorical Variables	n (%)
Race/Ethnicity	
Black	120 (35.7)
Hispanic	98 (29.2)
White	91 (27.1)
Other	27 (8.0)
Any IPV	
Total Reports of Perpetration	106 (31.5)
Individual Reports of Perpetration	65 (19.3)
Partner Reports of Victimization	41 (12.2)
Total Reports of Victimization	106 (31.5)
Individual reports of Victimization	81 (24.1)
Partner Reports of Perpetration	25 (7.4)
Bidirectional Violence	
Individual Report	52 (15.5)
Dyad Report	76 (22.6)

Table 5-2 shows the associations between two minority stress variables and depression. For both actor-perceived stress (aOR: 1.46; CI: 1.34, 1.58) and actor-LGBT victimization (aOR: 4.78; CI: 2.42, 9.42), there was a significant positive association between greater levels of the minority stressor and the likelihood of reporting depression symptoms. For partner-perceived stress and partner-LGBT victimization, this association was not significant.

Table 5-2: Associations between Minority Stress and Depression Symptoms Among YMSM Dyads

	Actor Effect aOR (95% CI)	Partner Effect aOR (95% CI)
Perceived Stress	1.46 (1.34, 1.58)	1.02 (0.97, 1.07)
LGBT Victimization	4.78 (2.42, 9.42)	1.38 (0.70, 2.74)

Note: All odds ratios are adjusted for dyad relationship length, individual age, and individual race/ethnicity; aOR: adjusted odds ratio; CI: Confidence Interval

Table 5-3 shows the associations between 1) IPV perpetration and depression symptoms, and 2) IPV victimization and depression symptoms. Both IPV perpetration (aOR: 2.28; CI: 1.35,

3.82) and IPV victimization (aOR: 2.16; CI: 1.28, 3.64) were significantly associated with greater risk of depression symptoms.

Table 5-3: Associations between Intimate Partner Violence and Depression Symptoms Among YMSM in

RADAR

Predictor	aOR (95% CI)
IPV Perpetration	2.28 (1.35, 3.82)
IPV Victimization	2.16 (1.28, 3.64)

Note: All odds ratios are adjusted for dyad relationship length, individual age, and individual race/ethnicity; aOR: adjusted odds ratio; CI: Confidence Interval

Table 5-4 shows models examining associations between minority stressors, IPV, and depression. In all four models, there was a significant association between the actor’s minority stress and their risk of depression symptoms. Models 2 and 4 also show significant positive associations between IPV perpetration and depression symptoms. There were also positive associations between IPV victimization and depression systems when accounting for perceived stress (Model 1) and LGBT victimization (Model 3), though these associations were not significant.

Table 5-4: Associations between Perceived Stress, LGBT Victimization, Intimate Partner Violence, and

Depression Symptoms among YMSM Dyads in the RADAR Study

Model	1	2	3	4
Stress Variable	Perceived Stress	Perceived Stress	LGBT Victimization	LGBT Victimization
IPV Variable	Victimization	Perpetration	Victimization	Perpetration
	aOR (95% CI)	aOR (95% CI)	aOR (95% CI)	aOR (95% CI)
Actor Stress	1.45 (1.34, 1.57)	1.46 (1.35, 1.58)	4.18 (2.07, 8.42)	4.34 (2.14, 8.85)
Partner Stress	1.01 (0.96, 1.07)	1.01 (0.96, 1.06)	1.24 (0.63, 2.42)	1.16 (0.58, 2.31)
IPV	1.80 (0.95, 3.43)	2.52 (1.35, 4.71)	1.69 (1.00, 2.88)	1.88 (1.11, 3.20)

Note: All odds ratios are adjusted for dyad relationship length, individual age, and individual race/ethnicity; aOR: adjusted odds ratio; CI: Confidence Interval

Table 5-5 builds upon the four models from Table 4, adding interactions between the actor and partner minority stress variables and the IPV variables. There were two significant interaction terms. In Model 2, there was a significant positive interaction between actor-perceived stress and

IPV perpetration (aOR: 1.26; CI: 1.01, 1.58). In Model 3, there is a significant negative association between actor LGBT victimization and IPV victimization (aOR: 0.19; CI: 0.04, 0.86).

Table 5-5: Associations between Perceived Stress, LGBT Victimization, Intimate Partner Violence, and Depression Among YMSM Dyads in RADAR

	Model 1: Perceived Stress and IPV Victimization aOR (95% CI)	Model 2: Perceived Stress and IPV Perpetration aOR (95% CI)	Model 3: LGBT Victimization and IPV Victimization aOR (95% CI)	Model 4: LGBT Victimization and IPV Perpetration aOR (95% CI)
Actor Effect	1.40 (1.28, 1.52)	1.38 (1.27, 1.50)	11.42 (3.17, 41.14)	6.49 (1.78, 23.6)
Partner Effect	0.98 (0.92, 1.05)	0.99 (0.93, 1.05)	0.89 (0.27, 2.98)	0.89 (0.29, 2.76)
IPV Effect	1.30 (0.56, 3.01)	1.76 (0.79, 3.90)	1.70 (1.00, 2.88)	1.87 (1.10, 3.17)
Actor Effect x IPV Effect	1.15 (0.95, 1.39)	1.26 (1.01, 1.58)	0.19 (0.04, 0.86)	0.50 (0.11, 2.28)
Partner Effect x IPV Effect	1.11 (0.99, 1.25)	1.07 (0.96, 1.19)	1.57 (0.36, 6.79)	1.48 (0.36, 6.15)

Note: All odds ratios are adjusted for dyad relationship length, individual age, and individual race/ethnicity; aOR: adjusted odds ratio; CI: Confidence Interval

To further examine these interactions, we ran univariate regression models to explore the effect of the stress variable on depression symptoms stratified by the IPV variable that produced the interaction. The association between actor-perceived stress and depression symptoms is significant for both those who report IPV perpetration (aOR: 1.82; CI: 1.42, 2.32) and those who do not (aOR: 1.39; CI: 1.28, 1.51), but is stronger for those who do report IPV perpetration (Table 5-6). The association between actor-LGBT victimization and depression symptoms is significant for both those who report IPV victimization (aOR: 2.35; 1.06, 5.22) and those who do not (aOR: 12.15, CI: 3.43, 43.03), but is stronger for those who do not report IPV victimization.

Table 5-6: Associations between Actor Stress and Depression, Stratified by IPV Perpetration, and Actor LGBT Victimization and Depression, Stratified by IPV Victimization

IPV Perpetration	Actor-Perceived Stress aOR (95% CI)	IPV Victimization	Actor-LGBT Victimization aOR (95% CI)
No	1.39 (1.28, 1.51)	No	12.15 (3.43, 43.03)
Yes	1.82 (1.42, 2.32)	Yes	2.35 (1.06, 5.22)

Note: All odds ratios are adjusted for dyad relationship length, individual age, individual race/ethnicity, and either partner stress (left analysis) or partner LGBT victimization (right analysis); aOR: adjusted odds ratio; CI: Confidence Interval

Table 5-7 shows the results of the multivariate models, where actor- and partner-perceived stress and actor- and partner-LGBT victimization were tested in the same models, with IPV victimization as the moderator in Model 1 and IPV perpetration as the moderator in Model 2. The interaction terms from the univariate models are no longer significant, though the interaction between actor-perceived stress and IPV perpetration remains marginally significant (aOR: 1.29; CI: 0.99, 1.69). Actor-perceived stress remains positively associated with depression symptoms when accounting for IPV victimization (aOR: 1.42; CI: 1.29, 1.56) and IPV perpetration (aOR: 1.38; CI: 1.27, 1.51). Partner-LGBT victimization is positively associated with actor depression symptoms when accounting for IPV victimization (aOR: 5.21; CI: 1.04, 26.13).

Table 5-7: Multivariate Associations between Perceived Stress, LGBT Victimization, Intimate Partner Violence, and Depression among YMSM Dyads in RADAR

Model 1: IPV Victimization		Model 2: IPV Perpetration	
	aOR (95% CI)		aOR (95% CI)
Main Effects		Main Effects	
Actor Perceived Stress	1.42 (1.29, 1.56)	Actor Perceived Stress	1.38 (1.27, 1.51)
Partner Perceived Stress	0.97 (0.91, 1.04)	Partner Perceived Stress	0.98 (0.92, 1.05)
Actor LGBT Victimization	2.55 (0.60, 10.94)	Actor LGBT Victimization	2.08 (0.41, 10.55)
Partner LGBT Victimization	5.21 (1.04, 26.13)	Partner LGBT Victimization	2.45 (0.41, 14.47)
IPV Victimization	0.94 (0.36, 2.48)	IPV Perpetration	1.21 (0.47, 3.13)
Interactions		Interactions	
Actor Perceived Stress x IPV Victimization	1.15 (0.93, 1.42)	Actor Perceived Stress x IPV Perpetration	1.29 (0.99, 1.69)
Partner Perceived Stress x IPV Victimization	1.12 (0.99, 1.26)	Partner Perceived Stress x IPV Perpetration	1.06 (0.94, 1.20)
Actor LGBT Victimization x IPV Victimization	0.63 (0.10, 3.89)	Actor LGBT Victimization x IPV Perpetration	0.74 (0.11, 5.05)
Partner LGBT Victimization x IPV Victimization	0.46 (0.06, 3.30)	Partner LGBT Victimization x IPV Perpetration	1.66 (0.18, 15.18)

Note: All odds ratios are adjusted for dyad relationship length, individual age, and individual race/ethnicity; aOR: adjusted odds ratio; CI: Confidence Interval

5.4 Discussion

The current study sought to understand the relationship among minority stress, intimate partner violence, and depression among YMSM. Actor-perceived stress and actor-LGBT victimization were both positively associated with risk of depression symptoms, even when accounting for the effects of IPV on depression. There was a positive association between IPV perpetration and depression symptoms, which remained significant when accounting for the effects of actor and partner LGBT victimization or actor and partner perceived stress. The univariate analyses identified two significant interaction terms. There was a significant interaction between actor-perceived stress and IPV perpetration, indicating a stronger association between actor-perceived stress and depression symptoms for those who also indicated IPV perpetration compared

to those who did not report IPV perpetration. There was also a significant interaction between actor-LGBT victimization and IPV victimization, indicating a weaker association between actor-LGBT victimization and depression symptoms for IPV victims in the sample. In exploring the associations between the stressors and depression symptoms when stratified by IPV perpetration and victimization, the association between actor-perceived stress and depression symptoms was positive and significant for both those who reported IPV perpetration and those who did not, and the association between actor-LGBT victimization and depression symptoms was positive and significant for both those who reported IPV victimization and those who did not. Neither of these interaction terms remained significant in the multivariate analysis, though the interaction between actor-perceived stress and IPV perpetration was close to remaining significant.

While the results support the hypothesis that there would be a significant positive association between the stressor variables and depression symptoms, they do not support the hypothesis that this relationship would be strengthened for those who are victims of IPV. For those who reported IPV perpetration in the sample, the association between their perceived stress and their risk of depression symptoms was stronger than for those who did not report IPV perpetration. This may indicate that IPV perpetration is a maladaptive coping mechanism for stress, and engaging in this coping mechanism further exacerbates the negative mental health outcomes for the perpetrator.

Prior literature exploring moderation of the relationship between minority stress and depression identified protective factors for sexual minority individuals, including parental acceptance (Feinstein et al., 2014), social support (Bissonette & Szymanski, 2019), and the presence of a dating relationship (Feinstein et al., 2016). It is possible that, for YMSM in relationships, the buffer they receive against minority stress and depression by being in a

relationship is not fully negated through the presence of IPV. Identifying IPV in relationships may not provide the full picture of the health the relationship, and there may be other aspects of the relationship that provide protection against minority stress and depression. Still, the independent associations between IPV and depression and minority stress and depression indicate a need for public health practice to address both minority stress and IPV, when present, to improve mental health outcomes for YMSM in relationships.

The current study has implications for policy and practice that addresses depression and IPV among YMSM. YMSM suffering from depression may also be experiencing IPV in their partnerships and minority stress as a result of their interactions in the community at large. While few interventions focus on mental health or violence among YMSM and other sexual minority youth (Coulter et al., 2019), one recent study on a bystander program to prevent sexual violence among sexual minority youth shows promise (Ann L Coker, Bush, Clear, Brancato, & McCauley, 2020). Improving the social environments for YMSM can improve their mental health and the quality of their romantic partnerships (Mark L Hatzenbuehler, Birkett, Van Wagenen, & Meyer, 2014). In addition to training bystanders to recognize the signs of IPV among same-sex couples, intervention work encouraging healthy dating relationships promotes discussions among youth about healthy dating habits (Miller et al., 2018). Health promotion interventions seek to address myriad adverse outcomes, including IPV, through increasing knowledge about sexual health and improving communication skills (Brian Mustanski, Greene, Ryan, & Whitton, 2015). Additionally, there is substantial literature on dyad-based interventions to address relationship issues, some of which may lead to IPV, though these interventions are largely targeted towards heterosexual couples (Newcomb, 2020). Through addressing individual-level factors that may lead to IPV and depression, as well as community-level factors, public health practitioners can more

fully address the health disparities that sexual minority youth endure and improve both their relationship and mental health outcomes.

5.4.1 Limitations

This study is not without limitations. The current data is cross-sectional, which means causal inferences about the relationship between minority stress, IPV, and depression cannot be made. While the IPV measures used in this analysis attempt to account for underreporting, it is possible that both partners did not report IPV incidents due to social desirability bias. Alternatively, while this study captures data on sexual, physical, and verbal violence, there are many other forms of IPV, such as emotional or controlling violence, for which data was not collected. Furthermore, the current study consolidated responses to the IPV questions into single variables for IPV perpetration and IPV victimization, and it is possible that, with a larger sample, this analysis could be performed for the different types of IPV separately. Another limitation is that 245 individuals (72.9% of the sample) had a score of 0 on the LGBT victimization variable, which limited the variability of the responses and resulted in larger confidence interval in the analyses. One potential remedy for this would be to operationalize the variable and determine whether any LGBT victimization, rather than an increase in LGBT victimization, impacts depression symptoms.

5.5 Conclusion

Addressing depression among YMSM, particularly for YMSM in relationships, should focus on addressing minority stressors, as well as encouraging healthy dating relationships. Future research should delve deeper into how minority stress affects IPV and depression. This could include examining other sources of minority stress, such as internalized homophobia, or creating composite measures of minority stress to explore the additive effect of various sources of minority stress. Public health interventions focusing on YMSM mental health must expand their focus from intrapersonal constructs to interpersonal dynamics to address some of the more fundamental causes of adverse mental health outcomes for this population.

6.0 Conclusion

6.1 Summary of Main Findings

The first analysis highlighted the importance of collecting data from couples to study IPV. While 19.3% of the sample reported IPV perpetration and 24.1% reported IPV victimization, 7.4% of the sample could be inferred as victims of IPV based on a partner's report of IPV perpetration, and 12.2% of the sample could be inferred as perpetrators of IPV based on a partner's report of IPV victimization. Compared to those who self-identified as victims, inferred IPV victims reported lower levels of depressive symptoms. Compared to those who self-identified as perpetrators, inferred IPV perpetrators reported lower levels of depressive symptoms, perceived stress, and microaggressions.

In the second analysis, self-report IPV and total-report IPV were both used to examine the association between minority stress and IPV perpetration and victimization. The results of the univariate analyses were largely similar, though the total-report IPV analyses identified significant partner effects of perceived stress and internalized stigma on IPV perpetration that the self-report IPV analyses did not identify. Additionally, the self-report IPV analysis identified significant associations between actor-perceived stress and IPV perpetration, and actor-microaggressions and IPV perpetration that the total-report IPV analysis did not identify. In the multivariate analysis, many of these effects were no longer significant.

In the third analysis, the multivariate analysis indicated that there was not a moderating effect by either IPV perpetration or IPV victimization on the associations between perceived stress and depression symptoms, or between LGBT victimization and depression symptoms. However,

when examined separately, IPV perpetration moderated the relationship between actor-perceived stress and depression symptoms, suggesting that the association between actor-perceived stress and depression symptoms was stronger for those who perpetrated IPV. IPV victimization moderated the relationship between actor-LGBT victimization and depression symptoms, suggesting that the association between actor-LGBT victimization and depression symptoms was weaker for those who were also victims of IPV. Further exploration of the data identified that the interaction between IPV victimization and actor-LGBT victimization may be due to a lack of variability in the LGBT victimization variable, and between that lack of variability and the interaction disappearing in the multivariate model, interpreting the moderation should be done with great caution.

Overall, the three analyses demonstrate that it is important to collect data from dyads when studying IPV, not only to learn more about the potential for underreporting, but to study how those who may experience violence as a victim or perpetrator but do not identify as so may differ from self-identified victims and perpetrators. Additionally, minority stress appears to play a role in the presence of IPV, and more research is needed around relationship functioning and dynamics – the constructs that may manifest in IPV – and how they may impact minority stress and depression symptoms.

6.2 Future Research Directions

Future public health research on IPV among YMSM dyads should include both qualitative and quantitative studies exploring the topic.

6.2.1 Quantitative Directions

Future IPV studies among YMSM dyads should collect data on more types of IPV, similar to the work showcased by Suarez et al. (2018) and Stephenson et al. (2019). The current analyses needed to collapse the three types of IPV for which data was collected due to sample size, but it is possible that some of the effects seen in this analysis are related to one type of violence rather than any violence. Larger samples of YMSM dyads may also have more statistical power, which not only allows for exploring individual types of IPV, but also the differences between those who report IPV and those who are inferred to have experience with IPV based on their partners' reports.

Current research identifies being in a relationship as a protective factor against minority stress and depression among MSM (Newcomb, 2020). There is a need to further explore this concept, and in particular to better understand the aspects of a relationship that may cause that protection to deteriorate. While the third analysis sought to examine whether the presence of IPV negated this protection, it may be that IPV is too distal of an indicator, or perhaps that the severity of IPV matters when looking at whether it moderates the relationship between minority stress and depression.

6.2.2 Qualitative Directions

One unique aspect of working with dyad data is the ability to probe when there is a subset of the sample that does not indicate experience with IPV contrary to their partners' responses. The results of this dissertation suggest that more qualitative work to explore the reasons behind underreporting within YMSM could provide important insights for future research and practice. The reasons may vary greatly, from denial that IPV took place, to not perceiving IPV as such, to

wanting to avoid getting a partner in trouble. Beyond reasons why underreporting may happen, understanding how underreporting may affect one's mental health can provide useful information.

Another important area for qualitative work is a better understanding of how relationship dynamics may affect IPV. Are there clear signals in a relationship that IPV is imminent? Are there confounding factors that may protect against IPV, even when aspects of the relationship seem to facilitate violence? Tackling these questions can not only improve our understanding of IPV, but influence public health practice when it comes to IPV prevention among YMSM.

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