

**Examining Risk Factors and the Healthcare Response to Intimate Partner and Sexual
Violence among Adolescents and Young Adults**

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Amber Lynn Hill, PhD

University of Pittsburgh, 2020

Intimate partner violence (IPV) and sexual violence (SV) are prevalent in the United States and can negatively impact health and wellbeing. This dissertation sought to inform future prevention and response efforts by exploring risk factors associated with IPV and SV and examining how healthcare providers currently support IPV and SV survivors.

First, we used longitudinal structural equation modeling to investigate the association between SV victimization and alcohol use among college students. SV victimization significantly predicted future alcohol use when controlling for previous alcohol use behaviors. Alcohol use did not predict future SV victimization when controlling for previous SV experiences. Survivors may be using alcohol as a coping mechanism for trauma; SV response efforts need to integrate substance use assessment and counseling to provide ongoing support for survivors. Prevention efforts need to move beyond targeting binge drinking and alcohol use as a means to reduce SV and instead explore larger societal norms that condone violence.

Second, we psychometrically evaluated a scale designed to measure gender equitable attitudes among a diverse sample of adolescents. We derived an 11-item scale that demonstrated construct validity across a sample of predominantly Black adolescent boys (aged 13-19 years) and measurement invariance across gender and race. In the United States, most psychometric research on gender attitudes has been conducted among white adult male populations, therefore, our research provided insight into how this construct is defined among populations with different

demographic characteristics. By validating measurement tools, we are better able to attribute shifts in gender inequitable attitudes to true differences as opposed to measurement error.

Finally, we used audio-recorded patient-provider encounters at family planning clinics to determine if and how healthcare providers discussed IPV and substance use with patients. We found that many clinicians were likely to discuss IPV, often asking screening questions followed by education through a wallet-sized safety card. Clinicians frequently asked about tobacco use, but not alcohol or drug use. Notably, there was only one integrated discussion about IPV and substance use, indicating a strong need for provider training on how these two phenomena can interact and potentially worsen health problems.

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Preface

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1.0 Introduction

1.1 Intimate Partner Violence: Definition and Epidemiology

Intimate partner violence (IPV) encompasses acts of physical, sexual, and psychological violence, aggression, and/or abuse perpetrated by a partner or ex-partner.¹ IPV also includes other controlling behaviors, such as preventing or restricting access to finances, education, healthcare, and employment in an effort to coerce or control a partner.² IPV is highly prevalent among women in the United States.¹ A total of 30.6% of U.S. women have experienced lifetime physical IPV, 18.3% have experienced lifetime sexual IPV, and 36.4% have experienced lifetime psychological IPV.¹ Nationally representative data have only been available since 2010; however, during the last decade, these prevalence estimates have remained stable.^{1,2} It is important to remember that these statistics are likely an under-representation of true prevalence given known barriers to reporting, such as stigma and fear of legal repercussions, among others.³

IPV impacts individuals across race, ethnicity, gender, sexual orientation, age, and socioeconomic status.¹⁻⁴ However, certain demographic groups are at higher risk. For example, individuals who identify as American Indian/Alaska Native or multiracial report the highest lifetime rates of physical and sexual IPV compared to other racial groups.² Women have consistently higher rates of IPV than men, as well as more severe sequelae (e.g., more likely to report missing work/school, physical injury, post-traumatic stress disorder, and seeking medical care).¹⁻⁴ Individuals who identify as a sexual minority, across all genders, have higher rates of IPV than those who do not.^{4,5} Finally, adolescents and young adults have elevated rates of IPV.^{1,2,4}

1.2 Intimate Partner Violence and Health

There is a wealth of data demonstrating strong associations between IPV and adverse health outcomes for both an individual experiencing the violence as well as that individual's future and current children.³ With regards to physical health, IPV victimization is associated with a host of physical symptomatology, including physical trauma (e.g. abrasions, strangulation, and traumatic brain injury), exacerbation of chronic health conditions (e.g., hypertension), somatoform disorders (e.g., irritable bowel syndrome), and mortality.^{3,6-8} IPV results in millions of physical injuries per year and is a significant predictor for future IPV-related homicide.⁸⁻¹¹ In the U.S., studies have estimated that 20-50% of femicide victims were killed by a partner or ex-partner.^{7,9-11}

With regards to mental health, studies show that IPV is associated with increased risk for depression, anxiety, post-traumatic stress disorder, suicidal ideation, disordered eating, substance misuse, and symptoms of psychosis.^{3-5,12-14} These mental health outcomes may be further exacerbated in the context of more severe physical health consequences of IPV such as traumatic brain injury, which is also shown to be related to depression and post-traumatic stress disorder.¹⁵

With regards to sexual and reproductive health, IPV is associated with higher risk for unwanted or undesired pregnancy, abortion, and sexually transmitted infections, including HIV.^{3,4} While many of these associations are a direct result of IPV, including forced sex, others are a result of indirect pathways.³ For example, reproductive coercion is one mechanism through which IPV can lead to poor sexual and reproductive health.¹⁶⁻¹⁸ Reproductive coercion includes coercive acts used to control a partner's reproductive autonomy, such as contraceptive sabotage (e.g., throwing away a partner's oral contraceptive pills) and condom manipulation (e.g., taking off a condom during sex).¹⁹ Studies have shown that reproductive coercion is also independently related to both IPV and poor sexual and reproductive health.^{17,18} More recently, researchers have explored other

theoretical indirect pathways, including the physiological impact IPV has on stress response (i.e., increasing inflammation and causing immune dysregulation), which could potentially increase susceptibility to reproductive tract infections such as HIV.²⁰

Finally, with regards to neonatal health, IPV during pregnancy is associated with higher rates of low birthweight, preterm birth, and spontaneous abortion.^{3,21} Furthermore, children who witness IPV are more likely to face increased risk for psychopathology, including behavioral problems (e.g., hyperactivity, irritability, and risk-taking)²²⁻²⁸ and poor emotional functioning (e.g., self-blame and emotional reactivity).²³⁻²⁶ Witnessing IPV as a child is one of the strongest predictors for future violence perpetration for males and future violence victimization for females, indicating the cyclic and intergenerational impact of IPV.^{23,29,30}

1.3 Intimate Partner Violence and Substance Use

Of the aforementioned health outcomes, two of the papers (Paper #1 and Paper #3) in this dissertation focus on the intersection of IPV and substance use (i.e., tobacco, alcohol, and other drugs). The research community has reached consensus on the high co-occurrence of IPV and substance use.³¹ For example, Stone et al.³² conducted a systematic review, which resulted in 20 studies estimating that 36-94% of women who used opioids had experienced lifetime IPV. Kraanen et al.³³ examined the prevalence of IPV by different types of substance; among women with cannabis use disorder and alcohol use disorder, 29.0% and 19.3%, respectively, had experienced severe physical IPV. In a meta-analysis of 55 studies, Devries et al.³⁴ demonstrated that there were increased odds of future alcohol use among individuals who experienced IPV and increased odds of experiencing IPV among those who used alcohol. Finally, Flanagan et al.³⁵ noted a significantly

higher prevalence of cigarette use among women who experienced IPV compared to those who have not.

Despite myriad studies investigating IPV and substance use, there is conflicting evidence on the directionality of this association, particularly among adolescents and young adults.³⁶ There is empirical evidence to support the “self-medication hypothesis,”³⁷ in which substance misuse and abuse is understood as a mechanism to cope with current or past experiences of violence.³⁶⁻³⁹ In qualitative studies that describe the lived experiences of IPV survivors with co-occurring substance use disorders, using drugs and alcohol as a means to “forget”, “numb”, or “get through” the abuse was a common theme.^{40,41} Other researchers have proposed a mechanism in the opposite direction, known as “reduced risk perception,”⁴² in which individuals under the influence of substances may perceive risk differently, leading to an increased likelihood of IPV.^{36,42,43} This theory is cited commonly among adolescent and young adult literature as a justification for programs that target binge drinking, and other problematic drinking behaviors, as a means to reduce violence victimization.⁴⁴⁻⁴⁶ Increasing our understanding of the complexity and directionality of these associations can inform violence prevention and response efforts.

Currently, programs to address IPV and substance use largely exist in siloes.⁴⁷ Recognizing the high co-occurrence and complex associations of these two prevalent health problems, experts in both fields (i.e., violence and substance use) have called for more integrated and comprehensive interventions.^{31,47} In response, recent research has focused on examining the intersection of IPV and substance use through phenomena such as substance use coercion (i.e., coercive behaviors that an individual perpetrates to influence a partner’s substance use as a mechanism of control in a relationship).⁴⁸ Warshaw et al.⁴⁸ has created educational materials and new measurement tools for healthcare providers to assess their patients for these behaviors, which have yet to be validated and

evaluated. Other researchers have worked to develop educational interventions to train healthcare providers to improve assessment of IPV among those who use substances and substance use among those who have experienced IPV.⁴⁷ However, despite this progress, more work is urgently needed to better understand mechanisms to improve the healthcare response to these intersecting problems of IPV and substance use.

1.4 Intimate Partner Violence and Gender Equitable Attitudes

The other paper in this dissertation (Paper #2) focuses on IPV as a manifestation of gender inequity. The personal endorsement of gender inequitable attitudes is a strong predictor for the perpetration of IPV and other forms of violence.⁴⁹⁻⁵¹ Gender inequitable attitudes include stereotypical beliefs about traditional, heteronormative roles of men and women in today's society (e.g., men are self-sufficient and bread-winners; women are responsible for household chores).⁵¹ These harmful attitudes may also include homophobic and transphobic beliefs about what "real men" and "real women" are and how they should act.⁵² Grounded in social norms theory (i.e., individuals' behaviors are influenced by their perceptions of social norms), violence prevention experts have targeted gender inequitable attitudes as a mechanism to reduce IPV, particularly among adolescents and young adults.^{49,50} Known as "gender transformative programs", these programs are currently endorsed by the World Health Organization and are now being more widely adopted both globally and within the U.S.^{50,53}

However, the evidence from evaluations of existing gender-transformative programs show interesting, yet mixed results.^{50,54-57} For example, several programs have shown to be effective in reducing rates of IPV perpetration without a shift in gender inequitable attitudes.⁵⁰ One possible

explanation for these seemingly conflicting results is related to the way in which researchers measure gender inequitable attitudes across different populations.⁵⁰ If a measurement tool is not accurately assessing the construct for which it was intended to be measured (specifically, gender inequity) then we may be missing key information about the underlying violence prevention mechanisms.⁵⁰ Therefore, more research is needed to better understand the validity and reliability of current measurement tools.

1.5 Healthcare Response to Intimate Partner Violence

While IPV prevention and response should be addressed across multiple sectors, much of the work in this dissertation is centered around the role of the healthcare system and the clinical implications for individual healthcare providers.⁵⁸ Numerous global and national health organizations, including the World Health Organization, Centers for Disease Control and Prevention, American College of Obstetricians and Gynecologists, and Futures Without Violence, have released guidelines to help facilitate dialogues between providers and their patients about IPV.⁵⁸⁻⁶² However, more research is needed to improve implementation of these guidelines and address commonly-cited patient- and provider-level barriers, described below, to discussing IPV in a clinical setting.

1.5.1 Patient-Level Barriers

Researchers conducted a number of qualitative studies among IPV survivors to improve understanding of why patients do not disclose their IPV experiences with their healthcare

providers, even when asked.⁶³⁻⁶⁷ Patients may not trust their healthcare provider, being aware of the existing power differential (i.e., the provider is the one who holds the resources and information) and fearing their judgement.⁶³⁻⁶⁸ Even with a trusted provider in which good rapport has been established, patients still may not disclose due to fear of retribution from their partner, losing custody over their children, and other potential legal repercussions.⁶³⁻⁶⁷

1.5.2 Provider-Level Barriers

At the provider-level, clinicians may not discuss IPV with their patients for fear of offending them and feeling their own sense of discomfort with the topic.⁶⁹⁻⁷¹ They may have limited knowledge about IPV and its health consequences and lack training opportunities to learn valuable communication skills.⁶⁹⁻⁷¹ Furthermore, they may be unsure of what to do if someone discloses IPV, as referral networks to advocacy organizations and other resources may not exist in their geographical area.⁶⁹⁻⁷¹

1.6 Adolescents and Young Adults

All three of the papers in this dissertation pertain predominantly to adolescent and young adult populations. Working with adolescents and young adults is extremely important for both violence prevention and response. In terms of prevention, this period of time (10-25 years of age) is when individuals develop their sense of identity and when peers and social networks have significant influence.⁷² As such, it is an opportune time, particularly at younger ages, to prevent the development of harmful societal norms that condone violence perpetration.

In terms of response, adolescents and young adults comprise a population with a disproportionate burden of IPV victimization. For example, among women who have experienced IPV, 71.0% were under the age of 25 at first victimization.¹ Furthermore, among women who have experienced sexual violence (either by a partner, ex-partner, or non-partner), over 80% were under the age of 25 at first victimization.¹ Almost half (45.4%) of individuals who experienced rape reported an intimate partner as the perpetrator.² Therefore, IPV (which includes sexual violence perpetrated by a partner/ex-partner) and sexual violence (which includes sexual violence perpetrated by a partner/ex-partner or non-partner) have significant overlap. This overlap is particularly important to consider when working with adolescent and young adult populations, which may have more fluid definitions of what constitutes “dating” or a “romantic partner.”⁷²

1.7 Trauma-Sensitive, Resiliency-Promoting, and Healing-Centered Approaches

All of the research in this dissertation was conducted with the intention of better informing trauma-sensitive, resiliency-promoting, and healing-centered approaches to preventing and responding to IPV. As evidenced by the aforementioned statistics, IPV and other forms of violence, such as non-partner sexual violence, are public health crises that are highly prevalent in our society.¹⁻³ In response, we must ensure future interventions, particularly within the healthcare system, are trauma-sensitive (i.e., assume that almost all individuals are carrying personal experiences of trauma). However, we must also be careful not to oversimplify and generalize. Every individual’s narrative is multifaceted and unique and filled with incredible moments of strength and resiliency. It is our job to find and bring these moments to light to help individuals

gain control and safety in their lives. And most importantly, all of our work needs to be centered around the lived experiences of survivors.

*“The news used phrases like avalanche of accusations, tsunami of stories, sea change. The metaphors were correct in that they were catastrophic, devastating. But it was wrong to compare them to natural disasters, for they were not natural at all, solely man-made. Call it a tsunami, but do not lose sight of the fact that **each life is a single drop**, how many drops it took to make a single wave. The loss is incomprehensible, staggering, maddening—we should have caught it when it was no more than a drip.”*

– *Chanel Miller, Know My Name.*

1.8 Goals of the Dissertation

The overarching goal of this research is to investigate risk factors associated with intimate partner and sexual violence among adolescents and young adults, and identify aspects of the healthcare response.

The first paper presents a longitudinal analysis examining the association between alcohol use and sexual violence victimization among college students seeking care at campus health centers. We conducted path analyses and longitudinal structural equation modeling to determine the auto-regressive and cross-lagged effects between sexual violence victimization and both alcohol use and binge drinking.

The second paper presents a psychometric evaluation examining the construct validity through exploratory and confirmatory factor analyses of a newly adapted gender equitable attitudes scale among a sample of adolescent boys. We also investigated measurement invariance by race and gender using data from three gender transformative programs of adolescents conducted in Pittsburgh, Pennsylvania.

Finally, the third paper presents a qualitative content analysis of if and how family planning providers discuss IPV and substance use with their patients using audio-recorded patient-provider encounters in family planning clinics. In addition, we examined if and how these providers discussed IPV and substance as intersecting health problems.

2.0 Longitudinal Assessment of Sexual Violence and Associations with Drinking among College Students

Amber L. Hill, MSPH,¹ Lan Yu, PhD,² Elizabeth Miller, MD PhD,^{1,3} Kaleab Z. Abebe, PhD,² Galen E. Switzer, PhD,^{2,4} Sonya Borrero, MD MS,^{2,4} Judy C. Chang, MD MPH,^{1,2,5} Robert W.S. Coulter, PhD^{3,6}

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2.1 Introduction

According to the latest Association of American Universities (AAU) Campus Climate Survey across 33 schools, over 25.9% of female and 6.9% of male undergraduate students reported experiencing sexual violence during college (SV; defined by the AAU as “nonconsensual sexual contact by physical force or inability to consent”).⁷³ Individuals who experience SV have higher rates of substance abuse, depression, suicidality, disordered eating, unintended pregnancy, and sexually transmitted infections, among other adverse outcomes.^{3,39,74-79} Furthermore, SV can have profound repercussions on an individual’s education, carrying lifelong and intergenerational consequences.^{77,80}

Studies show that in 50-70% of SV cases on college campuses, either the perpetrator or victim (or both) reported drinking alcohol.^{81,82} According to the AAU survey, the majority of the disclosed SV cases were alcohol-related, and more than 50% of women who experienced unwanted penetration reported that alcohol involvement impacted their decision to not seek help.⁷³ Given the high rates of alcohol-related SV, there is a growing body of research investigating the link between SV victimization and alcohol.^{83,84} This research largely focuses on college students due to the prevalence of heavy episodic drinking (also known as binge drinking) and the fact that college-aged women face a disproportionately high burden of SV.^{1,85} Most studies, however, are cross-sectional, limiting knowledge about temporality and mechanisms linking SV victimization and alcohol use.⁸³ Nevertheless, experts have offered a number of theories.^{36,81} For example, there is the “self-medication hypothesis” in which individuals who have experienced SV use alcohol to cope with their trauma.^{36,37} Another is the “reduced risk perception” theory in which individuals who drink alcohol perceive less risk during encounters with others, resulting in an increased likelihood for SV.³⁶ Both theories have preliminary empirical support.^{39,42,43}

Overall, there is a dearth of longitudinal data in the college context to determine how alcohol use influences SV victimization and how SV victimization influences alcohol use over time. Duval et al.⁸³ recently conducted a systematic review of risk factors for dating violence and SV among college students. Of 23 studies, only two examined the longitudinal associations between SV victimization and alcohol use.^{83,86,87} Both Carey et al.⁸⁶ and Mouilso et al.⁸⁷ found that binge drinking was associated with future SV victimization. Providing clarity on these associations has important implications for SV prevention and management. While some college-based SV prevention interventions have targeted binge drinking, evidence has shown mixed results in meaningful reductions in SV.⁴⁴⁻⁴⁶ By specifying the directionality of the association between SV and alcohol use, we can better inform future interventions to optimize college students' wellbeing.

To examine these complex associations requires analytic approaches that can account for bi-directionality and variations over time. We aimed to use longitudinal path models and structural equation modeling (SEM) to examine auto-regressive and cross-lagged effects between SV victimization and 1) alcohol use and 2) binge drinking over one year among a sample of 1,545 college students conducted at 28 campuses.⁸⁸

2.2 Methods

2.2.1 Study Sample

This is a secondary longitudinal analysis using data from a cluster-randomized controlled trial designed to improve recognition of alcohol-related sexual violence and sexual risk.⁸⁸ Study participants were undergraduate or graduate college students, aged 18-24, who were seeking care

at campus health centers for any reason at one of the 28 participating college campuses across Pennsylvania and West Virginia. In this trial, 12 campuses were randomized to the intervention arm, in which campus healthcare providers were trained in universal SV education. A total of 16 campuses were randomized to the control arm, in which campus healthcare clinicians provided patients with information about hazardous drinking. Additional study details are described elsewhere.⁸⁸ Researchers collected data (i.e., demographics, primary and secondary outcomes, SV victimization, SV disclosure to healthcare provider, use of SV-related services) from September 2015 to March 2017 through electronic surveys at baseline (T1), four-month follow-up (T2), and 12-month follow-up (T3).⁸⁸ Electronic surveys were hosted via REDCap⁸⁹ and sent to participants via their preferred contact method. The sample size was 2,291 at baseline, 1,757 at T2, and 1,729 at T3. To ensure completeness of data and an adequate sample size to adjust for gender, we used a sub-sample of individuals who completed all three surveys and identified as male or female (n=1,545).⁹⁰ The University of Pittsburgh's Institutional Review Board approved study procedures.

2.2.2 Measures

Participants self-reported their experiences. To assess victimization, participants disclosed the number of times they experienced six SV-related items (e.g., “How many times has anyone fondled, kissed or touched you sexually when you indicated that you didn’t want to?”). The SV scale was derived from the Sexual Experiences Survey with a 5-point Likert scale (never, once, twice, three times, four or more times).^{91,92} We used data collected at baseline about lifetime SV victimization before college and during college, as well as recent (past four-months) experiences of SV at T2 and T3. Cronbach’s alpha coefficients for SV before college, during college, at T2,

and at T3 were 0.74, 0.76, 0.65, and 0.72, respectively. We included SV experiences by any perpetrator.

We measured two continuous alcohol use variables over the past 30 days: 1) number of days drinking alcohol and 2) number of days binge drinking alcohol. Binge drinking was defined as five or more drinks within a two-hour period for males and four or more drinks within the same time period for females.⁸⁸

2.2.3 Statistical Analysis

We used descriptive statistics in Stata SE (Version 16) to characterize our sample. We examined demographic differences between the final sample retained (n=1,545, i.e., individuals who completed surveys at all three time points) and those excluded (n=714, i.e., individuals who did not complete surveys at all three time points) using cluster-adjusted chi-square and *t*-tests.

All remaining analyses were conducted in Mplus (Version 8). To ensure our 6-item SV scale was accurately measuring the construct of SV, we randomly divided our total sample into two half samples. For the first half, we conducted an exploratory factor analysis (EFA) using baseline data (before college and during college) with oblique rotation. We reviewed Eigenvalues and retained items with factor loadings >0.3. After conducting EFA, we used the second half to conduct a confirmatory factor analysis (CFA) for baseline data (before college and during college), as well as T2 and T3. In CFA, we assessed model fit through the following goodness-of-fit statistics: Comparative Fit Index (CFI>0.9), Tucker-Lewis Index (TLI>0.9), Root Mean Square Error of Estimation (RMSEA<0.06), and Standardized Root Mean Square Residual (SRMR<0.08) for path models and AIC and BIC for our SEM (the model was nested given the clustered data).^{93,94}

Analyses used weighted least square with mean and variance adjusted estimation with ordinal factor indicators.

First, we built longitudinal path models using maximum likelihood estimation with robust standard error, which accounted for non-normal data, to examine auto-regressive and cross-lagged associations over time between mean SV victimization and two alcohol-related variables separately: alcohol use and binge drinking. All path models were adjusted *a priori* for intervention arm, gender, and school-level clustering. We used full information maximum likelihood estimation to account for missing data.

Second, to minimize measurement error through use of latent variables,⁹⁰ we conducted SEM using the same estimation techniques and adjusting for the same covariates as the path models above to determine the association between SV as a latent construct and past-month alcohol use and binge drinking. We assessed model fit through Akaike Information Criteria (AIC), Bayesian Information Criteria (BIC), CFI>0.9, TLI>0.9, RMSEA<0.06, and SRMR<0.08 for path models and AIC and BIC for our SEM (the model was nested given the clustered data).^{93,94}

2.3 Results

Our sample was predominantly Non-Hispanic (87.2%), white (79.7%), and female (78.1%) with a mean age of 20 years (Table 1). A little over half (54.6%) of participants were in the control arm, while 45.4% were in the intervention arm. At baseline, students reported drinking alcohol for a median of four days and binge drinking for a median of one day over the past month with no significant differences by gender ($p>0.538$). Participants disclosed high rates of lifetime SV before and during college at 42.5% (48.5% of females, 21.2% of males; $p<0.001$) and 38.0% (43.3% of

females, 19.2% of males; $p < 0.001$), respectively. Most experiences of SV before and during college were perpetrated by someone the victim knew. Of the SV experiences before college, 18.0% reported the perpetrator as a friend, 13.7% a former romantic partner, 7.9% a “casual acquaintance or hook-up,” and 4.5% a current romantic partner. Of the SV experiences during college, 16.2% reported the perpetrator as a friend, 10.6% a “casual acquaintance or hook-up,” 5.1% a former romantic partner, and 3.3% a current romantic partner. When comparing those who completed surveys at all three time points to those who did not, we noted similar demographic characteristics ($p > 0.05$) except gender: 21.9% of participants in our sample identified as male compared to 37.1% of those excluded from analysis because they did not complete all assessments ($p = 0.005$).

2.3.1 Sexual Violence and Alcohol Use

The EFA using baseline data demonstrated that all six SV items strongly loaded (factor loadings > 0.59) onto a single construct (Table 2). Only the first Eigenvalue was > 1.0 and the ratio between the first and second Eigenvalues was $> 4:1$ (3.87:0.74 for before college SV, 4.32:0.67 for during college SV), indicating a strong single factor. The CFA using all SV exposure periods (before college, during college, T2, and T3) showed that the single factor model has adequate fit (RMSEA < 0.085 ; CFI > 0.96 ; TLI > 0.94 ; SRMR < 0.07).

Table 1 Participant Baseline Demographic Characteristics

	Study Sample (N=1,545) <i>n (%)</i>	Male (N=339) <i>n (%)</i>	Female (N=1,206) <i>n (%)</i>
Gender			
Male	339 (21.9)	--	--
Female	1,206 (78.1)	--	--
Ethnicity			
Hispanic	198 (12.8)	55 (16.2)	143 (11.9)
Non-Hispanic	1,347 (87.2)	284 (83.8)	1,063 (88.1)
Race			
American Indian or Alaska Native	5 (0.3)	1 (0.3)	4 (0.3)
Asian	90 (5.8)	21 (6.2)	69 (5.7)
Black or African American	134 (8.7)	39 (11.5)	95 (7.9)
Native Hawaiian or other Pacific Islander	3 (0.2)	0 (0)	3 (0.3)
White	1,232 (79.7)	261 (77.0)	971 (80.5)
Multiracial/more than one race	59 (3.8)	11 (3.2)	48 (4.0)
Other	22 (1.4)	6 (1.8)	16 (1.3)
Age (Mean +/- SD)	20.03 +/- 0.04	20.09 +/- 0.09	20.01 +/- 0.04
Intervention Status			
Intervention	702 (45.4)	155 (45.7)	547 (45.4)
Control	843 (54.6)	184 (54.3)	659 (54.6)
Past 30-Day Alcohol Use (Median, IQR)	4 [2,8]	5 [2,8]	4 [2,8]
Past 30-Day Binge Drinking (Median, IQR)	1 [0,3]	1 [0,4]	1 [0,3]
Lifetime Sexual Violence			
Before College ^a	657 (42.5)	72 (21.2)	585 (48.5)
During College ^a	580 (38.0)	64 (19.2)	516 (43.3)

^a Differences between male and female gender using cluster-adjusted chi-square test is significant ($p < 0.0001$)

Table 2 Exploratory and Confirmatory Factor Analyses of Sexual Violence Scale

	Exploratory Factor Analysis		Confirmatory Factor Analysis			
	Before College (n=773)	During College (n=763)	Before College (n=772)	During College (n=772)	T2 (n=772)	T3 (n=772)
How many times has anyone:						
1. Fondled, kissed or touched you sexually	0.829	0.847	0.810	0.831	0.809	0.902
2. Tried to have sex with you (but it did not happen)	0.769	0.827	0.713	0.821	0.743	0.840
3. Made you have vaginal sex	0.849	0.828	0.832	0.829	0.911	0.878
4. Made you have oral sex or have it done to you	0.728	0.865	0.809	0.858	0.840	0.557
5. Made you have anal sex	0.597	0.748	0.741	0.816	0.864	0.704
6. Penetrated you with a finger or objects (vaginally, orally, anally)	0.822	0.829	0.833	0.922	0.912	0.819

Items specified “when you indicated that you didn’t want to.” Numbers differ among samples due to small amounts of missing data. Items used a 5-point Likert scale (“0 times,” “1 time,” “2 times,” “3 times,” “4 or more times”). T2=4-months follow-up, T3=12-months follow-up. At T2 and T3, only past 4-month SV experiences were included.

Figure 1 shows the path model associations between SV victimization (mean score) and alcohol use over time. Regarding the cross-lagged effects, past SV significantly predicted future alcohol use (β 's range=0.026-0.052) when controlling for past alcohol use, gender, intervention arm, and school-level clustering. In contrast, past alcohol use did not significantly predict future SV (β 's range=0.014-0.018) when controlling for past SV and covariates. All auto-regressive terms were significant ($p<0.05$), indicating that past SV predicted future SV (β 's range=0.195-0.332) and past alcohol use predicted future alcohol use (β 's range=0.437-0.504). The models had adequate fit statistics (Table 3).

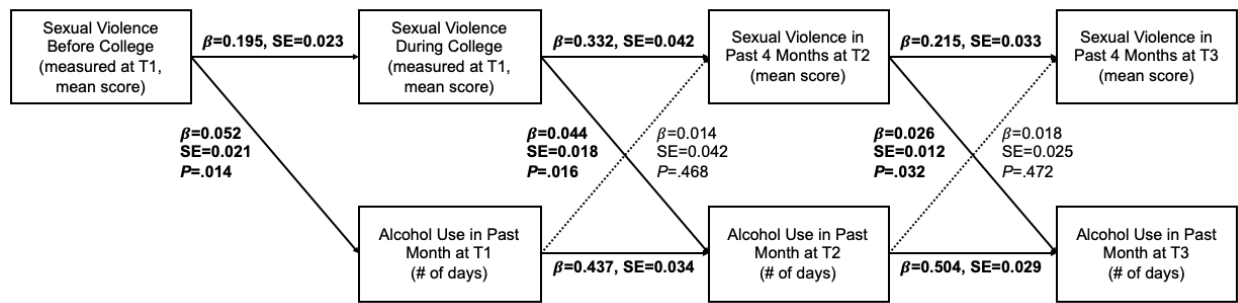


Figure 1 Longitudinal Associations between Sexual Violence and Alcohol Use

Bold, solid lines= $p<0.05$. For all auto-regressive effects, $p<0.001$. Dashed lines= $p>0.05$. Co-variances between sexual violence and alcohol use are estimated but not shown. Model is adjusted for gender, intervention arm, and school-level clustering. SE=standard error.

Figure 2 shows the path model associations between SV victimization (mean score) and binge drinking over time. Similar to the previous model, we found significant cross-lagged effects between SV and future binge drinking (β 's range=0.027-0.053), and non-significant cross-lagged effects between binge drinking and future SV (β 's range=0.027-0.034). All auto-regressive effects were significant. This model had similar fit statistics to the first model (Table 3).

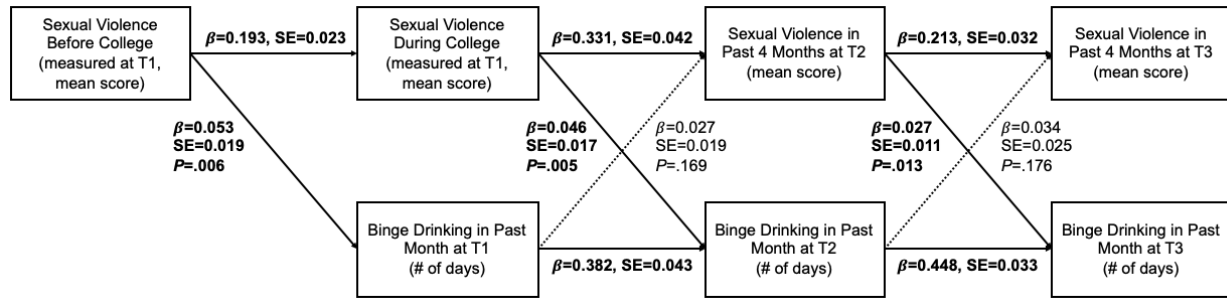


Figure 2 Longitudinal Associations between Sexual Violence and Binge Drinking

Bold, solid lines= $p<0.05$. For all auto-regressive effects, $p<0.001$. Dashed lines= $p>0.05$. Co-variances between sexual violence and binge drinking are estimated but not shown. Model is adjusted for gender, intervention arm, and school-level clustering. SE=standard error

Table 3 Model Fit Statistics

Model	AIC	BIC	CFI	TLI	Value	RMSEA 90%CI	SRMR
<u>Sexual Violence and Alcohol Use</u>							
Full model with all paths	26421.79	26592.76	0.837	0.665	0.069	0.058-0.079	0.055
Model with only significant paths	26420.62	26586.24	0.837	0.683	0.067	0.057-0.077	0.056
<u>Sexual Violence and Binge Drinking</u>							
Full model with all paths	23515.56	23686.53	0.832	0.653	0.064	0.054-0.075	0.058
Model with only significant paths	23516.52	23682.14	0.830	0.669	0.063	0.053-0.073	0.059
<u>Structural Equation Modeling</u>							
Sexual Violence and Alcohol Use	45874.49	46622.48	--	--	--	--	--
Sexual Violence and Binge Drinking	42977.93	43725.92	--	--	--	--	--

We calculated mean scores for past 4-months experiences of sexual violence (6 items) at baseline, 4-months follow-up, and 12-months follow-up. We measured past 30-day alcohol use and binge drinking as a continuous variable (number of days) at the same time points. SEM models treated sexual violence as a latent construct consisting of 6 items at each time point; Mplus only allows AIC/BIC to be calculated for nested (i.e. clustered) SEM models.

To minimize measurement error, we conducted SEM, treating SV as a latent construct. Figure 3 shows the associations between SV (as a latent variable) and alcohol use (observed, continuous variable) over time. Similar to previous models, past SV was a significant predictor for future alcohol use (β 's range: 0.092-0.098) and past alcohol use was not a significant predictor for future SV (β 's range: 0.010-0.012). All auto-regressive effects were significant.

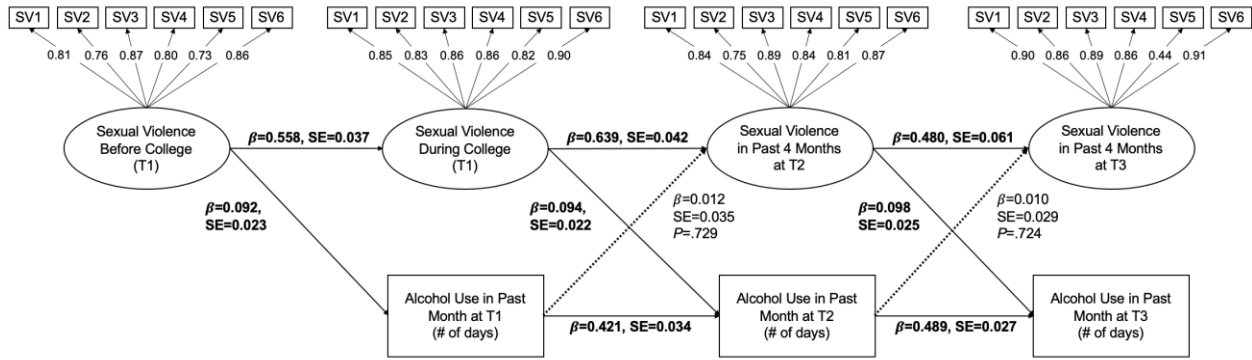


Figure 3 Structural Equation Modeling: Sexual Violence and Alcohol Use

Bold, solid lines= $p < 0.05$. For all auto-regressive effects, $p < 0.001$. Dashed lines= $p > 0.05$. Co-variances between sexual violence and alcohol use are estimated but not shown. Model is adjusted for gender, intervention arm, and school-level clustering. Standardized factor loadings are shown for each item. SV=sexual violence. SE=standard error.

Figure 4 shows longitudinal associations between SV (as a latent variable) and binge drinking, confirming results from path models: significant cross-lagged effects indicating that past SV predicted future binge drinking (β 's range: 0.086-0.095), holding past binge drinking constant. Auto-regressive effects remained significant. AIC and BIC values (Table 3) indicated that the binge drinking model had improved fit over the alcohol use model.

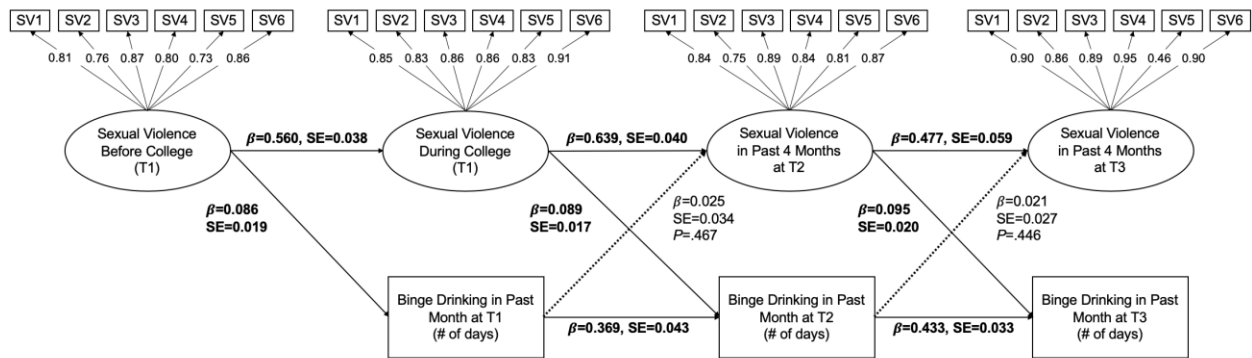


Figure 4 Structural Equation Modeling: Sexual Violence and Binge Drinking

Bold, solid lines= $p < 0.05$. For all auto-regressive effects, $p < 0.001$. Dashed lines= $p > 0.05$. Co-variances between sexual violence and binge drinking are estimated but not shown. Model is adjusted for gender, intervention arm, and school-level clustering. Standardized factor loadings are shown for each item. SV=sexual violence. SE=standard error.

2.4 Discussion

By examining both autoregressive and cross-lagged associations, we were able to capture complex, longitudinal associations between SV victimization and alcohol use. Our findings show that SV significantly predicted future alcohol use and binge drinking when controlling for past drinking behaviors. In contrast, alcohol use and binge drinking did not significantly predict SV when controlling for past SV experiences. These results simultaneously support the “self-medication hypothesis” and challenge “reduced risk perception” theories, indicating that survivors of violence may be drinking as a coping mechanism for their traumatic experiences.³⁶

While longitudinal studies investigating these relationships are scarce, our findings confirm those from Carey et al.⁸⁶ ($n=483$) and contradict those from Mouilso et al.⁸⁷ ($n=139$ at the final time point). Carey et al.⁸⁶ showed that heavy drinking prior to college was a significant predictor for experiencing incapacitated rape during the first year of college; however, the association became non-significant when controlling for past SV experiences. Our results may have varied from Mouilso et al.⁸⁷ due to differences in sample size (1,545 vs. 139), follow-up period (one year vs. four months), and choice of analytic methodology (SEM vs. linear/logistic regression) which minimizes measurement error. Notably, both of the prior longitudinal analyses focused only on first-year female college students and did not account for data at multiple time points; our paper overcomes the limitations of these prior studies.

Further disentangling the associations between SV victimization and alcohol use over time has several implications for violence prevention programs. Due to the high prevalence of alcohol-related SV, particularly among college students engaged in binge drinking, there has been a focus on campus-based interventions designed to reduce SV by reducing binge drinking. As previously mentioned, we now know that these interventions have mixed effectiveness.⁴⁴⁻⁴⁶ Our results

provide a possible explanation for these inconsistencies because in our study alcohol use and binge drinking failed to predict future SV victimization. While binge drinking can have serious health consequences and is a potential exacerbating factor for SV exposure, including decreased likelihood for seeking help,⁷³ our findings suggest that drinking, in and of itself, may not be a root cause of violence victimization. That is, alcohol use does not predispose individuals to become SV victims.

2.4.1 Limitations

Our sample is predominantly white female college students, limiting our generalizability to different age groups, genders, and races/ethnicities, as well as individuals who are not in college. In addition, as data are from a randomized trial of college students seeking care in health and counseling centers, this may be a population more predisposed to risky health behaviors. Given that we only had three time points, we were limited in our ability to approximate causality, which would have been possible by including random impulse effects through cross-lagged panel modeling.^{95,96} While the data were all collected at the same time points, the recall period was different for SV (past four months) compared to alcohol use and binge drinking (past 30 days).

Additionally, we focused this analysis on victimization, not perpetration. Studies have shown that men who participate in binge drinking are more likely to perpetuate sexist, heteronormative attitudes, such as “rape myths.”^{97,98} As such, future research should examine these broader societal norms associated with college drinking culture that condone violence perpetration and excuse harmful behaviors in the context of drinking.^{81,99-101}

2.5 Conclusion

This longitudinal study examines the auto-regressive and cross-lagged associations between SV victimization and alcohol consumption. We demonstrated how SV predicted future alcohol use and binge drinking among college students seeking care at campus health centers. Clinicians should be particularly attuned to the drinking patterns of their adolescent and young adult patients and how alcohol use may be related to prior traumatic experiences. Violence prevention programs should move away from simply targeting problematic drinking behaviors and look to broader, societal norms that may be influencing SV perpetration. Development and evaluation of healing-centered supports and services for college students who are survivors of SV (including before college) are needed, including strategies to reduce likelihood of hazardous drinking in the context of such violence exposure. Finally, future research should focus on mediating factors to better explain the relationship between SV victimization and alcohol use, as well as examining how these two phenomena interact over time to influence health outcomes.

3.0 The Psychometric Evaluation of a Gender Equitable Attitudes Scale among Adolescents: Examining Measurement Invariance by Race and Gender

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3.1 Introduction

The strong association of gender inequitable attitudes (e.g., heteronormative and hegemonic beliefs about how an individual of a particular gender should act) with increased rates of homophobic teasing, bullying, and violence perpetration against women and girls has been extensively documented.^{51,102-116} In response, violence prevention experts have placed a growing emphasis on implementing programs, known as “gender transformative” programs, which focus on equipping participants with critical analytic skills to challenge rigid social norms that perpetuate gender inequity and condone violence.^{50,61,117-121} These programs are grounded in social cognitive, gender and power, and social norms theories,^{49,50,122} and have demonstrated efficacy by reducing boys’ and young men’s perpetration of violence.^{56,57,123,124}

More recently, there has been a call for increased diversity in gender transformative research and programming.^{49,125} In the U.S., there are limited data about the effectiveness of gender transformative programs among adolescents, communities of color, and non-male populations.^{49, 128} To address this concern, programs such as Manhood 2.0, Sisterhood 2.0, and Coaching Boys into Men (CBIM) Middle School, all of which are adaptations of previously existing interventions, have been implemented and evaluated.^{49,56,57,124,126} These programs have shown promising results in reducing rates of violence perpetration^{54,55} and will likely serve as a roadmap for additional programs to be adapted to other U.S. adolescent populations. However, as future iterations of these gender-transformative interventions are implemented, researchers must be particularly mindful of the measures they use to assess programmatic success. This is important given that the validity and reliability of a measurement tool may differ depending on the population. Furthermore, research findings are only as good as the measurement tools used to collect data.

As such, the evaluation and validation of measures in each new population is critical. In the U.S., the existing scales to measure attitudes related to gender equity have largely been validated among predominantly white adult male populations.¹²⁷ Currently, there is limited evidence that these scales will perform similarly in more diverse populations. For example, if we are examining the differences of gender equitable attitudes by race/ethnicity prior to additional validation work, there is the risk that differences due to measurement error will be interpreted as true differences. Internationally, studies by Pulerwitz & Barker⁵¹ and Vu et al.¹²⁵ demonstrated this adaptation and validation process using the Gender Equitable Men (GEM) Scale in Brazil (among 15-24-year-old men) and Uganda (among 10-24-year-old men and women), respectively. These authors highlight the best practice of examining the construct validity of scales (i.e., how accurately a scale is measuring the construct it was intended to measure) measuring gender norms in new populations in which they are applied, and to confirm the scale's performance across race/ethnicity and gender.^{51,125} Evidence of construct validity will allow for a better understanding of the construct of gender equitable attitudes in this particular population, while measurement invariance across gender and race will allow for broader uptake of the scale in different populations.

With these recommendations in mind, our first aim is to evaluate the construct validity through exploratory and confirmatory factor analyses of a 13-item scale on gender equitable attitudes adapted from previous scales used in other populations,^{51,128} among a sample of 13-19-year-old adolescent boys from predominantly Black neighborhoods in Pittsburgh, PA. Our second aim is to assess measurement invariance of the same gender equitable attitudes by race and gender using baseline data from three gender transformative programs: Manhood 2.0, CBIM Middle School, and Sisterhood 2.0.

3.2 Methods

3.2.1 Participants and Procedures

Our sample was derived from three recent studies conducted in one geographic area during 2015-2018 in which the same 13-item scale was used to assess gender equitable attitudes. Briefly, Manhood 2.0 was a cluster-randomized controlled trial designed to reduce adolescent relationship abuse perpetration and victimization among adolescent boys living in neighborhoods with concentrated social disadvantage in Pittsburgh, PA. Those in the intervention group received 18 hours of training on a curriculum about healthy relationships, bystander behaviors, and masculinity. Those in the comparison group received an 18-hour job skills curriculum.⁴⁹ CBIM Middle School was a cluster randomized controlled trial testing the effectiveness of a coach-led program targeting middle school male athletes in reducing perpetration and victimization of teen dating violence.^{55-57,126} Finally, Sisterhood 2.0 was a quasi-experimental study in which female adolescents received an 18-hour curriculum addressing similar themes as Manhood 2.0.

For Aim 1, we used baseline data from the Manhood 2.0 study. Details of the study design are published elsewhere.⁴⁹ In short, a total of 866 male participants, aged 13-19 years, were recruited across various community sites to participate in either the intervention or control groups.⁴⁹ To compare by measurement invariance by race in Aim 2, we pooled baseline gender equitable attitudes data from the Manhood 2.0 study and the Coaching Boys into Men study, which is another gender transformative violence prevention study conducted among middle school students in a similar area. Given the studies had different participant age ranges, we only selected individuals of overlapping ages (Grades 8 and 9) to minimize potential confounding. Furthermore, we only selected individuals who identified as Black/African American or white, as there were

sample size limitations with other races/ethnicities.^{49,126} Finally, to compare measurement invariance by gender in Aim 2, we pooled the baseline sample of adolescent boys from Manhood 2.0 and adolescent girls from Sisterhood 2.0, given that participants from these two samples were the same age (13-19 years) and from the same neighborhoods (Figure 5). The University of Pittsburgh’s Institutional Review Board approved all study procedures.

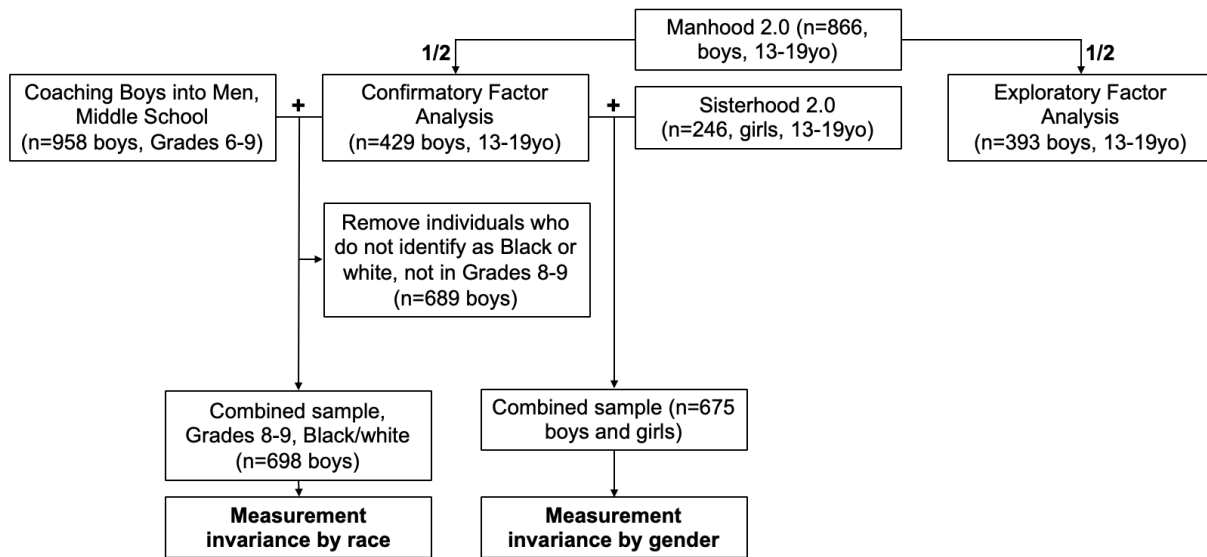


Figure 5 Flow Diagram of Analyses: Construct Validity and Measurement Invariance by Race and Gender

3.2.2 Measures

We created the 13-item scale to assess gender equitable attitudes through an iterative process that involved 1) adapting items from both the GEM Scale and Adolescent Masculinity Ideology in Relationships Scale (AMIRS),^{51,128,129} 2) conducting formative research through concept mapping and Visual Voices techniques among adolescent boys, and 3) cognitive interviewing and pilot testing of the scale among a community-based sample of adolescents and

young adults. The scale includes six positively-worded questions (e.g., “I can respect a guy who backs down from a fight” and “A guy takes responsibility for his actions”) and seven negatively-worded questions (e.g., “In a good dating relationship, the guy gets his way most of the time” and “If a guy tells people his worries, he will look weak”). Participants answered each item on a 5-point Likert scale (“strongly agree,” “agree,” “neutral,” “disagree,” “strongly disagree”). We calculated mean scores after reverse-coding the negatively-worded items, so that a higher score indicates more equitable gender attitudes.

3.2.3 Analysis

To evaluate the construct validity of the 13-item gender equitable attitudes scale among the Manhood 2.0 population, we conducted both exploratory and confirmatory factor analyses. First, we randomly divided our sample of 866 adolescents in half. Among the first half of the sample, we determined the number of underlying factors through exploratory factor analysis (EFA) with an oblique rotation using the “polychromic” command for ordinal factor indicators in Stata SE (Version 16). Our defined factor loading cut-off to include an item was set at 0.3. We then used the second half of the sample to confirm the factor structure through confirmatory factor analysis (CFA) with ordinal factor indicators and weighted least square mean and variance adjusted estimators in Mplus (Version 8). We used commonly accepted thresholds to measure goodness-of-fit ($CFI > 0.9$, $TLI > 0.9$, $RSMEA < 0.06$, $SRMR < 0.08$).^{93,94} Finally, we assessed convergent validity, a component of construct validity, by determining the association of the mean score on the final gender equitable attitudes scale with any lifetime adolescent relationship abuse perpetration (measured as a dichotomous variable: “yes” to any of three items derived from the revised Conflict Tactics Survey and Sexual Experiences Survey).^{92,130} Internal consistency

reliability was also assessed through Cronbach's alpha coefficients and ordinal alpha coefficients using the full sample.¹³¹

To evaluate measurement invariance by race, we pooled the participants who reported being in Grades 8 and 9 from Manhood 2.0 and Coaching Boys into Men, and divided the samples into Black/African American and white.^{49,126} To evaluate measurement invariance by gender, we pooled the participants who in Manhood 2.0 and Sisterhood 2.0. To determine configural invariance, we compared goodness-of-fit statistics between Black and white race (or male and female gender, in separate models) using the CFA model derived from Aim 1. If there proved to be configural invariance (i.e., goodness-of-fit statistics were qualitatively similar), we constrained the model parameters to be equivalent to test different levels of measurement invariance (e.g., weak factorial/metric: constrained factor loadings; strong factorial/scalar: constrained factor loadings and thresholds; strict factorial: constrained factor loadings, thresholds, and residuals) by race. For each level of measurement invariance, we evaluated changes in goodness-of-fit statistics and used chi-squared difference testing to compare increasingly constrained models with previous models (i.e., weak vs. configural, strong vs. weak, and strict vs. strong). For all measurement invariance models, we specified the use of theta parameterization. Overall, missing data for the gender equitable attitudes was limited (<5%). All analyses were conducted in Mplus (Version 8). A flow diagram of all analyses is shown in Figure 5.

As an exploratory analysis, we also reviewed the percent agreement (“strongly agree”/“agree” vs. “neutral”/“disagree”/“strongly disagree”) to each item by sample. We used two sample proportional tests to examine differences by gender between the Manhood 2.0 and Sisterhood 2.0 samples and by race between the Black and white samples in Stata SE (Version 16).

3.3 Results

Demographic characteristics are shown in Table 4. The majority of participants in Manhood 2.0 sample (100% male) identified as Black/African American (77.5%), Non-Hispanic (93.3%), between the ages of 14-17 years (74.8%), and were currently in school (90.7%) in grades 8-11 (87.7%). When combining samples of Black and white individuals (100% male) from Manhood 2.0 and Coaching Boys into Men (middle school sample), the majority of both races reported being in Grade 8 at 67.3% and 96.3%, respectively (shown as “Black” and “white” populations in Table 4). A larger proportion of the Black (32.7%) sample was in Grade 9 compared to only 3.7% of the white sample. The Sisterhood 2.0 participants (100% female) largely identified as Black/African American (83.8%), Non-Hispanic (94.3%), between the ages of 14-17 years (79.5%), and were currently in school (90.6%) in grades 8-11 (84.2%).

Table 4 Participant Demographic Characteristics

	Manhood 2.0 (n=866 boys)	Black^b (n=400 boys)	White^b (n=298 boys)	Sisterhood 2.0 (n=246 girls)^c
Age				
13	104 (12.0%)	--	--	30 (12.2%)
14	176 (20.4%)	--	--	64 (26.1%)
15	161 (18.6%)	--	--	53 (21.6%)
16	178 (20.6%)	--	--	41 (16.7%)
17	131 (15.2%)	--	--	37 (15.1%)
18	84 (9.7%)	--	--	14 (5.7%)
19	30 (3.47%)	--	--	6 (2.5%)
Grade Level^a				
8	163 (22.9%)	269 (67.3%)	287 (96.3%)	40 (18.6%)
9	180 (25.3%)	131 (32.7%)	11 (3.7%)	53 (24.7%)
10	151 (21.2%)	0 (0%)	0 (0%)	52 (24.2%)
11	130 (18.3%)	0 (0%)	0 (0%)	36 (16.7%)
12	72 (10.1%)	0 (0%)	0 (0%)	34 (15.8%)
Finished high school/GED	9 (1.3%)	0 (0%)	0 (0%)	--
College	6 (0.8%)	0 (0%)	0 (0%)	--
Currently in School				
Yes	735 (90.7%)	--	--	221 (90.6%)
No	75 (9.3%)	--	--	23 (9.4%)

Table 4 (continued)

	Manhood 2.0 (n=866 boys)	Black^b (n=400 boys)	White^b (n=298 boys)	Sisterhood 2.0 (n=246 girls)^c
Race				
American Indian or Alaska Native	36 (4.4%)	0 (0%)	0 (0%)	16 (7.4%)
Asian	31 (3.8%)	0 (0%)	0 (0%)	2 (0.93%)
Black/African American	633 (77.5%)	400 (100%)	0 (0%)	181 (83.8%)
Native Hawaiian or other Pacific Islander	1 (0.1%)	0 (0%)	0 (0%)	4 (1.9%)
White/Caucasian	30 (3.7%)	0 (0%)	298 (100%)	17 (7.9%)
Multi-racial	65 (8.0%)	0 (0%)	0 (0%)	24 (11.1%)
Other	21 (2.6%)	0 (0%)	0 (0%)	7 (3.2%)
Ethnicity				
Hispanic	53 (6.7%)	--	--	12 (5.7%)
Non-Hispanic	736 (93.3%)	--	--	199 (94.3%)
Gender				
Male	866 (100%)	400 (100%)	298 (100%)	0 (0%)
Female	0 (0%)	0 (0%)	0 (0%)	246 (100%)

^a Calculated among those who are currently in school.

^b Missing data among Black and white columns due to differences in data collection methods of those variables between samples; sample was derived by combining Black and white participants in Grades 8-9 from Coaching Boys into Men Middle School and Manhood 2.0.

^c Numbers add up to more than 100% given that participants were able to select all that applied.

3.3.1 Construct Validity – Gender Equitable Attitudes Scale

Using the Manhood 2.0 sample, the EFA (n=393) provided evidence for both a two- and three-factor solution. The highest Eigenvalues were 2.40, 1.93, and 0.81 (Figure 6). All 13 items loaded (factor loadings >0.3) onto at least one factor. In the three-factor solution, Item 10 (“I would be friends with a guy who is gay”) cross-loaded onto Factors 2 and 3. To determine the most appropriate underlying factor structure, we conducted CFA (n=429) using three models: 1) a two-factor solution with all 13 items, 2) a three-factor solution with all 13 items, and 3) a three-factor solution without Item 10, which was removed due to cross-loading. The model with the best fit was the 12-item three-factor solution (CFI=0.890, TLI=0.858, RMSEA=0.077 (90%CI: 0.065-0.089), SRMR=0.052). All EFA and CFA factor loadings for the final model are shown in Table 5. We labeled Factor 1: “Emotional and Sexual Stereotypes in Relationships,” Factor 2: “Moral

Code,” and Factor 3: “Heteronormativity,” based on formative concept mapping research conducted by the research team.

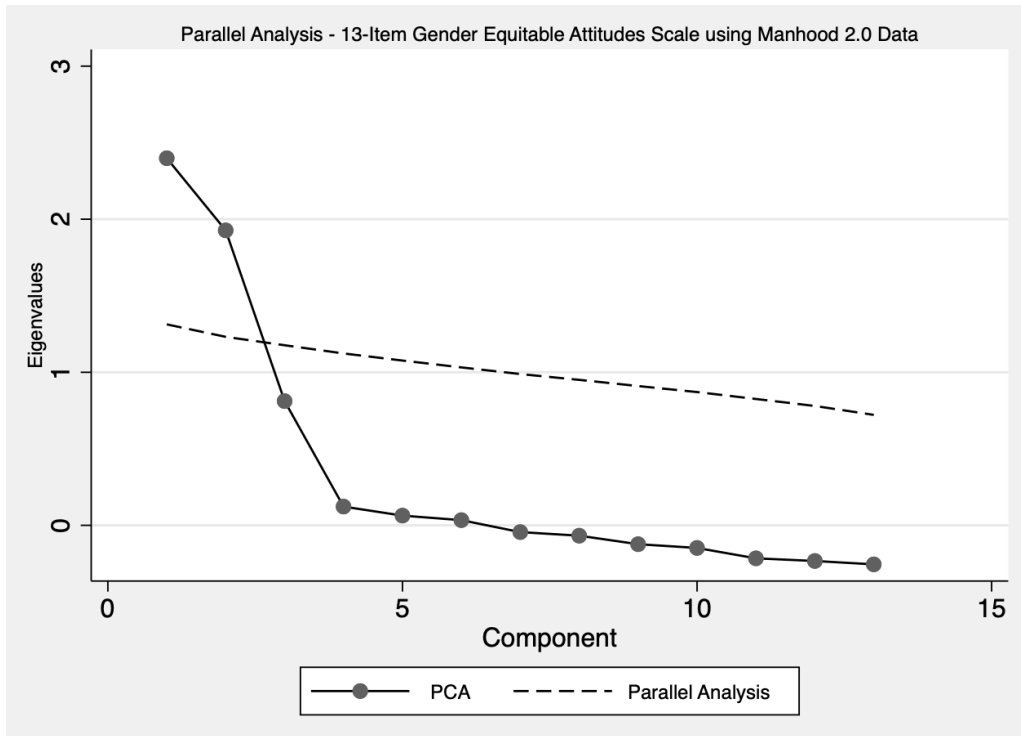


Figure 6 Parallel Analysis of the 13-Item Gender Equitable Attitudes Scale among Manhood 2.0 Participants

Table 5 Exploratory and Confirmatory Factor Analyses among Manhood 2.0 Participants

Item	Exploratory Factor Analysis (n=393)			Confirmatory Factor Analysis (n=429)		
	Factor 1	Factor 2	Factor 3	Factor 1	Factor 2	Factor 3
1. A guy takes responsibility for his actions.	0.0607	0.6284	-0.1485	--	0.732	--
2. A guy never needs to hit another guy to get respect.	-0.0103	0.5595	0.0098	--	0.425	--
3. A girl wearing revealing clothing deserves to have comments made about her. ^a	0.6432	-0.0155	-0.0471	0.555	--	--
4. It bothers me when a guy acts like a girl. ^a	0.1644	-0.0211	0.6078	--	--	0.868
5. Guys should sleep with as many girls as possible. ^a	0.4911	0.1102	0.1486	0.621	--	--
6. If a guy tells people his worries, he will look weak. ^a	0.6069	0.0896	0.0615	0.654	--	--

Table 5 (continued)

Item	<u>Exploratory Factor Analysis</u> (n=393)			<u>Confirmatory Factor Analysis</u> (n=429)		
	Factor 1	Factor 2	Factor 3	Factor 1	Factor 2	Factor 3
7. In a good dating relationship, the guy gets his way most of the time. ^a	0.5750	-0.0279	0.1399	0.652	--	--
8. Guys should only have sex with girls. ^a	0.0722	-0.1830	0.6702	--	--	0.675
9. I can respect a guy who backs down from a fight.	0.0766	0.6551	0.0208	--	0.486	--
10. I would be friends with a guy who is gay.	-0.1490	0.4582	0.5717	N/A	N/A	N/A
11. A guy should share in household chores.	-0.0333	0.5819	0.0563	--	0.544	--
12. If a girl is raped it is often because she did not say no clearly enough. ^a	0.5783	-0.0230	-0.0722	0.516	--	--
13. Guys put women and children first.	0.0337	0.5038	-0.1852	--	0.563	--

^a Reverse-coded items; Bold: factor loading > 0.3.

We also demonstrated convergent validity. For every 1.0 unit increase in the mean score of the 12-item gender equitable attitudes scale, there was a 69% reduction in odds of lifetime adolescent relationship abuse perpetration (OR: 0.31, 95%CI: 0.18-0.55). For the items in Factor 1 (all reverse-coded) and Factor 2, the odds ratios were also significant at 0.55 (95%CI: 0.38-0.80) and 0.58 (95%CI: 0.42-0.80), respectively. This was indicative of respondents with more equitable gender norms perpetrating significantly less relationship abuse. The mean score of the two items included in Factor 3 (“Guys should only have sex with girls” and “It bothers me when a guy acts like a girl”) was not significantly associated with lifetime adolescent relationship abuse perpetration (OR: 0.90, 95%CI: 0.72-1.12). The Cronbach’s alpha coefficients for Factors 1-2 were 0.68 and 0.65, respectively, indicating adequate internal consistency. The ordinal alpha coefficients for Factors 1-2 were 0.72 and 0.64, respectively. The Spearman’s rank correlation coefficient between the two items in Factor 3 was 0.48.

3.3.2 Gender Equitable Attitudes Scale by Race

We conducted a CFA of the three-factor 12-item model on both Black and white samples to test measurement invariance with varying model constraints. Among Black adolescents, in Grades 8-9, the model (n=398) fit very well (CFI=0.961, TLI=0.949, RMSEA=0.044 (90%CI: 0.029-0.059), SRMR=0.038). Among their white counterparts (n=297), the model had acceptable fit (CFI=0.905, TLI=0.877, RMSEA=0.088 (90%CI: 0.072-0.103), SRMR=0.057), yet there was one item (“Guys should put women and children first”) that did load strongly onto its designated factor (factor loading = 0.19). As such, we re-ran the models for both races excluding this item (11 items total), which resulted in improved fit statistics (Table 6) and demonstrated configural invariance. To test for weak factorial invariance, we constrained the factor loadings to be equivalent by race. Our chi-square difference revealed that the two models were not significantly different ($p=0.0809$), and our model fit statistics improved (CFI=0.950, TLI=0.939, RMSEA=0.059 (90%CI: 0.048-0.070), SRMR=0.043). However, our modification indices showed that Item 11 (“A guy should share in household chores”) was inappropriately constrained. After further constraining our model to set item thresholds as equivalent, our fit was significantly worse ($p<0.0001$). Given that we did not demonstrate strong factorial invariance, we did not further constrain our model.

Table 6 Confirmatory Factor Analyses (CFA) Goodness-of-Fit Statistics

Model	χ^2	df	CFI	TLI	Value	RMSEA	SRMR
						90%CI	
<u>Manhood 2.0</u>							
3-factor ^a	179.286	51	0.890	0.858	0.077	0.065-0.089	0.052
3-factor ^b	133.300	41	0.913	0.883	0.072	0.059-0.086	0.047
<u>Black</u>							
3-factor ^a	90.664	51	0.961	0.949	0.044	0.029-0.059	0.038
3-factor ^b	62.133	41	0.977	0.970	0.036	0.015-0.053	0.032

Table 6 (continued)

Model	χ^2	df	CFI	TLI	Value	<u>RMSEA</u>	SRMR
						90% CI	
White							
3-factor ^a	168.719	51	0.905	0.877	0.088	0.072-0.103	0.057
3-factor ^b	132.360	41	0.924	0.899	0.087	0.070-0.103	0.051
Sisterhood 2.0							
3-factor ^a	139.435	51	0.886	0.052	0.085	0.068-0.102	0.064
3-factor ^b	81.567	41	0.944	0.924	0.064	0.044-0.084	0.050

^a Item 10 removed due to cross-loading in exploratory factor analysis (EFA).

^b Item 10 removed due to cross-loading in EFA and Item 13 removed due to poor factor loading in CFA.

As an additional exploratory analysis, we examined the percent agreement with each of the scale's items by race (Table 7). Across almost all items, Black participants endorsed higher percentage agreement with more gender inequitable norms than white participants ($p < 0.05$). There were two items ("Guys should sleep with as many girls as possible" and "If a guy tells people his worries, he will look weak") in which there was no significant difference between samples. Among Black and white participants, the highest percent agreement (81.3%, 89.6%) was with "a guy takes responsibility for his actions". The lowest percent agreement was with "if a guy tells people his worries, he will look weak" (8.8%) among Black participants and "In a good dating relationship, the guy gets his way most of the time" (4.8%) among white participants.

Table 7 Percent Agreement with Gender Attitudes by Race and Gender

Items	<u>Race</u>		<u>Gender</u>	
	Black (n=400)	White (n=298)	Manhood 2.0 (n=866)	Sisterhood 2.0 (n=246)
Factor 1				
A girl wearing revealing clothing deserves to have comments made about her. ^a	13.7%	8.5%	15.8%	12.1%
Guys should sleep with as many girls as possible. ^a	10.4%	7.2%	12.7%	6.7%
If a guy tells people his worries, he will look weak. ^a	8.8%	9.8%	13.4%	6.3%
In a good dating relationship, the guy gets his way most of the time. ^a	9.7%	4.8%	13.0%	10.1%
If a girl is raped it is often because she did not say no clearly enough. ^a	13.9%	8.7%	14.1%	12.6%

Table 7 (continued)

Items	Race		Gender	
	Black (n=400)	White (n=298)	Manhood 2.0 (n=866)	Sisterhood 2.0 (n=246)
Factor 2				
A guy takes responsibility for his actions. ^b	81.3%	89.6%	79.0%	58.2%
A guy never needs to hit another guy to get respect. ^b	57.4%	70.8%	51.3%	53.1%
I can respect a guy who backs down from a fight. ^b	55.8%	72.6%	50.4%	54.9%
A guy should share in household chores. ^b	57.6%	75.3%	53.9%	68.5%
Factor 3				
It bothers me when a guy acts like a girl. ^a	47.6%	35.5%	50.5%	20.8%
Guys should only have sex with girls. ^a	63.1%	48.8%	65.1%	28.9%
Excluded Items				
I would be friends with a guy who is gay. ^b	23.8%	46.4%	22.2%	78.2%
Guys put women and children first. ^b	66.4%	73.5%	62.7%	50.2%

^a Negatively worded questions, % agreement indicates more gender inequity.

^b Positively worded questions, % agreement indicates more gender equity.

Bold = $p < 0.05$: Black adolescent boys compared to white adolescent boys (Grades 8-9) using a combined sample from Coaching Boys into Men Middle School and Manhood 2.0; Manhood 2.0 (boys, 13-19 years old) compared to Sisterhood 2.0 (girls, 13-19 years old)

3.3.3 Gender Equitable Attitudes Scale by Gender

We repeated all analyses using the three-factor 12-item model for both Manhood 2.0 (boys) and Sisterhood 2.0 (girls) samples. We demonstrated configural invariance by gender as the model had mediocre fit statistics among the adolescent girls ($n=240$; CFI=0.886, TLI=0.852, RMSEA=0.085 (90%CI: 0.068-0.102), SRMR=0.064) and all factor loadings were sufficiently strong (factor loadings >0.3). Given the results of the race analysis, we also ran the model excluding Item 13 (“Guys should put women and children first”), which dramatically improved fit among the girls (CFI=0.944, TLI=0.924, RMSEA=0.064 (90%CI: 0.044-0.084), SRMR=0.050). Among the original sample of boys ($n=429$), the fit also improved (CFI=0.913, TLI=0.883, RMSEA=0.072 (90%CI: 0.059-0.086), SRMR=0.047) (Table 6). To test weak factorial invariance, we constrained the factor loadings to be equivalent. While the chi-square difference test did reveal that the newly constrained model did not fit significantly worse ($p=0.0548$), the fit statistics did

not improve above commonly cited thresholds and the modification indices revealed several items that were inappropriately constrained.^{132,133}

We then conducted an exploratory analysis of percent agreement by gender (Table 7). Girls had significantly higher percent agreement with “A guy should share in household chores” (68.5% vs. 53.9%, $p<0.05$) and significantly lower percent agreement with “Guys should sleep with as many girls as possible” (6.7% vs. 12.7%), “If a guy tells people his worries, he will look weak” (6.3% vs. 13.4%), “It bothers me when a guy acts like a girl” (20.8% vs. 50.5%), and “Guys should only have sex with girls” (28.9% vs. 65.1%). This indicated that girls in our sample had more gender equitable attitudes on many of the items, with one exception, “A guy takes responsibility for his actions,” in which the boys had significantly higher percent agreement (79.0% vs. 58.2%).

3.4 Discussion

This study aimed to evaluate the construct validity of a newly adapted 13-item scale among adolescent boys from predominantly Black neighborhoods and determine this scale’s measurement invariance across race and gender. Our analyses resulted in an 11-item scale with three underlying factors to measure personal agreement with gender equitable attitudes, which demonstrated construct validity, and showed weak factorial invariance across Black and white race and configural invariance across gender.

Our initial 13-item scale, adapted from two existing scales (GEM Scale and AMIRS) and grounded in the experiences of Black adolescent boys, strengthens the psychometric evidence base.^{51,128} In the final 11-item scale, the first factor is comprised of five items (all reverse-coded) that pertain to emotional and sexual stereotypes about boys and girls (e.g., “Guys should sleep

with as many girls as possible” and “If a guy tells people his worries, he will look weak”). The second factor is comprised of four items that represent a man’s “moral code” related to respect and responsibilities (e.g., “A guy takes responsibility for his actions” and “I can respect a guy who backs down from a fight”). The third factor only consists of two items (“Guys should only have sex with girls” and “It bothers me when a guy acts like a girl”), which perpetuate heteronormative behaviors, and allude to both homophobia and a lack of acceptance of gender fluidity.

The original AMIRS scale by Chu et al.,¹²⁸ from which five of our initial 13-item scale’s items were derived (Items 2, 6, 7, 9, and 10), was shown to be a unidimensional construct among a predominantly white sample of U.S. middle school (n=147) and high school (n=31) students. In contrast, in both the EFA and CFA among the Manhood 2.0 participants, which was almost 78% Black and only 3.7% white, we see that these five items fall into more than one factor. While we cannot attribute this to racial/ethnic differences alone, our differing results may reflect the unique cultural, historical, and societal contexts that contribute to Black adolescent boys’ views on “manhood” and “masculinities.”¹³⁴⁻¹³⁷ Hewitt¹³⁴ provided further context to these differences by discussing the intersection of gender and race in the development of Black male identity within the U.S. The complexity of the construct of Black masculinity is proposed as both a rejection and internalization of hegemonic norms.^{134,137} While this rejection of mainstream traditional male roles by Black adolescent boys may underlie the differences we see by race in our analysis, it is the internalization of these norms that may contribute to the scale’s measurement invariance across Black and white populations.

In addition to the AMIRS, two of our scale’s items were derived from the original GEM Scale (Items 4 and 8). These two items were dropped in the GEM Scale validation study among 15-24-year-old men in Brazil, as they did not load strongly onto the two underlying factors

(“inequitable gender norms” and “equitable gender norms”).⁵¹ Similarly, these two items separated out in our analyses, indicating a possible third latent construct pertaining to adolescents’ homophobic and heteronormative attitudes important to measuring gender equitable attitudes among our populations. We found it particularly important to retain these items as homophobic attitudes have been shown to be one of the strongest predictors for future sexual violence perpetration.¹⁰⁴

There were two items that were removed by the study team from the final scale: “I would be friends with a guy who is gay” (Item 10) and “Guys put women and children first” (Item 13). Item 10 loaded strongly onto multiple factors, making it difficult to understand how this item was correlated with our underlying constructs. These results are consistent with recent findings from a psychometric evaluation of the “Man Box Scale”, which demonstrated construct validity among over 3,600 men aged 18-30 across the U.S., United Kingdom, and Mexico.¹³⁸ Hill et al.¹³⁸ removed a similarly worded item from the scale after showing that it did not load onto the unidimensional construct of the “Man Box” or harmful masculinities. As such, Item 10 may not be the most appropriate measure of personal homophobic attitudes. Similarly, Item 13 strongly cross-loaded onto multiple factors among the sample of adolescent girls. When it was removed, the scale’s model fit improved across all genders. This may represent a societal shift in gender norms and a rejection of the potentially antiquated notion of “putting women and children first.”

Given that we established at least configural invariance across race and gender, we were interested in exploring differences in the percent agreement of each item by race and gender as an exploratory analysis. Our results showed consistent evidence of more gender inequitable attitudes among Black adolescent boys compared to their white peers. This may be a result of several factors: 1) while we demonstrated weak factorial invariance, we did not have strong factorial

invariance and measurement error is still a possibility, 2) the majority of Black participants were from socially disadvantaged neighborhoods as opposed to white participants, and 3) there exist several theories about Black men's increased internalization of harmful societal stereotypes as a result of living in a systematically oppressive society, which impacts identity development.^{134,137,139}

When comparing adolescent girls and boys in our study (both predominantly Black samples), girls had significantly higher gender equitable attitudes across almost all items. This has interesting implications given that young Black women are particularly vulnerable to negative health and social outcomes due to their identities that lay at the crossroads of oppression, misogyny, and persistent gender inequities.¹³⁹⁻¹⁴¹ Our findings were similar to a recent cross-sectional study from a cohort of 1,691 adolescent boys and girls in India that found that girls were more likely to have higher gender equitable attitudes scores than boys.¹⁴² Although interrupting gender inequitable norms among boys and young men has proven promising, little is known about how further shifting these gender attitudes among girls will change violence victimization.⁵⁴ As more gender transformative programs are adapted and evaluated, we will gain important insight on how these attitudes are internalized, particularly among girls of color, and influence patterns of violence.

3.4.1 Limitations

Our study has limitations. First, our samples from Manhood 2.0 and Sisterhood 2.0 were from neighborhoods of concentrated social disadvantage, thereby making it difficult to disentangle the relationship between race/ethnicity and socioeconomic status thus limiting generalizability. Given sample size restrictions, we were unable to comment on other race/ethnicities beyond Black

and white, and were also limited in our ability to examine within group variability. Additionally, these data were collected from one geographic area within and surrounding Pittsburgh, PA. Finally, we only measured adolescents' personal endorsement of gender equitable attitudes (i.e., how much does each participant endorse a belief), and did not capture their assessment of perceived societal endorsement (i.e., how much does each participant believe that society, as a whole, endorses that belief). Future studies should investigate the difference between personal and societal beliefs and their impact on behavior change.

3.5 Conclusion

Given the advances in gender transformative programming among more diverse populations in the U.S., there is a need to simultaneously update the psychometric literature to measure gender equitable attitudes in different populations.^{50,127} We refined this 11-item gender equitable attitudes scale by adapting items to be culturally relevant and evidence-based through formative research and pilot testing. This psychometric evaluation led us to determine construct validity among a sample of Black adolescent boys and measurement invariance by race and gender. Our results highlight the importance of assessing for validity of measures when adapting programming across diverse populations. Further research with larger, more representative sample sizes will provide a better understanding of the association between gender equitable attitudes and violence victimization (and perpetration) among youth of color.

4.0 Family Planning Providers' Assessment of Intimate Partner Violence and Substance Use

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4.1 Introduction

Within the U.S., it is common for women to use family planning (FP) clinics—standalone clinics that provide preventive sexual and reproductive healthcare—as their primary, and sometimes only, point of healthcare.¹⁴³⁻¹⁴⁷ Recent studies have demonstrated that 70% of reproductive-aged women visit a FP clinic every year and 40% of FP patients use their FP clinician as a primary care provider.^{143,147,148} FP healthcare providers are therefore in a unique position to address other important and unmet needs related to women’s sexual and reproductive health, such as intimate partner violence (IPV) and substance use.^{3,145,149}

National estimates show that one in four women have experienced lifetime physical or sexual violence perpetrated by a partner or ex-partner.¹ Among FP clinic-based samples, the rate of IPV is as high as 50%.^{17,18,150} It is well-established that IPV can lead to myriad health consequences, including STIs and unintended pregnancy. IPV can also influence an individual’s choice and use of contraception.^{17,151} As such, several organizations have guidelines about how providers should discuss IPV with their patients.^{59,151}

For example, the 2014 Providing Quality Family Planning (QFP) Services Recommendations, which are a compilation of guidelines from the Centers for Disease Control and Prevention (CDC) and the U.S. Preventive Services Task Force (USPSTF), note that providers should screen women of reproductive age for IPV during preconception counseling.¹⁵¹ The American College of Obstetricians and Gynecologists (ACOG) guidelines offer further recommendations that extend beyond traditional screening (i.e., “yes” or “no” questions that require an individual to answer “yes” prior to receiving resources and information).⁵⁹ In a 2012 Committee Opinion, ACOG recommended that healthcare providers: 1) offer normalizing statements (i.e., “we talk to all of our patients about safe and healthy relationships”⁵⁹) and review

confidentiality prior to discussing IPV, 2) assess for IPV with all patients regardless of provider suspicion level, and 3) provide educational resources regardless of disclosure. While the QFP Recommendations still promote traditional screening,¹⁵¹ there is evidence of the effectiveness of universal education approaches more in line with the ACOG guidelines.^{59,152,153} Universal education is centered around equity-based frameworks, which encourage clinicians to discuss IPV with and provide resources to all patients.^{18,152,153} This approach, provided it is conducted in an empathetic and nonjudgmental manner, is also supported by patient-centered qualitative literature.^{63,64}

Guidelines also exist on the importance of assessing for substance use, including tobacco, alcohol, and other drugs, in the context of sexual and reproductive healthcare.¹⁵¹ The QFP Recommendations suggest that providers screen women of reproductive age for tobacco, alcohol, and drug use during preconception services and for tobacco use only during contraceptive services. Substance use, like IPV, is significantly associated with adverse health consequences.¹⁵⁴⁻¹⁵⁶ Furthermore, substance use plays an influential role in an individual's care-seeking behaviors and use of contraception.^{145,151} For example, Hall et al.¹⁴⁵ demonstrated that individuals who used substances sought sexual and reproductive healthcare more often compared to those who did not use substances. Better understanding substance use behaviors will allow for more tailored and effective contraceptive counseling. Studies have shown patient acceptability in providers' substance use assessments.^{147,157}

Over the past decade, there has been increasing awareness of the strong association between IPV victimization and substance use, which may further exacerbate poor health outcomes.^{32,36,48,158} IPV exposure may increase use of substances as a coping strategy and substance abuse may increase risk for exposure to violence.³⁶ Furthermore, researchers have

described a phenomenon known as substance use coercion, which includes controlling partner behaviors such as interfering with an individual's substance use disorder treatment, pressuring or forcing an individual to use substances, or reporting or threatening to report a partner's substance use to force that individual to do something against his or her will.^{48,159} One national study of over 2,500 women who had experienced IPV noted a 43% lifetime prevalence of substance use coercion.⁴⁸ However, the aforementioned guidelines on IPV and substance use currently exist in siloes, offering limited advice to healthcare providers about how to address these often co-occurring problems.

Despite the guidelines and what we know about the ways in which IPV and substance use intersect, little is known about whether, what, and how FP providers are asking their patients about IPV and substance use. Using content analyses of audio-recorded clinical encounters, our study aimed to 1) characterize whether and how FP clinic providers assessed for IPV and substance use and 2) explore the extent to which providers combine assessments for IPV and substance use.

4.2 Methods

This qualitative patient-provider communication analysis was embedded within a randomized controlled trial conducted at four FP clinics in Western Pennsylvania. A detailed description of the parent study design can be found elsewhere.¹⁶⁰ In short, the parent study aimed to assess the differences in frequency of IPV assessments between clinicians who received interactive training on patient-provider communication skills (e.g., N-U-R-S-E, ask-tell-ask)¹⁶¹⁻¹⁶³ compared to those who only received general didactic training on IPV. Providers in the intervention arm engaged in role-playing exercises with trained actors (simulated patients) to

strengthen their communications skills in IPV-specific contexts.¹⁶⁰ The unit of randomization was the clinic (two intervention, two comparison). In both arms, clinicians received training on IPV awareness, which stressed the importance of universal education and resource provision as opposed to traditional screening paradigms. Regarding universal education, study staff trained providers to introduce the topic of healthy/unhealthy relationships to all patients in a normalizing way, inquire if this is a concern of the patient in a non-judgmental tone (i.e., “is any of this a part of your story?”⁶⁰), provide educational resources to all patients, and respond in a validating and empathetic way if the patient disclosed IPV experiences.¹⁵³ This approach is in direct response to patient-centered qualitative studies that demonstrated patients’ desires for knowledge and resources without necessitating disclosure on their part.^{63,64,68} In order to help facilitate universal education, healthcare providers in both arms received wallet-sized safety cards to distribute to their patients with important facts related to healthy relationships and key hotline numbers and websites.^{150,153,160} Neither arm received any training specific to substance use assessments or communication.

Patient-provider encounters were audio-recorded to better capture what providers were specifically saying to their patients. For this analysis, we sought to describe the content, style, and approach with IPV and substance use assessments (e.g., how providers ask questions and start conversations) in all the recorded encounters. Given the null results of the parent trial, we grouped all visits together for analyses.¹⁶⁰

All providers from participating family planning clinics were eligible. Patient eligibility criteria included: (1) female, (2), 18-29 years of age, (3) English-speaking, (4) having plans to remain in the area for two months following the visit, (5) willing to provide contact information,

and (6) attending the visit alone. All patients who consented to the parent study (and met the above criteria) were asked to participate in an audio-recorded visit with their healthcare provider.

Research staff placed a digital voice recorder in the exam room prior to arrival of the reproductive healthcare provider. They collected the recorders after the encounter was completed and uploaded audio files to a secure server. Visits lasted anywhere between 7-115 minutes, and most visits were between 10-40 minutes. All audio-recorded data were collected between December 2014 and August 2015. All participating providers and patients provided written informed consent. The University of Pittsburgh Institutional Review Board approved all study procedures.

4.2.1 Intimate Partner Violence

In 2015, a team of research assistants listened to each audio-recording in full, transcribing verbatim the parts of the visit where IPV was discussed. All transcriptions were quality checked. Two researchers (ALH, SZ) coded each transcript separately with the assistance of ATLAS.ti (Version 7). The preliminary codebook was based on a prior study conducted on IPV-related patient-provider communication.¹⁶⁴ As the two researchers began coding independently, they applied additional interpretive codes and met to discuss how they defined and applied them, updating the codebook as needed. Throughout the coding process, they continued frequent meetings to discuss any changes.

4.2.2 Substance Use

In 2019, a team of research assistants re-listened to the audio-recordings in full and transcribed verbatim the parts relevant to tobacco use, alcohol use, and/or other drug use (adding to the previously transcribed portions about IPV). A separate researcher (ALH) performed quality checks on 25% of the transcripts. Two researchers (ALH, SMW or JT) independently coded each transcript using a previously defined codebook from studies conducted to assess substance use screening among obstetrician clinics,^{165,166} adding codes in an iterative and collaborative manner. Researchers coded the substance use transcripts with the assistance of Dedoose (Version 7.0.23).

4.2.3 Intimate Partner Violence and Substance Use

For both IPV and substance use, we conducted a content analysis to review whether any assessment occurred and if so, how the providers asked the assessment questions (e.g., style and timeframe), how they framed the questions, how they responded to positive disclosure, and the context in which they asked the questions. Inter-coder agreement was calculated manually using Cohen's kappa coefficient for the presence/absence of IPV discussions and screening for tobacco, alcohol, and other drug use.^{167,168}

4.3 Results

A total of 18 providers (eight nurse practitioners, 10 medical assistants) participated in the study and we recorded and coded 98 patient-provider encounters. Most patient participants

identified as white (79.6%), college-educated (65.3%), and being in a relationship/dating one person (62.2%) (Table 8). The mean age was 22.6 years old. In addition, most participants sought care for contraceptive methods other than condoms (33.3%), STI testing or treatment (14.6%), or an annual check-up (11.5%). The final Cohen’s kappa statistic ranged from 0.91-1.0 for the presence/absence of IPV-related discussions and 1.0 for the presence/absence of substance use assessments, demonstrating excellent inter-coder agreement.¹⁶⁸

Table 8 Patient Demographic Characteristics

Patient Characteristics (n=99)	Total % (n)
Race	
Asian	1.0% (1)
Black/African-American	12.2% (12)
Hispanic or Latina	2.0% (2)
White	79.6% (78)
Multiracial/other	5.1% (5)
Age, mean (SD)	22.6 (0.36)
Education	
Less than 12 th grade	16.3% (16)
Finished high school	18.4% (18)
Some college	38.8% (38)
College degree or higher	26.5% (26)
Relationship status	
Single	28.6% (28)
Dating more than one person	1.0% (1)
In a serious relationship/dating one person	62.2% (61)
Married	8.2% (8)
Reason for visit ^a	
Annual check-up	11.5% (11)
Contraception other than condoms	33.3% (32)
STI test or treatment	14.6% (14)
Pregnancy test/options counseling	6.3% (6)
Painful urinations/sores/pain around genitals	1.0% (1)
Irregular bleeding	3.1% (3)
Abdominal pain/pelvic pain	4.2% (4)
Abortion (in clinic today for procedure or follow-up)	1.0% (1)
Other	4.2% (4)

^a Patients were allowed to select all that apply.

4.3.1 Intimate Partner Violence

Among the 98 recorded encounters, almost all (90/98, 91.8%) contained discussions related to IPV, healthy relationships, or other controlling partner behaviors (e.g., reproductive coercion). FP provider communication on these topics had at least one of three components—provider inquiry/screening for IPV, provision of IPV awareness or education, and responses to IPV disclosure. In 68 visits (69.4% of total visits), providers offered universal education through a wallet-sized safety card. In 83 encounters (84.7% of total visits), providers asked patients traditional “yes/no” IPV screening questions (i.e., “Do you feel safe living at home?”). Despite an emphasis on universal education, in 14 of these 83 encounters (16.9%), providers asked isolated screening questions with no efforts to normalize the conversation or provide resources. In seven encounters, FP patients disclosed IPV—six were in response to provider assessment and only one disclosure was spontaneous before the provider initiated any form of IPV communication.

As previously mentioned, one of the key goals of the trainings in both the intervention and control groups was to emphasize universal education of IPV; providers should be discussing IPV with all patients and offering resources regardless of disclosure.¹⁶⁰ Among the audio-recorded encounters, 71 patients received the safety card and 68 patients received a description of the safety card, as demonstrated by the following example:

“[The safety card] does talk about relationships, healthy relationships. If you look at this little thing, it talks about something: people don’t realize that they’re in controlling, unsafe relationships because they don’t understand how things can start with minor kinds of events and activities, and progress where people are telling you what you can do and when you can do it, even though they may not be physically hurting or harming you.”

In offering the safety card, many providers included statements that clarified that this information was being given to everyone. This type of normalization occurred in 45 encounters

(e.g., “We do want to make sure that everybody is aware of healthy relationships”). These normalizing statements often included suggestions or encouragement for patients to pass along the safety cards and expand awareness of IPV and existing resources, such as:

“I’m gonna give you an information card. We give these out to everybody. Anybody who walks through this door gets one. If you don’t need it, awesome. If you need it for a friend, that would be helpful; if you know anybody you would give it out to. It’s just something we give out, and it’s helpful to our patients because we care about you. If you have any questions, they’ll talk to you on the phone.”

Among those 83 patients who were asked screening questions of IPV, 43 were asked about current relationships only, 13 were asked about past abuse only, while 27 were asked about both current and past experiences. Providers screened for IPV with either direct (50/83, 60.2%) or indirect (58/83, 69.9%) questions. By asking directly, clinicians explicitly used terms such as “abuse” (e.g., “Have you ever been physically, emotionally, or psychologically abused at all?”). By asking indirectly, providers used assessed for general safety concerns (e.g., “Do you feel safe at home and in your relationship?”). Additionally, in 25 encounters (30.1%), providers used both indirect and direct styles, generally using indirect questions to begin the conversation and then continuing to more specific questions.

Another aspect of IPV screening communication was providers’ use of leading or grouped questions. Leading questions refer to those in which the provider indicated an expected response or framed the question more as a confirmation of an assumed answer (e.g., “No problems with domestic violence, no one’s hurting you?”). This occurred in 23 of 83 encounters (27.7%) with IPV screening questions. Grouped questions refer to when the IPV inquiry occurred among a cluster of related questions without any pauses between to allow the patient to answer each question individually. Of the 16 encounters in which these questions occurred, IPV was mostly

grouped with other types of abuse (e.g., “Are you or have you ever been a victim of child abuse, or were you ever abused as an adult?”).

Finally, as previously mentioned, only seven patients (7.1%) disclosed experiences with IPV, all of which were with previous partners (i.e., not currently experiencing IPV). In all seven cases, providers responded with follow-up questions. Most commonly, providers asked whether the patient received counseling and assessed if the patient was still with the partner. Responses also included empathetic and validating statements (e.g., “Nobody has a right to do anything to you that you don’t want them to”). In some cases, providers’ response to the patient’s IPV disclosure was considered a missed opportunity for further inquiry and counseling:

Provider: “Ever have a history of child abuse or any domestic violence?”

Patient: “Domestic violence, yes.”

Provider: “Ok.”

Patient: “With my ex-husband.”

Provider: “Are you in counseling at all?”

Patient: “I am in counseling once a week, every week, at [name of place].”

Provider: “And, do you drink caffeine at all?”

4.3.2 Substance Use

Among these 98 recorded encounters, providers screened for tobacco use in 70 visits (71.4%). In all 70, patients were asked about current use; in only four were they also asked about past use. Leading questions were common (n=30, 42.9%). Providers varied in their response to disclosure of tobacco use. Of those who disclosed past or current tobacco use, providers asked follow-up questions to obtain more information (e.g., “How much do you smoke?”) in 16 encounters (55.2%). Some providers offered affirming comments, as demonstrated by the following example:

Provider: “Do you smoke, honey?”

Patient: “I quit.”

Provider: “Alright, good for you! Good for you. How’d you quit?”

In only one encounter did a provider offer smoking cessation resources to a patient. In three encounters, providers spent time to educate patients on the adverse health effects of smoking. Other providers missed opportunities to provide counseling or education.

Alcohol use screening was much less common than tobacco use (n=17, 17.3%). Among 14 encounters (82.4% of all alcohol discussions), providers assessed current use only. In two visits, the timeframe was unclear (e.g., “alcohol?”). Leading questions were uncommon. A total of 12 patients disclosed drinking alcohol. Of those who were asked and disclosed alcohol use, providers asked follow-up questions in six cases (50.0%). The two most common follow-up questions included: “Is it social?” and “How often?”. There were no cases in which the provider offered education or resources with regards to alcohol use.

Similarly, drug use screening was uncommon (n=17, 17.3%). In 10 encounters, providers assessed for current drug use. Among those, eight also involved questions about past drug use. Only two patients disclosed past drug use. In six encounters, providers combined alcohol use and drug use screening (e.g., “do you feel like you have any issues with drugs or alcohol?”). Unlike screening for tobacco or alcohol use, providers often asked patients about their partners’ use of drugs. For example, in 18 encounters, the provider explicitly asked whether the patient had or has a partner who uses intravenous (IV) drugs. In five cases, the providers only asked about the patient’s partner and did not screen the patient for drug use. Other common questions included whether the patient shared needles (n=13) or whether she misused prescription drugs (n=7). In the two cases where a patient disclosed past drug use, the provider was already aware based on her medical records and tailored the conversation to reflect that, assessing for more details about treatment. Both patients also had previous partners who used drugs as well.

4.3.3 Intimate Partner Violence Integrated with Substance Use Assessment

It was common for providers to ask about substance use and IPV directly before or after one another. IPV assessments frequently followed tobacco use screening (n=26), in addition to conversations about birth control, STIs or other components of the patient's sexual and medical history. After IPV assessments, providers often discussed contraception or other sexual and reproductive health questions. In 10 cases, providers took vitals and in another 10 cases, providers asked for urine samples, blood draws, or STI testing immediately after IPV assessments. In 12 encounters, the providers discussed IPV either immediately before or during a physical exam (e.g., gynecological exam, breast exam). Regarding other substances, questions about alcohol use were typically preceded by tobacco use and prescription drug misuse screening and followed by IPV assessments or questions about work hazard exposures. The most common questions before and after drug use screening involved partners' STI-related symptoms and other substance use (i.e., tobacco, alcohol), respectively.

In one encounter in which a patient disclosed lifetime IPV and drug use, her provider explored how her experiences with substance use and IPV were related:

Provider: "Good, what about as far as any sexual behavior during drug use or anything like that, has that been a problem for you in the past or is that something that you have dealt with?"

Patient: "It's something that I've dealt with, my ex-boyfriend he's on heroin really heavily and that was the only time he ever wanted to do anything intimate like that."

Provider: "Okay."

Patient: "We actually broke up because of it because I got really scared the one time because he held me down and said that he was gonna come inside me and get me pregnant or try to get me pregnant and like I got really scared and like I just like didn't want that to happen and like then something be the matter with anything."

Provider: "Right. Like with the baby."

Patient: "So like we broke up and stuff that was the only thing."

Provider: "Okay. Did he force you to use [drugs] or was that something he just did?"

Patient: "Um...No."

Provider: "Or did you consensually do it or did you do at all?"

Patient: “I didn’t really consensually do it. The first time it happened it was not my choice.”

4.4 Discussion

This analysis offers direct insight into patient-provider discussions on IPV and substance use during clinic encounters in the FP setting. The trained providers in our study demonstrated willingness to talk with their patients about IPV: many asked patients “yes” or “no” screening questions about IPV and provided universal IPV education. Regarding substance use, screening for tobacco use occurred frequently but screening for alcohol and drug use was relatively rare. FP providers’ assessment styles varied, but several common practices emerged. First, providers often asked IPV questions either directly before or after substance use. Second, they frequently asked about current IPV and substance use only without inquiring about past experiences. Third, leading questions were common. Finally, in response to patients’ disclosures of IPV or substance use, with a few exceptions, many offered validating and empathetic statements or inquired further to elicit more details.

Despite an emphasis on universal education in both intervention and control groups, IPV screening remained more common than universal education. The most common form of screening was through indirect questions, generally different iterations of “do you feel safe at home?”, which research has demonstrated poor sensitivity in detecting women’s experiences with violence.¹⁶⁹ When providers were more explicit in naming violence, IPV was often grouped with other types of abuse (e.g., child abuse or abuse by a non-partner) and asked as a multi-pronged question. Survey research and communications literature demonstrate that these types of questions are often confusing to respondents, increasing the probability of inaccurate responses.^{170,171} However, both

direct and indirect screening questions were often supplemented later in the visit with conversations related to the wallet-sized safety card, which contained relevant resources. This provides some preliminary evidence of the utility of resource aids to help facilitate conversations between healthcare professionals and their patients. These publicly available resources provide examples of framing statements (Table 9).

Table 9 Examples of Provider IPV Assessment Skills from the Literature

Provider Assessment Skills	Examples	Source
Framing Statements	“We’ve started talking to all of our patients about safe and healthy relationships because it can have such a large impact on your health.”	ACOG Committee Opinion No. 518 ⁵⁹
	“Because relationships can affect our health, I give [resources] to all patients in case you or someone you know needs it. It talks about healthy relationships and what to do if your relationship is not healthy. Take a look...Is any of this part of your story?”	Futures Without Violence, CUES: Addressing Domestic and Sexual Violence in Health Settings ¹⁷²
Supportive Statements after IPV Disclosure	“Thank you for sharing this with me, I am so sorry this is happening. What you’re telling me makes me worried about your safety and health...”	
Warm Referral to Resources	“Would you like me to share some options and resources that folks with similar are often interesting in hearing about? I would be happy to connect you if you are interested.”	
Incorporating Substance Use into IPV Assessments	“Sometimes, people who are being hurt by someone in their life or who have been hurt in the past use alcohol or other drugs to help them cope or get through the day. This includes over-the-counter, prescription, and other kinds of drugs that may not be legally available. Many people report their partner makes them use alcohol or other drugs, makes it hard for them to stop or prevents them from stopping, uses their alcohol or other drug use as a way to control them, or does other hurtful things related to their alcohol or other drug use. Does this sound like anything you might be experiencing?”	Coercion Related to Mental Health and Substance Use in the Context of Intimate Partner Violence: A Toolkit for Screening, Assessment, and Brief Counseling in Primary Care and Behavioral Health Settings ¹⁵⁹

A total of seven patients disclosed IPV, despite previously published quantitative results from the same population showing a lifetime IPV of 44.7%.¹⁶⁰ In addition, only one patient disclosed spontaneously. These results support other studies that indicate patient IPV disclosure is unlikely if providers do not raise the topic, and is consistent with the myriad studies documenting patient-reported barriers to IPV disclosure.^{164,173} Patients are often fearful of retribution from their partners, judgement from their providers, and legal repercussions (e.g., losing their children), among other factors.^{63,64,68} When patients do disclose, it is important that providers have training on how to offer supportive statements (Table 9). To help facilitate this process, guidelines advise that FP clinics formally partner with local domestic violence agencies.¹⁵¹

Our findings regarding substance use communication illustrates that providers' screening varied by substance with providers more likely to ask and discuss tobacco use. This is consistent with other research which has shown that providers feel more comfortable and competent discussing tobacco use compared to other substances.^{174,175} These findings are also in line with QFP Recommendations, which note that FP providers should assess for tobacco use during both preconception health services and contraceptive services, and only assess for alcohol and other drug use during preconception health services.¹⁵¹ ACOG provides specific verbiage through guidelines endorsing quick educational interventions, such as the five A's (Ask, Advise, Assess, Assist, Arrange) for smoking cessation.¹⁷⁶

More research is needed to better understand how FP providers see their role in substance use screening, education, and counseling, particularly given the changing landscape of substance use in the U.S. (i.e., the opioid epidemic). Like IPV, providers face multiple barriers in assessing for substance use. Qualitative literature from the primary care setting has demonstrated that despite providers' knowledge that substance use is detrimental to health and should be screened for,

barriers such as limited training, time, and resources (particularly related to addiction treatment) prevent them from doing so.¹⁷⁷ In an effort to address this in the FP setting, there has been emerging evidence about the feasibility of SBIRT (Screening, Brief Intervention and Referral to Treatment). Hettema et al.¹⁴⁷ noted high rates of patient acceptability of SBIRT among almost 200 women's health clinic patients. In addition, Appel et al.¹⁵⁷ discussed the potential feasibility of implementing SBIRT in an abortion clinic, stating patients' high comfort levels with being asked about substance use. Finally, Gotham et al.¹⁷⁸ demonstrated favorable FP provider opinions about implementing SBIRT. Future research should focus on the effectiveness of quick screening and intervention techniques in improving implementation and quality of substance use assessments, as well as their impact on substance use over time, specific to the FP setting.

Finally, while we intended to examine how providers assessed for both IPV and substance use as potentially co-occurring and related phenomena, we only found one example in which a provider assessed for whether a patient's partner influenced her substance use. In this case, the patient's history of substance use was known. Providers often asked about IPV and substance use consecutively during a patient's medical history but the questions were siloed and unrelated. To assist providers in having these conversations about the intersection between IPV and substance use, Warshaw et al.¹⁵⁹ published a toolkit for providers to incorporate substance use coercion as part of IPV assessment (Table 9).

Warshaw et al.¹⁵⁹ also provided adapted questionnaires, such as CAGE ("cutting down"/"annoyed"/"guilt"/"eye-opener"; a well-known substance abuse screening tool), to include substance use coercion. The validity of these questions, their acceptability in the FP setting among patients and providers, and how substance use coercion can be incorporated into the universal education IPV approach warrant further research.

4.4.1 Limitations

While the sample included almost 100 patient encounters, there were only 18 providers (and only two types of providers), limiting generalizability. Furthermore, these providers all received training in IPV awareness, likely contributing to the relatively high proportion of visits in which IPV assessment occurred, making it difficult to extrapolate findings to other FP settings. However, providers did not receive substance use training, thereby making these substance use communication findings a more accurate baseline assessment. These were also single recorded encounters between participating providers and patients. Thus, whether IPV or substance use conversations occurred in prior or subsequent visits was not known.

4.5 Conclusion

Findings from this study underscore the need for strategies to support implementation of IPV and substance use assessments in the FP clinic setting. However, these results can also be used to inform policy and practice recommendations among other primary care settings in which patients seek sexual and reproductive healthcare services. Given the importance of both IPV and substance use to health and wellbeing, there is a need for feasible interventions to help providers discuss both IPV and substance use in an integrated manner with their patients. Second, these interventions should focus on key communications strategies that offer providers tools (including scripts) to respond to disclosure of stigmatized health conditions. Finally, more research is needed to determine the effectiveness of resource aids in facilitating these potentially challenging conversations.

5.0 Conclusions

Intimate partner violence (IPV) and sexual violence (SV) are highly prevalent among adolescents and young adults and lead to myriad lifelong and intergenerational health consequences. The research in this dissertation aimed to better inform IPV and SV prevention and response efforts by further characterizing common risk factors and examining the current response of healthcare providers. Overall, this research addressed several important gaps in the literature. In papers 1 and 2, we further disentangled the complex associations between IPV and SV and both alcohol use and gender inequitable attitudes, respectively. In these papers, we highlighted the importance of harmful societal and cultural norms that condone violence perpetration as a root cause of IPV and SV. In papers 1 and 3, we provided insight on the intersection between IPV and SV and substance use, noting that substances are often used as a coping mechanism among women who have experienced trauma. Furthermore, primary care providers need access to resources and training that allow for integrated discussions with their patients.

More specifically, in paper 1, we used structural equation modeling to investigate the bi-directional longitudinal associations between SV victimization and alcohol use. Among care-seeking college students, we demonstrated a clear directional link between SV victimization and subsequent alcohol use, including binge drinking. We failed to demonstrate that same directional link between alcohol use and subsequent SV victimization. By using structural equation modeling, we were able to hold past behaviors constant and minimize measurement error compared to other longitudinal statistical models. These findings contradicted commonly cited hypotheses that state that individuals who drink alcohol, and particularly those who engage in binge drinking, are more

likely to be victimized by violence. Instead, these individuals may be using alcohol in response to their experiences with violence.

In paper 2, we psychometrically evaluated a scale used to measure gender inequitable attitudes among adolescent boys and girls participating in gender-transformative programs to reduce IPV victimization and perpetration. We derived a final 11-item scale with three underlying factors that explored “emotional and sexual stereotypes in relationships”, a man’s “moral code”, and “heteronormativity.” This factor structure proved to have construct validity among a sample of predominantly Black adolescent boys, weak factorial invariance across Black and white race, and configural invariance by male and female gender. We also demonstrated that individuals who endorsed more equitable gender attitudes had lower odds of violence perpetration. These findings highlight the importance of assessing for construct validity when applying measurement tools to new populations.

In paper 3, we used audio-recordings of patient-provider encounters among family planning clinics to analyze if and how providers were discussing IPV and substance use with their patients. Through content analysis, we discovered that providers frequently offered IPV education, facilitated through a small wallet-sized safety card. We also noted that providers commonly assessed for tobacco use, but not alcohol or drug use. IPV and substance use discussions occurred in siloes, except in one case where a provider asked about a patient’s partner’s influence on her substance use. This insight into current practices provided a “baseline” assessment allowing for more targeted interventions to improve the way in which providers communicate both IPV and substance use with their patients.

5.1 Programmatic and Clinical Implications

The research in this dissertation has several programmatic and clinical implications. In paper 1, we provided clarity on the directionality of the longitudinal relationship between SV victimization and alcohol use. By demonstrating that SV victimization leads to future alcohol use, our findings reinforced the validity of the “self-medication hypothesis” in which individuals use substances to cope with traumatic experiences. Programs that help support survivors of SV need to do more to assess for problematic substance use and strengthen healthy coping skills. Programs that help support individuals with substance use should assess for prior and on-going trauma to better understand how an individual’s substance use may be linked to that trauma. Overall, there is a clear and strong need for improved integration of services. These implications are further supported by the results from paper 3. While many providers are assessing for both IPV and substance use, these conversations are isolated with limited acknowledgement of their intersecting nature. Future healthcare training programs for family planning and other primary care providers should offer education about how IPV and substance use are related and resources for providing integrated assessments.

By demonstrating that alcohol use does not lead to future SV victimization, we can understand why programs targeting binge drinking as a means to reduce SV victimization have resulted in limited effectiveness. These interventions, which operate under the assumption that individuals who drink alcohol are putting themselves at increased risk for violence, may also have unintended consequences in further perpetuating “victim blaming” beliefs. Future prevention interventions should target other possible root causes for violence, such as gender inequitable attitudes, and investigate the larger sociocultural context around drinking, particularly among college students.

Prior to implementing such programs, however, we must be mindful in how we are monitoring and evaluating success. In paper 2, we highlighted the research that has demonstrated the link between violence perpetration and gender inequitable attitudes and also noted how insufficient psychometric evaluation of measurement tools can lead to inaccurate interpretations of results. We provided an 11-item scale for future programs to use among similar populations to assess for gender inequitable attitudes, as well as a general framework for future programs to use to validate the scale among different populations.

5.2 Future Research Directions

Future research should make efforts to capture the complexity associated with IPV and SV by using frameworks, such as syndemics, which accounts for how two or more intersecting phenomena influence each other over time and interact to impact health outcomes. For example, how are SV victimization and alcohol use interacting with one another to impact other health outcomes over time? Gaining more knowledge on the interaction of SV (and other forms of violence victimization) with alcohol use (and other substances) will help inform how best to integrate future interventions to maximize benefit on health outcomes. In addition, there is a need to further contextualize these associations through investigating potential mediating and moderating factors such as harmful societal norms, including gender inequitable attitudes. Finally, more research is needed to develop and assess relevant measurement tools among diverse populations and evaluate their feasibility and acceptability in different research and clinical contexts.

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