SEXUAL EMPOWERMENT AND STIGMA AMONG YOUNG BLACK MEN WHO HAVE SEX WITH MEN: HEALTHMPOWERMENT.ORG, A MOBILE PHONE OPTIMIZED ONLINE INTERVENTION TO REDUCE SEXUAL RISK BEHAVIORS

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A dissertation submitted to the faculty at the University of North Carolina at Chapel Hill in partial fulfillment of the requirements for the degree of Doctor of Philosophy in the Department of Health Behavior in the Gillings School of Global Public Health.

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ABSTRACT

Seul Ki Choi: Sexual Empowerment and Stigma among Young Black Men who have Sex with Men: healthmpowerment.org, A Mobile Phone Optimized Online Intervention to Reduce Sexual Risk Behaviors
(Under the direction of Lisa Hightow-Weidman)

Young Black men who have sex with men (YBMSM) in the United States accounted for more new HIV diagnoses than any other subgroup by race, age, and sex. Profound levels of stigma and marginalization contribute to engagement in sexual risk behaviors and HIV infection among YBMSM explains these disparities. Interventions addressing discrimination and stigma through empowerment of marginalized groups have been shown to reduce HIV infection rate among disproportionately impacted groups. Thus, investigating both empowerment and stigma and defining their relationship with sexual risk behaviors among YBMSM is an important pathway for reducing HIV among this population. These relationships will be explored using data collected from 474 YBMSM participating in randomized controlled trial of a theory-based online intervention optimized for mobile phones, healthMpowerment.org (HMP). Multiple quantitative methods, including confirmatory factor analysis, latent profile analysis (LPA), logistic analysis, and zero-inflated Poisson models were used to test hypotheses.

In Aim 1, the sexual empowerment scale (SEMS) was developed. The SEMS was found to consist of six sub-constructs: emotional support, self-efficacy for condom use, negative self-esteem, positive self-esteem, self-efficacy to refuse sexual behavior, and social norms for condom use. In Aim 2, YBMSM were classified into profiles based on the SEMS using LPA.

Based on four fit indices and theory, three sexual empowerment profiles were identified. Using logistic regression, a relationship between sexual empowerment profiles and stigma-related experiences was found. In Aim 3, we explored the moderating effect of the intervention on the impact of sexual empowerment profile and stigma-related experiences on sexual risk behaviors.

Findings from this dissertation help elucidate the complex relationships between sexual empowerment, stigma-related experiences, and sexual risk behaviors among YBMSM. In addition, the impact of an online intervention on reducing sexual risk behaviors by the degree of stigma-related experiences was identified. Future research is needed to develop interventions specifically targeting the identified constructs of sexual empowerment and examining intervention impact on sexual empowerment, stigma and sexual risk. Results could then be more widely applied to other preventative behaviors that could potentially be improved by increasing sexual empowerment, such as HIV testing, and ART/PrEP uptake and adherence.

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LIST OF ABBREVIATIONS

3MV	The Many Men, Many Voices
AIDS	Acquired Immune Deficiency Syndrome
ART	Anti-Retroviral Therapy
BMSM	Black men who have sex with men
CAI	Condomless anal intercourse
CASI	Computer-assisted self-interviewing
CFA	Confirmatory factor analysis
CFI	Comparative fit index
CI	Confidence interval
ECV	Explained common variance
HIV	Human Immunodeficiency Virus
HMP	healthMpowerment.org
IECV	Individual explained common variance
LPA	Latent profile analysis
MSM	Men who have sex with men
OR	Odds ratio
PrEP	Pre-Exposure Prophylaxis
PRV	Percentage of reliable variance
RMSEA	Root mean square error of approximation
RPB	Relative parameter bias
SEM	Structural Equation Modeling
SEMS	Sexual empowerment scale
STIs	Sexually transmitted infections
U.S.	United States
WRMR	Weighted root mean square residual
YBMSM	Young Black men who have sex with men

ωH	Omega hierarchical
ωHS	Omega hierarchical - specific

CHAPTER 1: PREFACE

Young Black men who have sex with men (YBMSM), between the ages of 18-30, are the group most disproportionately affected by HIV in the United States (U.S). However, behavioral risk factors alone do not explain disproportionate Human Immunodeficiency Virus (HIV) infection rates between Black men who have sex with men (MSM) and White MSM. Multiple studies have found no significant differences between Black MSM (BMSM) and White MSM in rates of engaging in condomless anal intercourse (CAI), engaging in exchange sex, having sex with HIV-positive partners, or using drugs. It has been suggested that the higher rates of HIV among BMSM may be explained by structural inequalities including stigma rather than individual behavioral risk factors alone.

Prior research has also acknowledged special issues that influence higher HIV rates and engagement in sexual behaviors among BMSM. These issues are critical to the design of HIV prevention interventions and include:

- Intersectionality driving health inequalities for individuals from multiple historically oppressed groups (e.g., racial and sexual minorities)
- Stigma due to sexuality, gender, race and ethnicity, and class
- The importance of empowerment in HIV prevention
- The need for theory-based interventions to address these issues.

However, current research is limited by several notable gaps that could inform future prevention efforts for YBMSM. These gaps are listed below:

- There is no current measure to quantify sexual empowerment among YBMSM
- There is a lack of studies exploring the multidimensionality of sexual empowerment
- Few quantitative studies have examined the complexity of stigma and discrimination and their effect on sexual risk behaviors among YBMSM
- There is a dearth of theory-based interventions that address the multidimensional nature of HIV risk for YBMSM and measure how these constructs impact intervention outcomes.

To fill these gaps, this study will apply empowerment theory and minority stress theory to better understand engagement in safer sex behaviors among YBMSM by (1) developing and validating a sexual empowerment scale (SEMS) by using confirmatory factor analysis (CFA), (2) classifying YBMSM into different profiles based on the multidimensional constructs of sexual empowerment (e.g., personal/perceived control (self-efficacy), self-esteem, emotional support and sense of community) and identifying the relationship between profile membership and stigma-related experiences by using Latent Profile Analysis (LPA), and (3) testing the differential effect of an online intervention (healthMpowerment.org [HMP]) on reducing sexual risk behaviors by sexual empowerment profile memberships and the degree of stigma-related experiences. The purpose of this study is to apply the theoretical constructs of empowerment theory and minority stress theory to a population of YBMSM participating in an online intervention to improve understanding of their engagement in sexual risk behaviors using

sophisticated quantitative methods, including, CFA, LPA, and moderation analysis. The specific aims of the research are to:

- **AIM 1:** Develop and validate a SEMS that includes safer sex-related personal/perceived control, self-esteem, emotional support, and social norms aspects, which are common constructs that impact sexual empowerment among YBMSM.
- **AIM 2:** Classify YBMSM into groups according to similar distributions on the sub-scales of the SEMS developed in Aim 1 and explore associations between demographic characteristics and stigma-related experiences (internalized homophobia, experienced sexual minority stigma, and racial discrimination) and sexual empowerment profile membership.
- **AIM 3:** Test the associations between stigma-related experiences and sexual empowerment profile, and the number of acts of CAI at baseline (Aim 3-1). Test the effects of baseline stigma-related experiences (Aim 3-2) and sexual empowerment profile (Aim 3-3) on the number of acts of CAI at 3-months moderated by participating in an online intervention, HMP (described in detail in Chapter 4).

This study uniquely combines multiple theories, concepts, and statistical methodologies that have not previously been used to explore sexual risk behaviors among YBMSM. Results of this study will develop and validate a novel SEMS for YBMSM, establish participant profile membership based on the constructs of sexual empowerment, identify determinants (e.g., stigma-related experiences) that distinguish profile membership, and delineate pathways that lead to a decrease in sexual risk behaviors among YBMSM. Moreover, the results of this study will elucidate the potential role and intervention targets for addressing both empowerment and

stigmatized stress as a means for reducing sexual risk behaviors and decreasing HIV infection among YBMSM.

CHAPTER 2: BACKGROUND AND SIGNIFICANCE

This chapter describes the Human Immunodeficiency Virus (HIV) epidemic in the United States (U.S.) highlighting the disproportionate impact that HIV has had and continues to have among Black men who have sex with men (BMSM). The special issues that contribute to high rates of HIV among BMSM such as intersectionality, stigma, and empowerment will be investigated. Lastly, this chapter will describe current gaps in HIV research among BMSM, including the limited number of efficacious interventions and expound upon the significance of the proposed research to fill the gaps.

HIV in the United States

HIV prevalence in the United States

In the U.S., there were 1.1 million people over the age of 13 living with HIV infection at the end of 2015 (Dailey et al., 2017). This number includes 162,500 people who had been infected but had not yet been diagnosed. There were 39,782 new HIV diagnoses in 2016, representing a decline of 5% from 2011 (CDC, 2018b). Among new HIV diagnoses in 2016, 67% were among gay and bisexual men (referred to in the proposal as men who have sex with men [MSM]), 24% were among heterosexuals, and 9% were people who inject drugs (CDC, 2018b). While 12% of the national population was Black and 18% was Hispanic/Latino, these groups accounted for 44% and 25% of HIV diagnoses, respectively, in 2016 (CDC, 2018b). Furthermore, people aged 20–29 years represented 14% of the national population, but accounted

for 37% of new HIV diagnoses (United States Census Bureau, 2016; Virginia Department of Health, 2016). In terms of geographical spread, HIV infection rates were highest in the South, followed by the Northeast, the West, and the Midwest. While 38% of the national population resided in the South (CDC, 2018c), this region accounted for more than 50% of new HIV diagnoses. Thus, in the U.S., HIV infection disproportionately impacts MSM, minorities, people aged 20–29 years, and people living in the South (CDC, 2018c).

The HIV continuum of care

The HIV continuum of care is a model that outlines the sequential steps or stages of HIV medical care that people living with HIV go through from initial diagnosis to achieving the goal of viral suppression. Viral suppression is critical at both the individual and public health level. Those who are virally suppressed are less likely to have HIV or other health related comorbidities and those who are virally suppressed do not transmit the virus to others during sexual intercourse, needle sharing, and from mother to child during pregnancy, birth, and breastfeeding (Lazarus et al., 2016). The series of steps in the continuum of care is as follows: (1) being diagnosed with HIV, (2) linking to care, (3) engaging and being retained in care, (4) initiating Anti-Retroviral Therapy (ART), and (5) achieving viral suppression (McNairy & El-Sadr, 2012). Monitoring the HIV continuum of care is an important strategy for tracking the epidemic. Despite the significant progress that has been made, people living with HIV are dropping off at every stage of the continuum. Undiagnosed cases of HIV infection account for 18% of the total HIV-infected population, and persons who have been diagnosed, but are not in care, account for 45% of cases. However, those who are aware of their HIV status are less likely to be involved in sexual risk behaviors than those who are unaware of their status (Skarbinski et

al., 2015). Therefore, most new infections can be attributed to HIV-positive individuals who are undiagnosed or not in care. Early HIV diagnosis; linkage to and retention in care; and adherence to ART are important steps for preventing HIV transmission in the U.S.

HIV among Black MSM in the U.S.

Men who have sex with men are disproportionately impacted by HIV infection in the U.S., as they accounted for 67% of all new diagnoses and 82% of new diagnoses among males in 2015. Black MSM (BMSM) are particularly impacted, accounting for 39% of the new diagnoses among all MSM (CDC, 2018a). Further, BMSM account for the highest rate of new HIV infections among Black males, comprising 79% of new HIV infections (CDC, 2017). Modeling studies have estimated that one in two BMSM will be diagnosed with HIV in their lifetime, and that with the current incidence rate remaining constant, 40% of BMSM would be HIV-infected by age 30 (CDC, 2016c; Matthews et al., 2016).

Disparities persist not only in new HIV infections but also along all stages of the continuum of care for BMSM compared to White MSM. A recent modeling study estimated that 24% of BMSM living with HIV were in care, compared to 43% of White MSM living with HIV, and 16% of BMSM living with HIV were virally suppressed compared to 34% of White MSM (E. S. Rosenberg, Millett, Sullivan, del Rio, & Curran, 2014).

Young Black MSM are particularly impacted by HIV

Persistent HIV infections among young BMSM (YBMSM) between 13 and 29 years of age are of particular concern in the U.S. Young BMSM represent an increasing proportion of HIV infections; new HIV infections among this subgroup increased by 48% in the U.S. from 2006 to 2009, and this was the only subgroup with increased incidence (Prejean et al., 2011). In

2016, YBMSM made up 57% of existing HIV infections in young MSM, compared to Whites (17%), and Hispanics/Latinos (26%) (CDC, 2016b).

Individual sexual risk factors among YBMSM

Compared to young MSM of other races, YBMSM are more likely to become sexually active at a younger age, which has been associated with an increased risk of HIV/sexually transmitted infections (STIs) and sexual risk behaviors (Lyons et al., 2012; Millett et al., 2012). YBMSM are also more likely to have older ($\geq$ 5 years) sex partners, thereby increasing their risk of exposure to partners with HIV infection (Berry, Raymond, & McFarland, 2007; Clerkin, Newcomb, & Mustanski, 2011; Hurt et al., 2010; Millett et al., 2012; Mustanski & Newcomb, 2013).

Individual risk behaviors do not explain HIV disparity among BMSM

Despite being disproportionately affected by HIV in the U.S., behavioral risk factors alone do not explain the disparity between BMSM and White MSM in HIV infection rates (Millett, Flores, Peterson, & Bakeman, 2007). Multiple studies have found no significant differences between BMSM and White MSM in engagement in condomless anal intercourse (CAI), general drug use, or injection drug use (Harawa et al., 2004; S. Rhodes, Yee, & Hergenrather, 2006; Sanchez et al., 2006; Siegel, Schrimshaw, & Karus, 2004; Sullivan, Nakashima, Purcell, & Ward, 1998; Thiede et al., 2003). It has been suggested that, rather than individual behavioral risk factors alone, the higher rates of HIV among BMSM may be explained by other sociocultural factors, such as less uptake of or access to HIV prevention and care services; dyadic/sexual network factors; and structural inequalities, including stigma (Millett, Peterson, Wolitski, & Stall, 2006; E. S. Rosenberg et al., 2014; Sullivan et al., 2014).

Compared to heterosexuals and White MSM, BMSM are less likely to know that they are infected with HIV (Dorell et al., 2011; Millett et al., 2011; Millett et al., 2007). Moreover, HIV-positive BMSM are less likely than their White counterparts to be prescribed ART (Millett et al., 2007), to adhere to ART, and to be virally suppressed (Millett et al., 2012). Black MSM are also more likely than other MSM to have Black sexual partners (Sullivan et al., 2014), which can increase their risk of HIV owing to the higher HIV prevalence among BMSM.

Rates of HIV infection among BMSM are also affected by broader social, cultural, and institutional factors. Black MSM are particularly vulnerable to HIV due to the intersection of their racial and sexual identities. Young BMSM experience profound levels of stigma and marginalization (K. Quinn et al., 2017) which have been shown to reduce engagement in protective sexual behaviors (Huebner et al., 2014). Empowering marginalized groups, including YBMSM, against discrimination and stigma could help reduce their disproportionate rates of HIV infection (Parker, Aggleton, Attawell, Pulerwitz, & Brown, 2002) by fostering emotional and social support in peer networks (Garcia et al., 2016; Hays, Rebchook, & Kegeles, 2003; Maiorana et al., 2016). Therefore, it is imperative to explore the factors that contribute to the high incidence of HIV in BMSM and develop methods for slowing or preventing new HIV infections in this population.

Special Issues that Contribute to HIV Risk among BMSM

Intersectionality

Intersectionality is a theoretical framework rooted in Black feminist scholarship that was developed by scholar Kimberlé Crenshaw in the 1990s (Crenshaw, 1991). Intersectionality is defined as “the notion that subjectivity is constituted by mutually reinforcing structural identities

including race, gender, class, and sexuality" (Nash, 2008). Intersectionality highlights how an individual's multiple identities, such as race, gender, sexual orientation, and socioeconomic status, intersect at the individual level to reflect interlocking systems of oppression at the macro sociopolitical level, such as racism, sexism, heterosexism, and classism (P. H. Collins, 2002; Crenshaw, 1991). Intersectionality has been shown to apply to people who are marginalized, such as racial/ethnic minorities, sexual minorities, those of a low socioeconomic status, and people with disabilities, and can help explain health inequalities among individuals from multiple historically oppressed groups (e.g., racial and sexual minorities). Intersectionality may inform our understanding of why individual risk factors do not explain the rate of HIV infection among BMSM, and provide a useful theoretical framework for informing future HIV prevention interventions that focus on the intersection of an individual's multiple identities and the social oppression that they face (Wyatt et al., 2013).

The core tenets of intersectionality are as follows: social identities are multidimensional and intersect with each other; people who are within a historically oppressed and marginalized group experience intersectionality; and micro-level social identities intersect with the macro-level socio-structural context to produce health outcome disparities (Bowleg, 2012).

Multidimensional social identities among BMSM

Black MSM have multiple micro-level identities, such as race, sexual identity, and (presumed) HIV status. A community-based participatory research study conducted using the photovoice technique revealed that YBMSM described their identity in terms of their race, sexual identity, HIV risk, individual factors (e.g., employment and interests), relationships, and community (Njiemoun, 2016). Racial and sexual identities are two fundamental social identities

among BMSM that may give rise to a range of health disparities. Racial identity is defined as "the significance and qualitative meaning that individuals attribute to their membership within the Black racial group within their self-concepts" (Sellers, Smith, Shelton, Rowley, & Chavous, 1998). Positive racial identity is associated with favorable psychosocial health outcomes (e.g., self-concept, self-esteem, and coping with stressful life events) (Walker, 2011). Strong sexual identity among BMSM refers to an ability to perceive one's sexual identity as legitimate, and not as secondary to a heterosexual identity, and to disclose that identity to others (Garnets & Kimmel, 1993). Social oppression may impede the ability of BMSM to develop positive attitudes toward their sexual identity (Crawford, Allison, Zamboni, & Soto, 2002). Further, BMSM may experience challenges in building strong racial and sexual identities because of social oppression and marginalization toward both Black and gay identities (Walker, 2011).

Historically marginalized BMSM

Black MSM are a highly marginalized and oppressed group in the U.S. Black men face unique and complex challenges, such as low socioeconomic status, high rates of incarceration, and unemployment (Harawa et al., 2016). Men who have sex with men in general, and BMSM in particular, face homophobia and stigma (Jeffries, Marks, Lauby, Murrill, & Millett, 2013). Black MSM are more likely to experience prejudice, discrimination, or even threats of physical violence based both on their status as Black men within the gay community and as gay or MSM in the Black community (Mays, Cochran, & Zamudio, 2004). This marginalization, arising from racism, poverty, and homophobia can contribute to an increased HIV risk (Mays et al., 2004). Marginalization leads to psychosocial health problems, low levels of social support, and

increased social isolation which have been associated with sexual risk behaviors through both (Stall et al., 2003).

Socio-structural context among BMSM

Socio-structural factors interact or influence individual identities. Heterosexism and racism are the most common socio-structural factors that impact BMSM (LaSala & Frierson, 2012). Heterosexism is a type of discrimination against those who do not identify as heterosexual, and it is based on the presumption that heterosexuality is the normal sexual orientation, while anything else (e.g., identifying as gay or bisexual) is abnormal (Jung & Smith, 1993). Racism is a form of discrimination based on the belief that one racial group should be favored over another (Garner, 2017). These multiple identities can lead BMSM to feel isolated from both the Black and the gay community. They neither experience full inclusion in the Black community due to potential heterosexism nor in sexual minority communities due to potential racism (Jamil, Harper, & Fernandez, 2009; Telander, Hosek, Lemos, & Jeremie-Brink, 2017). Moreover, BMSM often feel displaced from mainstream heterosexuals in U.S. society (Malebranche, Peterson, Fullilove, & Stackhouse, 2004). The intersection of racism and heterosexism in the lives of BMSM can lead to negative health outcomes, not only manifested in an increased incidence of HIV but also in an inability to enlist social support or navigate the HIV healthcare system (Haile, Padilla, & Parker, 2011).

Stigma

Stigma is defined as the intersection of labeling, stereotyping, separation, status loss, and discrimination in a context where one's personal characteristics do not align with the perceived norm of one's social unit or where power is exercised (Hatzenbuehler, Phelan, & Link, 2013;

Link & Phelan, 2001). Sexuality, gender identity, race and ethnicity, class, and fear of contagion and disease can all be sources of stigma for BMSM and contribute to health inequalities (Parker et al., 2002). Black MSM may experience more stigma than other populations at risk of HIV due to the intersection of race, sexuality, and (presumed) HIV status. A recent review of HIV and sexual health interventions for BMSM explicitly noted the importance of recognizing the role of stigma for developing successful interventions (Fish, Papaloukas, Jaspal, & Williamson, 2016). Therefore, researchers must better understand and measure the impact of stigma-related processes on HIV risk among BMSM and subsequently design and test interventions to address stigma and reduce risks.

Stigma and health outcomes

Stigma-related experiences can manifest as externalized stigma (e.g., discriminatory events in everyday life) or internalized stigma (e.g., internalized homonegativity). In BMSM, externalized and internalized stigma are related to various health outcomes, such as depressive symptoms, anxiety, substance use, eating disorders, suicidality, and engagement in sexual risk behaviors (Bogart, Landrine, Galvan, Wagner, & Klein, 2013; Bogart et al., 2011; Hatzenbuehler, O'cleirigh, Mayer, Mimiaga, & Safren, 2011; Maulsby et al., 2014; Williamson, 2000). According to Bogart and colleagues (Bogart et al., 2011), HIV-positive BMSM experiencing multiple stigmas are more likely to report depression and post-traumatic stress disorder than those who do not experience stigma. Moreover, a study conducted among 181 HIV-positive BMSM found that those who experienced greater racial discrimination were 30% less likely to have a high CD4 cell count, 20% less likely to report an undetectable viral load, and 30% more likely to visit the emergency department (Bogart et al., 2013).

Efforts to investigate the complexity of stigma around BMSM

Previous research supports the need for future HIV interventions to address the multiple and interrelated stigma that BMSM experience in their social lives and social structures (Wilson et al., 2016). Qualitative research has examined the complexity of these relationships, including how multidimensional identities, intersectionality, and social structures are correlated and operate to impact BMSM (Errol Lamont Fields et al., 2015; Garcia et al., 2016; Tobin, Cutchin, Latkin, & Takahashi, 2013). In-depth interviews were conducted with 20 BMSM (Tobin et al., 2013) to examine the relationship between stigma and social class. These men related experiences of stigma at school or work, which in some cases led to unemployment, or impacted their socioeconomic status and social class, and subsequently was associated with engagement in sexual risk behaviors. Another study involving three in-depth interviews with 31 BMSM and 17 community leaders in New York (Garcia et al., 2016) revealed a common theme among those interviewed in that psychosocial factors (e.g., self-worth, trust, love, guilt, and mood) and rejection from family and religious groups were related to engagement in sexual risk behaviors. Moreover, rejection from family and religious groups has been shown to influence both internalized homophobia and HIV stigma, leading to lower condom use self-efficacy (i.e., a person's ability to negotiate condom use with partners) and less adherence to Pre-Exposure Prophylaxis (PrEP) (Garcia et al., 2016). Fields and colleagues (Errol L Fields et al., 2012) conducted semi-structured interviews with 35 YBMSM, who expressed the importance of satisfying gender role expectations regarding masculinity from family, peers, and the community. Expectations from others that conflicted with YBMSM's identities led to psychological distress and influenced engagement in sexual risk behaviors.

Empowerment

Empowerment is the ability of people to gain an understanding of, and control over, personal, social, economic, and political forces in order to take actions or change behaviors to improve their life situations, including their health (Israel, Checkoway, Schulz, & Zimmerman, 1994). Empowerment is often defined at the individual, organizational, and community level. Individual empowerment refers to an individual's ability to exert control over their own life, and includes self-efficacy and self-esteem. Organizational empowerment refers to sharing information and power, utilizing a cooperative decision-making process, and endeavoring to reach organization members' mutual goals. Community empowerment refers to the confluence of individual and organizational empowerment, with each one supporting the other to meet common goals. To promote effective behavioral change and foster control over other forces, all three levels of empowerment must be intimately connected to one another. Empowerment is considered to be an effective health education or prevention model for influencing behavioral change and improving life situations (Beeker, Guenther-Grey, & Raj, 1998; Israel et al., 1994; N. A. Peterson, Lowe, Aquilino, & Schneider, 2005).

Sexual empowerment

The role of empowerment in HIV prevention to increase engagement in safer sex behaviors has been examined among sex workers and MSM (Hays et al., 2003; D. L. Kerrigan, Fonner, Stromdahl, & Kennedy, 2013; Maiorana et al., 2016). A systematic review of community empowerment interventions for HIV prevention among sex workers in low- and middle-income countries from 1990–2010 found that empowerment-based interventions reduced STIs, and increased condom use (D. L. Kerrigan et al., 2013). Approaches to address HIV

prevention among sex workers include not only traditional initiatives, such as peer education, condom distribution, and promotion of STI testing, but also providing assistance to sex workers to organize, mobilize, and take collective action to address social and structural factors related to sex worker rights, health, and HIV risk (D. L. Kerrigan et al., 2013; Wirtz et al., 2014). Empowerment-based approaches for promoting safer sex have also been explored among populations of MSM in the U.S. and Peru. The Mpowerment Project (Hays et al., 2003) is a community-based intervention utilizing an empowerment model designed to reduce sexual risk behaviors among young MSM in the U.S . The Mpowerment Project includes: (1) venue-based outreach (e.g., at bars, cafes, and community events), (2) small group sessions designed to change attitudes toward safer sex, and (3) an ongoing publicity campaign which includes articles and advertisements in gay newspapers, and posters and fliers in settings frequented by young gay/bisexual men. The intervention addressed individual, interpersonal, social, and structural psychosocial factors, such as attitudes, beliefs, sense of agency, social support, and community empowerment, as a means to influence individuals' sexual behaviors. The original evaluation was conducted among 268 MSM (81% White, 86% gay-identified, mean age 23 years) in Eugene, Oregon and Santa Barbara, California. The Mpowerment intervention community showed a significant decrease in the proportion of men engaging in CAI at the follow-up assessment, compared to the wait list control community ($p < 0.03$, one-tailed test) (Hays et al., 2003). This intervention is listed as having "good" evidence in the Centers for Disease Control Compendium of Evidence-Based Interventions (CDC, 2015). More recently (2009–2012), three community-based organizations evaluated Mpowerment among 298 young MSM of color. HIV testing and self-efficacy for safer sex increased at three and six months; engagement in CAI was lower at the three-month follow-up only (Shelley et al., 2017). Maiorana and colleagues

developed a community mobilization intervention in Peru called Proyecto Orgullo, to increase safer sex behaviors and HIV testing among gay men and transgender women (Maiorana et al., 2016). Community mobilization facilitated empowerment around safer sex, changing social norms, and increasing social support. These limited studies highlight the potential for empowerment-based approaches to impact safer sex behaviors among BMSM.

Multidimensionality of empowerment

Rissel defined two types of empowerment: psychological empowerment and community empowerment (Rissel, 1994). Psychological empowerment is a feeling of control over one's life (individual perception of power) (Z. D. Peterson, 2010), whereas community empowerment is the situation in which psychologically empowered community members engage in political action to achieve a redistribution of resources (control over external resources). Psychological empowerment itself is also composed of multiple dimensions. Zimmerman's conceptual framework specified three components of psychological empowerment: (1) intrapersonal, (2) interactional, and (3) behavioral (Zimmerman, 1995). The intrapersonal aspect refers to self-perceptions of competence over one's social environment. The interactional aspect addresses how people understand themselves and relate to their social environment. The behavioral aspect refers to specific actions aimed at influencing the sociopolitical environment through participation in community activities (Zimmerman, 1995).

Previous research on youth and young adults has provided substantial supportive evidence for the existence of multiple components and dimensions of empowerment (Christens, Peterson, Reid, & Garcia-Reid, 2015; Eisman et al., 2016; Z. D. Peterson, 2010). Peterson

suggested that sexual empowerment among adolescent girls should be considered as a continuous and multidimensional construct (Z. D. Peterson, 2010). Eisman et al. provided support for empowerment as a higher-order, multidimensional construct comprising inter-related but distinct intrapersonal, interactional and behavioral components (Eisman et al., 2016).

The literature provides common constructs of empowerment that are associated with HIV prevention. These include: personal/perceived control (self-efficacy), self-esteem, emotional support and sense of community (Marín, 2003; Wallerstein, 1992; Zimmerman, 1995; Zimmerman, Israel, Schulz, & Checkoway, 1992) as related to sexual behaviors. However, no studies have evaluated the intersecting role of these constructs in engagement in sexual risk behaviors or intervention outcomes among YBMSM. In addition, to date, there has been no research examining the multidimensional construct of empowerment among populations of YBMSM.

Lack of efficacious interventions to address HIV prevention for BMSM

Despite the disproportionate rate of HIV among BMSM, few evidence-based interventions have been designed to address HIV risk behaviors among them (Johnson et al., 2008; J. L. Peterson & Jones, 2009). A 2016 systematic review of HIV interventions specifically designed for Black and minority ethnic MSM identified 19 interventions. Eleven of these interventions were designed for BMSM, and five of these interventions were randomized controlled efficacy studies aimed at addressing risk reduction (Fish et al., 2016).

Current HIV prevention interventions for BMSM

The Many Men, Many Voices (3MV) intervention developed by Wilton and colleagues is a small group intervention (six two-to-three hour sessions) addressing racism, homophobia,

sexual relationship dynamics, risk reduction, intention to change, negotiation, social support, and problem solving (Wilton et al., 2009). Social cognitive theory, the behavioral skills acquisition model, the trans-theoretical model of health behavior change, and the decisional balance model guided the development of 3MV (Wilton et al., 2009). When compared to controls, those men receiving 3MV had significant reductions in the mean number of CAI episodes with casual partners (Rate Ratio = 0.34; 95% Confidence Interval [CI] = 0.14–0.83) at six months and number of male sex partners (Rate Ratio = 0.75; 95% CI = 0.57–0.98) at three months. Peterson et al. demonstrated the superiority of a triple session intervention (three three-hour sessions) over a single session intervention (one, three-hour session) aimed at reducing sexual risk behaviors (J. L. Peterson et al., 1996). Topics addressed in the sessions included: racial and sexual identities, perceptions of HIV risk, and provision of HIV risk education. Participants in the triple-session group reduced CAI from 46% to 20% at 12 months; participants in the single-session group reduced CAI from 47% to 38% at 12 months; participants in the control group had no change in CAI at 12 months (26% to 23%).

More recent interventions addressing HIV prevention for YBMSM include reducing sexual risk behaviors and increasing retention in care for HIV-positives (Bouris et al., 2017; R. A. Crosby et al., 2018; Fish et al., 2016; Hergenrather, Emmanuel, Durant, & Rhodes, 2016; Hightow-Weidman et al., 2012). Project nGage was a randomized controlled trial aimed at increasing retention in care among HIV-positive YBMSM in Chicago (Bouris et al., 2017). The intervention, which was based on the information–motivation–behavioral skills model, consisted of a 90-minute session with a social worker intended to improve HIV care knowledge, activate dyadic social support, and develop a retention in care plan. The intervention used a social network elicitation approach with index YBMSM (n = 45) to identify and recruit a support

confidant to the study. Each index and support confidant also received four mini-booster sessions. Intervention participants were three times more likely to have had at least 3 provider visits than were control participants over 12 months.

Focus on the Future was a single-session (approximately 40–50 minutes long) clinic-based intervention to increase condom use among 369 YBMSM (R. Crosby, DiClemente, Charnigo, Snow, & Troutman, 2009). The intervention was based on information–motivation–behavioral skills model and consisted of providing information about condom use; motivating a personal response to the Acquired Immune Deficiency Syndrome (AIDS) epidemic and disproportionate HIV/AIDS prevalence among Black men; and teaching the correct use of condoms and lubrication. The intervention group was more likely to use condoms in the last sexual intercourse than the control group (72% vs. 54%, $p = 0.008$).

Importance of theory-based interventions

Theory-based interventions are more effective for changing behaviors than those not based on theory (Glanz, Rimer, & Viswanath, 2008). Five of seven meta-analyses found that theory-based interventions were more effective than non-theory-based interventions at increasing condom use (Noar, 2008). In Maulsby's systematic review, described above, 9 of the 12 studies used theory to develop the intervention, however, few details were provided to explain how theory had informed the study design or had been considered in the evaluation. For example, 3MV was based on several behavior change theories (Social Cognitive Theory, Behavior Skills Acquisition Model, Trans-theoretical Model, Decision Balance Model), but how each theory informed different intervention components or how the theories had been integrated to develop the intervention was not described. Further, none of the relevant theoretical constructs were reported.

In order to reduce HIV disparities among BMSM, it is critically important to define relationships between theoretical constructs, and design theory-driven HIV risk reduction interventions for YBMSM based on these defined relationships. Further, interventions should address and measure the effects of intersectionality, stigma, and empowerment on the sexual risk behaviors of YBMSM.

Gaps in the Current Research

As described above, prior research has acknowledged special issues that impact engagement in sexual behaviors and HIV prevention among YBMSM: intersectionality driving health inequalities for individuals from multiple historically oppressed groups (e.g., racial and sexual minorities); stigma due to sexuality, gender, race and ethnicity, and class; the importance of empowerment in HIV prevention; and the need for theory-based interventions to address these issues. However, current research is limited by several notable gaps that could inform future prevention efforts for YBMSM. These gaps are listed below and expounded on in the following sections:

- There is no current measure to quantify sexual empowerment among YBMSM.
- There is a lack of studies exploring the multidimensionality of sexual empowerment.
- Few quantitative studies have examined the complexity of stigma and discrimination and their effect on sexual risk behaviors among YBMSM.
- There is a dearth of theory-based interventions that address the multidimensional nature of HIV risk for YBMSM and measure how these constructs impact intervention outcomes**.**

Gap 1: No current measure to quantify sexual empowerment among YBMSM

Empowerment represents an important intervention strategy that can reduce the negative impacts of intersectional stigma experienced by YBMSM, thereby leading to the promotion of safer sex. HIV prevention interventions adopting an empowerment approach have been successful among sex workers and MSM (Hays et al., 2003; D. L. Kerrigan et al., 2013; Maiorana et al., 2016), but to date, such interventions have not been fully explored among populations of YBMSM. Moreover, despite targeting empowerment as a behavioral change mechanism, these previous studies either did not measure or did not report changes in empowerment from baseline to post-intervention in their participants. One potential explanation for the lack of papers addressing empowerment as an outcome is the lack of a currently validated measurement tool that quantifies the multidimensional nature of sexual empowerment.

Importance of scale development and validation

Scale development is a fundamental scientific activity and a critical process for social science researchers to acquire knowledge about people, objects, events, and processes (DeVellis, 2016; Morgado, Meireles, Neves, Amaral, & Ferreira, 2018). Scales are sets of questions that collectively are expected to measure theorized psychosocial constructs.

Quantifying research questions are required to make sense of theorized psychosocial constructs, and researchers need valid measurement tools to quantify outcomes (DeVellis, 2016). However, it can be difficult to find measurement tools to fit certain research questions, and relevant tools may, in fact, not exist. In some cases, researchers adopt indiscriminate measurement tools when they do not have one that fits perfectly. Utilizing a measurement tool that is not well-matched to the research question runs the risks of achieving poor content validity

and disseminating inaccurate results. To avoid this, it is important to develop and validate scales that appropriately match and quantify the specific question to be addressed.

Lack of measurement of sexual empowerment among YBMSM

While the importance of empowerment among YBMSM has been acknowledged, there is currently no validated measure that captures YBMSM's empowerment to negotiate safer sex behavior. The two most utilized scales measuring empowerment constructs include the Sociopolitical Empowerment Scale (N. A. Peterson et al., 2006; Speer & Peterson, 2000; Zimmerman & Zahniser, 1991) and the Perceived Control Scale (Sandstrom, Burgess, & Coffel, 1998; Schulz, Israel, Zimmerman, & Checkoway, 1995). These scales do not address sexual behaviors or focus on a specific target population (e.g., YBMSM).

Gap 2: Lack of research exploring the multidimensionality of sexual empowerment

While previous studies have described and demonstrated the multidimensionality of empowerment, and the importance of considering empowerment as more than a single dimension on a continuous scale, there has been no research to date on theoretical models of sexual empowerment, that include multidimensional constructs. Rissel distinguished psychological empowerment and community empowerment, while Zimmerman described empowerment through intrapersonal, interactional, and behavioral aspects (Rissel, 1994; Zimmerman, 1995). Christens described psychological empowerment as comprising emotional, cognitive, relational, and behavioral components (Christens, 2012). However, these conceptualizations are not sufficiently specific to the context of sexual empowerment. Thus, there is a need to fully explore the multidimensionality of sexual empowerment, particularly among YBMSM.

Gap 3: Lack of quantitative studies examining the complexity of stigma and discrimination

While stigma is considered to be a fundamental cause and consequence of disease, it cannot be solely targeted (Parker et al., 2002). Stigma is a complex problem that needs to be understood and subsequently addressed in its complexity. Young BMSM experience multiple types of stigma due to the intersection of race, sexuality and, (presumed) HIV status. Previous qualitative studies focused on YBMSM and BMSM have identified how stigma relates to social class, how social class affects health behaviors, how rejection from family leads to stigmatization, and how stigma leads to sexual risk behaviors (Errol Lamont Fields et al., 2015; Garcia et al., 2016; Tobin et al., 2013). Quantitative studies have examined singular relationships, such as the effect of stigma on mental and physical health and sexual risk behaviors, and the effects of an intervention on stigma (Bogart et al., 2013; Bogart et al., 2011; Preston, D'augelli, Kassab, & Starks, 2007; Stangl, Lloyd, Brady, Holland, & Baral, 2013). However, few studies have addressed and quantitatively measured the combined impact of multiple types of stigmas and how they mediate/moderate the effects of an HIV intervention.

Gap 4: Need for a theory-based intervention that addresses the multidimensional nature of HIV risk for YBMSM and evaluates how these constructs impact intervention outcomes

Previous research has highlighted the importance of theory-based interventions, and how intersectionality, stigma, and empowerment contribute to HIV risk among YBMSM. However, there are currently no theory-based interventions that address intersectionality, stigma, and empowerment aimed at minimizing HIV risk among YBMSM.

In 2002, a document about HIV/AIDS-related stigma and discrimination was published under the Horizon Program (Parker et al., 2002), and it suggested a new conceptual framework

addressing intersectionality, stigma, and empowerment. According to the framework, environmental-level interventions (e.g., social and community mobilization and empowerment of marginalized populations) are needed to create a climate in which stigma and discrimination are no longer tolerated. It has been more than 16 years since this document was published, but there are currently no theory-based interventions that address both empowerment and stigmatization.

Significance of the Proposed Research

There have been no investigations into the relationship between sexual empowerment, stigmatization, and sexual risk behaviors among YBMSM. The proposed research applies empowerment theory and minority stress theory to understand and subsequently reduce sexual risk behaviors, and better elucidate the interplay of stigmatization and sexual empowerment with sexual risk behaviors among YBMSM.

This study is the first study to investigate sexual empowerment and stigmatization among YBMSM and to further test the impact of an online intervention on sexual risk behaviors through both the aforementioned multidimensional empowerment constructs and experiences of minority stress and stigmatization. The results of the study will provide critical information to inform future prevention strategies aimed at addressing sexual risk behaviors among YBMSM. The results of the study will illustrate the potential impact of a tailored intervention to change relevant sexual empowerment constructs, such as social norms and self-efficacy to engage in condom use, and further delineate differences in intervention effects on YBMSM based on assigned sexual empowerment profiles. Moreover, if stigma-related experiences are identified as causal mechanisms for engagement in sexual risk behaviors, reducing stigma-related experiences could be an effective strategy for reducing sexual risk behaviors and subsequent HIV risk. These

findings will have important implications for the design of future interventions for YBMSM, including those addressing sexual risk behaviors, but also more broadly for addressing other critical prevention strategies that are affected by stigma-related experiences and empowerment, such as ART uptake and adherence for HIV-positive individuals and PrEP uptake and adherence for high risk HIV-negative individuals.

CHAPTER 3: THEORETICAL FRAMEWORKS AND CONCEPTUAL MODEL

This chapter begins by exploring empowerment theory, minority stress theory, and their applications in Human Immunodeficiency Virus (HIV) intervention research to understand and subsequently reduce sexual risk behaviors among young Black men who have sex with men (YBMSM). Then, the chapter elucidates the interplay of stigmatization and sexual empowerment with engagement in sexual risk behaviors among YBMSM. The chapter closes by proposing hypotheses and a conceptual model (based on both empowerment theory and minority stress theory) to evaluate the effect of an online theory-based intervention on reducing sexual risk behaviors among YBMSM.

Empowerment Theory in HIV Intervention Research

Empowerment theory

Empowerment is a social action process that focuses on linking individuals' beliefs about their ability to change their behaviors within their social and political environment. As such, individuals gain a sense of control and exert political power as they participate in the democratic life of their community for social change (Airhihenbuwa, 1994; Perkins & Zimmerman, 1995; Zimmerman, 1995). Empowerment promotes the participation of people, organizations and communities toward the goals of increased control over their lives, political efficacy, improved quality of life, social justice, and reduced marginalization (Maton, 2008; N. A. Peterson, 2014; Rappaport, 1981; Wallerstein, 1992). Empowerment can discourage individuals' engagement in

risky behaviors, and empowered individuals can more readily make social change within their community. Previous research has provided substantial evidence supporting the multidimensionality of empowerment. Common constructs of empowerment that are associated with HIV prevention are: personal/perceived control (self-efficacy), self-esteem, emotional support and sense of community (Marín, 2003; Wallerstein, 1992; Zimmerman, 1995; Zimmerman et al., 1992).

Self-Efficacy

Self-efficacy is an individual's belief in their ability or the action required to deal with possible situations (Bandura, 1982). The concept of self-efficacy was first introduced by Bandura, who argued that it is a belief, trust, or confidence in oneself to execute duty, willingness to challenge, and ability to maintain a certain attitude in any situation (Bandura, 1977, 1997). Persons with high self-efficacy focus on their lack of effort when they encounter barriers, while those with low self-efficacy focus on their lack of ability. Thus, those with high self-efficacy will put more effort into increasing their ability to perform, and this effort will allow them to grow based on an increased ability. However, those with low self-efficacy will tend to avoid challenging situations, thus losing opportunities to enhance their abilities. (Stajkovic & Luthans, 1998). Self-efficacy is an important and useful construct in psychology, especially relating to health, as it helps to explain how people engage in, and subsequently maintain, healthy behaviors (Strecher, McEvoy DeVellis, Becker, & Rosenstock, 1986).

In terms of HIV prevention, increased condom use self-efficacy (e.g., a person's ability to negotiate condom use with their partners) has been associated with reduced sexual risk behaviors (Berg, 2008; Simon Rosser et al., 2008; Træen et al., 2014). Moreover, condom use self-efficacy

was significantly associated with reduced condomless anal intercourse (CAI) in the study with ethnically diverse men who have sex with men (MSM) in the United States (U.S.) (Newcomb & Mustanski, 2014), and HIV positive MSM in the Netherlands (Schutz et al., 2011).

Self-esteem

Self-esteem is an individual's subjective evaluation of their own worth, which is not necessarily based on any specific behaviors (Robins, Hendin, & Trzesniewski, 2001). Self-esteem includes not only beliefs about oneself (e.g., "I am confident" or "I am worthy") but also emotional states (e.g., pride or failure) (Snyder & Lopez, 2009). Self-esteem is an important construct in psychology, since it is ubiquitous in contemporary life, from classrooms to workplaces, and impacts even everyday life choices (Orth & Robins, 2014). This concept is also relevant to health behaviors. Persons with high self-esteem will act according to their own judgment and not feel guilty about others' perceptions. Moreover, individuals with high self-esteem perceive higher social support, and this higher social support has a beneficial impact on physical and mental health (Baumeister, Campbell, Krueger, & Vohs, 2003). This allows those with high self-esteem to lead healthier lives than those with low self-esteem. While self-esteem has been found to be related to sexual risk behaviors, study results on this topic are conflicting. For example, in a study among 93 rural MSM (Preston, D'Augelli, Kassab, & Cain, 2004), those with low self-esteem were more likely to have multiple sexual partners, and engage in a greater episodes of unprotected receptive anal intercourse than those with high self-esteem. However, in a study conducted primarily among Hispanic MSM, those with higher levels of self-esteem reported more participation in high-risk sexual behaviors (De Santis, Colin, Provencio Vasquez, & McCain, 2008).

Emotional support

Social support is the perception of receiving various supports from others, and has been associated with health and emotional well-being (Sherbourne & Stewart, 1991). Sherbourne & Stewart has identified four different types of social support: emotional, tangible, affectionate, and positive social interaction (Sherbourne & Stewart, 1991). Emotional support includes receiving positive affect, understanding, empathy, concern, love, acceptance, and encouragement for self-expression (Sherbourne & Stewart, 1991). This support can increase self-esteem and allow people to think of themselves as "valuable" (Uchino, 2004). Emotional support has been associated with engagement in general health behaviors and increased coping behaviors related to their disease among HIV-positive MSM (Deichert, Fekete, Boarts, Druley, & Delahanty, 2008). Emotional support has also been found to impact mental health outcomes among Black MSM (BMSM) (Wong, Schrager, Holloway, Meyer, & Kipke, 2014).

Sense of community/Social Norms

McMillan and Chavis (1986) defined sense of community as "a feeling that members have of belonging, a feeling that members matter to one another and to the group, and a shared faith that members' needs will be met through their commitment to be together" (McMillan & Chavis, 1986). Having a strong sense of community can have a powerful impact on the behaviors of MSM as community members have been found to influence each other and in turn be influenced by the behavioral norms within the community (Billingsley & Caldwell, 1991; Herek & Glunt, 1995; Warren et al., 2008). Moreover, changing social norms is a key strategy in HIV prevention, and enhancing the sense of community and community empowerment could be expected to change social norms impacting sexual risk behaviors among MSM (Berg, 2008).

Injunctive social norms can be defined as social pressure regarding whether or not to perform a behavior and has been associated with greater perceived control and strong intentions to perform the health behavior (Ajzen, 1991). Black MSM who engage in sexual risk behaviors are more likely to experience negative social norms around condom use (J. Peterson, Rothenberg, Kraft, Beeker, & Trotter, 2008).

Previous HIV intervention studies informed by empowerment theory

Previous studies applied empowerment theory to design HIV interventions for substance using MSM and female sex workers (D. L. Kerrigan et al., 2013; Kurtz, Stall, Buttram, Surratt, & Chen, 2013); however, this approach has never been used specifically for YBMSM. Kurtz and colleagues implemented a small group intervention based on empowerment theory that addressed sexual and substance use risk reduction among 515 high risk not-in-substance abuse treatment MSM substance users in South Florida; they found that the intervention reduced sexual risk behaviors, such as CAI, and sex under the influence of alcohol (Kurtz et al., 2013). While the mean age of the sample was almost 40 years, and only 21% of the sample identified as Black, BMSM reduced their risks at a greater rate than White or Latino participants, indicating the potential utility of empowerment theory-informed interventions in this population. A comprehensive review of community empowerment approaches for addressing HIV in sex workers, whereby sex workers took collective ownership over reducing the risks of HIV infection, found these approaches were significantly associated with reductions in HIV and other sexually transmitted infections (STIs) and consistent increases in condom use (D. L. Kerrigan et al., 2013; Swendeman, Basu, Das, Jana, & Rotheram-Borus, 2009). The authors postulated that the empowerment approach was effective because it did not classify this traditionally

marginalized group as victims or vectors of disease (D. Kerrigan et al., 2015). Rather, the empowerment approach ensured sex workers' health and human rights as workers, not as "sex workers". Other studies have provided evidence of the potential success of empowerment theory based HIV prevention interventions with other at-risk populations, including substance using MSM, Hispanic MSM, MSM in general, and female sex workers, but none focused specifically on YBMSM (Cornish, 2006; Kurtz et al., 2013). Empowering YBMSM is critical for HIV prevention. Minority populations may be more isolated and experience marginalization, leading to more limited knowledge and lack of access to information (Voisin, Bird, Shiu, & Krieger, 2013). Interventions that build on existing and informal social networks and facilitate community building should be encouraged (S. D. Rhodes et al., 2009; S. D. Rhodes et al., 2011).

Minority Stress Theory as Applied to Sexual Risk Behaviors among BMSM

Minority stress theory

Another theory that has been shown to be relevant for understanding BMSM's engagement in sexual risk behaviors is the minority stress theory (Meyer, 1995). Formulated by Ian Meyer and applied to LGBT populations, the minority stress theory was later extended to racial and ethnic minorities and women. It emphasizes that the stress that sexual minorities experience can have profound effects on health disparities, particularly mental health outcomes (Meyer, 1995). Meyer pointed out that prejudice and stigma directed at sexual minorities bring unique stressors that can cause adverse health outcomes, including mental disorders (Figure 3.1) (Meyer, 2003). Meyer insisted that socially disadvantaged statuses, such as being a sexual, racial, or gender minorities, will expose those in the disadvantaged group to more stress than members of advantaged groups. The stress that minorities experience includes expectations of rejection,

internalized stigma, and prejudice. These stress-related experiences can lead to poor health outcomes such as engagement in sexual risk behaviors or mental disorders. However, the effect of stress on adverse health outcomes can be moderated by coping and social support (Meyer, 2003). Thus, the relationship between stress and adverse health outcomes will be weaker among those with high social support than those with low social support (Wong et al., 2014).

Minority stress among BMSM

Black MSM experience compounding stigma due to the intersectionality of sexual identity and race (Earnshaw, Bogart, Dovidio, & Williams, 2013; Turan et al., 2017; Watkins-Hayes, 2014). This intersectionality exposes them to more stresses than other sexual minority populations. Meyer's model contains two aspects of stigma (considered as stress), externalized stigma (both perceived stigma and experienced stigma) and internalized stigma. Externalized stigma refers to everyday stigmatized experiences due to gender, sexuality, and race, whereas internalized stigma refers to absorbing society's negative views about a particular minority population as one's identity. For the purposes of this dissertation, the focus will be on the three common stigma-related experiences reported by YBMSM —namely, internalized homophobia, experienced sexual minority stigma, and racial discrimination (Figure 3.2) (Earnshaw et al., 2013; Hatzenbuehler, Nolen-Hoeksema, & Dovidio, 2009; Overstreet, Earnshaw, Kalichman, & Quinn, 2013).

Experienced sexual minority stigma

Experienced sexual minority stigma is defined as experiencing discriminatory events in everyday life due to one's sexual orientation. Experienced sexual minority stigma is posited to causes health disparities between sexual minorities and heterosexuals. For example, sexual

minorities experience worse mental health outcomes than heterosexuals (Hatzenbuehler et al., 2009). Additionally, HIV-positive MSM who experienced greater sexual minority stigma were more likely to report depressive symptoms and cases of post-traumatic stress disorder (Bogart et al., 2011). They were also more likely to show Acquired Immune Deficiency Syndrome (AIDS) symptoms and visit the emergency department than participants who experienced less sexual minority stigma (Bogart et al., 2013).

Internalized homophobia

Internalized homophobia comprises both the conscious and unconscious beliefs, attitudes, affect, stereotypes, and myths regarding homosexuality that other persons express, which those who engage in same-sex sexual behaviors may feature in themselves. Affectional feelings, sexual behavior, intimate relationships, and self-labeling as lesbian, gay, or bisexual are considered to be features that may impact internalized homophobia in sexual minority populations (Shidlo, 1994). Internalized homophobia is important in HIV prevention, since internalized homophobia is related to riskier sexual behaviors and has been shown to negatively impact viral suppression (Maulsby et al., 2014). Internalized homophobia is also related to other health issues, such as substance use, eating disorders, and suicidality among YBMSM (Williamson, 2000).

Racial discrimination

Racial discrimination is traditionally defined as institutionalized discriminatory practices in employment and housing (e.g., segregation), and perceived unfair treatment due to race or ethnicity. Racial discrimination at the societal level contributes to racial HIV disparities, and societal-level racial discrimination manifests as stereotypes and prejudice toward BMSM (Earnshaw et al., 2013). Racial discrimination has been correlated with poorer mental and

physical health outcomes among HIV-positive BMSM (Bogart et al., 2013; Bogart et al., 2011). In one study, participants who experienced greater racial discrimination were more likely to report depressive symptoms and events of post-traumatic stress disorder (Bogart et al., 2011). In addition, they were less likely to have an undetectable viral load and more likely to visit the emergency department than participants who experienced less racial discrimination (Bogart et al., 2013).

Previous application of minority stress theory to the sexual risk behaviors of BMSM

The effects of minority stress on mental health outcomes have been rigorously studied across diverse minority populations (Airhihenbuwa, 1994; Bogart et al., 2011; Errol L Fields et al., 2013; Hatzenbuehler et al., 2011; Pascoe & Smart Richman, 2009). Perceived discrimination and internalized homophobia have been shown to have significant negative effects on mental health outcomes among BMSM with HIV, MSM in general, and YBMSM (Garcia et al., 2016; Hermanstyne et al., 2018; Wong et al., 2014). Furthermore, an association between stress and engagement in greater sexual risk behaviors has been described among MSM (Diaz, Ayala, & Bein, 2004; Hatzenbuehler, Nolen-Hoeksema, & Erickson, 2008; Preston et al., 2007; Rosario, Rotheram-Borus, & Reid, 1996). Diaz and colleagues found that social discrimination (homophobia and racism) were associated with difficulties engaging in safer sex practices among Latino gay men in the U.S. (Diaz et al., 2004). Community stigma, internalized homophobia, and self-esteem were related to sexual sensation-seeking behaviors among 414 rural MSM in the U.S. (Preston et al., 2007). However, no studies to date have examined stress reduction as a pathway to reducing sexual risk behaviors among YBMSM. Thus, for the purposes of this study, it is assumed that these stressors reduce engagement in health promotive behaviors, which can

exaggerate health disparities and increase HIV risks for HIV-negative individuals or increase transmission to others for HIV-positive individuals.

Exploring Relationships between Empowerment and Minority Stress on HIV Risk Reduction among YBMSM

Investigating the roles of empowerment and minority stress experienced by YBMSM (sexual minority stigma, internalized homophobia, and racial discrimination (Bogart, Wagner, Galvan, & Banks, 2010; Hatzenbuehler et al., 2008)) and defining their relationships with sexual risk behaviors is an important strategy for reducing HIV among this disproportionately affected population (D. Kerrigan et al., 2015). Moreover, developing a deeper understanding of potential pathways to empower stigmatized populations and communities may offer novel approaches for intervention development aimed at minority stress reduction and improved mental health outcomes leading to less engagement in CAI, the behavior most likely to lead to HIV acquisition or transmission.

The proposed research is intended to develop and validate a multidimensional sexual empowerment scale (SEMS) among YBMSM that includes the constructs of personal/perceived control (self-efficacy), self-esteem, emotional support, and social norms. After scale development and validation is completed, YBMSM will be classified into different groups using Latent Profile Analysis (LPA) methodology, based on the constructs described above. Then, the association between sexual empowerment profiles and various predictors including stigma-related experiences (experienced sexual minority stigma, internalized homophobia, and racial discrimination) will be explored. Lastly, the study will evaluate the effects of an online intervention designed specifically for YBMSM, on the relationship between sexual

empowerment profile membership, stigmatization (experienced sexual minority stigma, internalized homophobia, and racial discrimination), and engagement in sexual risk behaviors.

Study Flow Chart

This study combines several different quantitative methods to examine multiple theories and concepts related to empowerment and minority stress, which have not been used previously to assess sexual risk behaviors among YBMSM. The data for this study comes from healthMpowerment.org (HMP), a randomized controlled trial (RCT) of a mobile-phone-optimized, Internet-based intervention designed to reduce sexual risk behaviors among HIV-positive and HIV-negative YBMSM. Between November 2013 and October 2015, 474 YBMSM enrolled; 12-month follow up data collection was completed in October 2016.

The study comprises three sequential phases. The first phase entails developing and validating a multidimensional SEMS using data collected from a sample of among YBMSM (Aim 1). The literature review suggests that the scale should have five sub-constructs: self-efficacy to refuse sexual behavior, condom use self-efficacy, self-esteem, social norms, and emotional support. After developing and validating the scale, the second phase involves classifying participants into different profiles using LPA based on the sub-scales identified in Aim 1 (Aim 2). Moreover, significant predictors (demographic variables and stigma-related stresses), which define profile membership, will be examined using latent profile logistic regression. The last phase involves examining the conceptual model, which includes the sexual empowerment profile membership that was developed in Aim 2. Aim 3 is to test the associations between stigma-related experiences (experienced sexual minority stigma, internalized homophobia, and racial discrimination) and sexual empowerment profile, and the number of acts

of CAI at baseline (Aim 3-1) and then test how the effects of baseline stigma-related experiences (Aim 3-2) and sexual empowerment profile (Aim 3-3) on the number of acts of CAI at 3-months are moderated by the online intervention, HMP (described in detail in Chapter 4).

The first and second phases of the study rely on cross-sectional data collected from the baseline survey, and the third phase employs both baseline data and follow-up data collected at the intervention completion (3 months). A flow chart describing the activities at each phase is shown below (Figure 3.3).

Conceptual Model

Empowerment theory and minority stress theory were used to develop the conceptual model for this study (Figure 3.4). Empowerment is a social action process and health prevention theory, which can discourage individuals' engagement in risky behaviors. Further, empowered individuals can enact social change within their community. Empowerment creates a social wave that brings people together and mobilizes collective power. This collective power can change social norms, which can discourage risky behaviors in the community. Eventually, these changed social norms can protect the community from diseases by minimizing health risk behaviors (Kelly, Murphy, Sikkema, & Kalichman, 1993; D. Kerrigan et al., 2015). Moreover, minority stress theory emphasizes that stigma, prejudice, and discrimination cause adverse health outcomes, especially mental health problems. HealthMpowerment.org includes interactive features designed to empower each participant to reduce stigma-related experiences and impact norms, attitudes, and self-efficacy towards safer sex. These features are expected to increase sexual empowerment, reduce stigma-related experiences, and reduce sexual risk behaviors, such as CAI, among YBMSM. As proposed in Figure 3.4, the effect of sexual empowerment profile

and stigma-related experiences (considered as stress) at baseline on CAI at three months (intervention completion) would be moderated by the intervention.

Hypotheses and Aims

To address the research aims, several hypotheses are tested.

Aim 1

Aim 1 is to develop and validate a SEMS that includes safer sex related personal/perceived control, self-esteem, emotional support, and sense of community aspects (i.e., social norms), which are common constructs that impact sexual empowerment among YBMSM.

Confirmatory Factor Analysis (CFA) is used to confirm the factor structure of an empirically derived set of sub-scales. Based on the literature review (Chapter 3. Empowerment theory section), the expectation is that the scale will have five sub-constructs.

Hypothesis 1

Sexual empowerment is multidimensional, with several sub-constructs. Thus, the hypothesis related to Aim 1 is that there are five sub-constructs—namely, self-efficacy to refuse sexual behaviors, condom use self-efficacy, self-esteem, social norms for condom use, and emotional support.

Aim 2

Aim 2 is to identify sexual empowerment profile membership by classifying YBMSM into groups according to similar distributions on the sub-scales of SEMS from Aim 1 and explore associations between demographic characteristics and stigma-related experiences (internalized

homophobia, experienced sexual minority stigma, and racial discrimination) and sexual empowerment profile membership. Latent Profile Analysis (LPA) will be used in Aim 2

Hypothesis 2a

Latent Profile Analysis will reveal at least two distinct profiles of sexual empowerment among YBMSM according to similar distributions on the sub-scales in SEMS. First profiles is (1) a psychologically empowered with safer sex intentions profile and second profile is (2) a psychologically disempowered without safer sex intentions profile.

Hypothesis 2b

Latent Profile Analysis will reveal distinct profiles of YBMSM demonstrating different demographic characteristics and stigma-related experiences.

Aim 3

Test the associations between stigma-related experiences and sexual empowerment profile, and the number of acts of CAI at baseline (Aim 3-1). Next, test the effects of baseline stigma-related experiences (Aim 3-2) and sexual empowerment profile (Aim 3-3) on the number of acts of CAI at 3-months moderated by participation in HMP.

Hypothesis 3a

Stigma-related experiences and CAI are positively associated while sexual empowerment and CAI are negatively associated at baseline, such that YBMSM who reported more stigma-related experiences will report more acts of CAI than YBMSM who reported less stigma-related experiences. Also, YBMSM with greater sexual empowerment will report a smaller number of acts of CAI compared to those with less sexual empowerment.

Hypothesis 3b

The effect of stigma-related experiences on CAI at 3 months after the baseline survey will be moderated by intervention status, such that the stigma effect on CAI will be weaker among those in the intervention group compared to the control group.

Hypothesis 3c

The effect of sexual empowerment profile on CAI at 3 months after the baseline survey will be moderated by intervention status, such that the sexual empowerment effect - greater sexual empowerment: high self-efficacy, emotionally supported, high self-esteem, and more positive social norms towards condom use group on CAI will be stronger among those in the intervention group compared to the control group.

Figure 3.1. Minority stress processes in lesbian, gay, and bisexual populations (reproduced from Meyer, 2003)

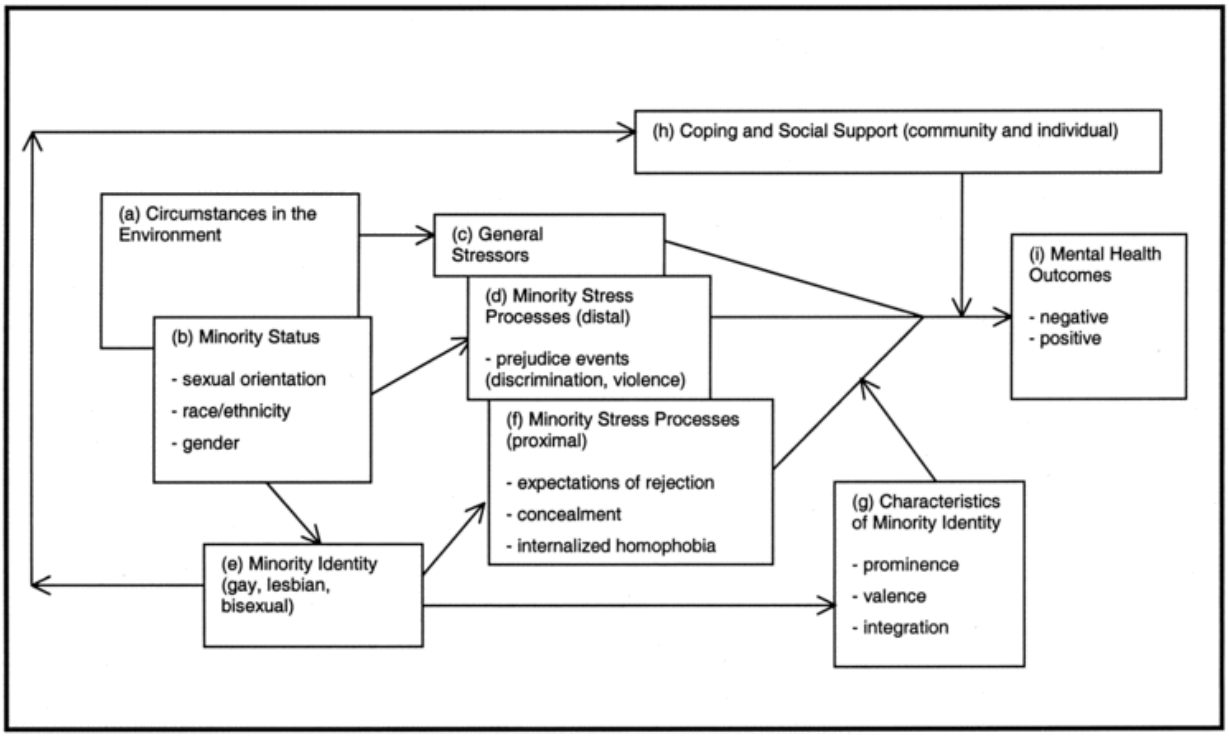


Figure 3.2. Minority stress among BMSM

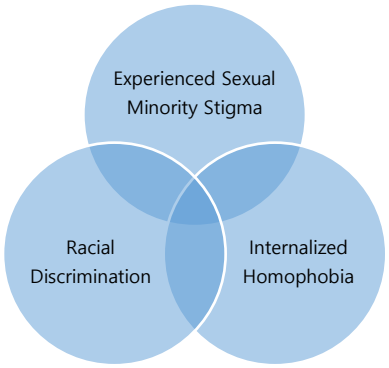


Figure 3.3. Study flow chart

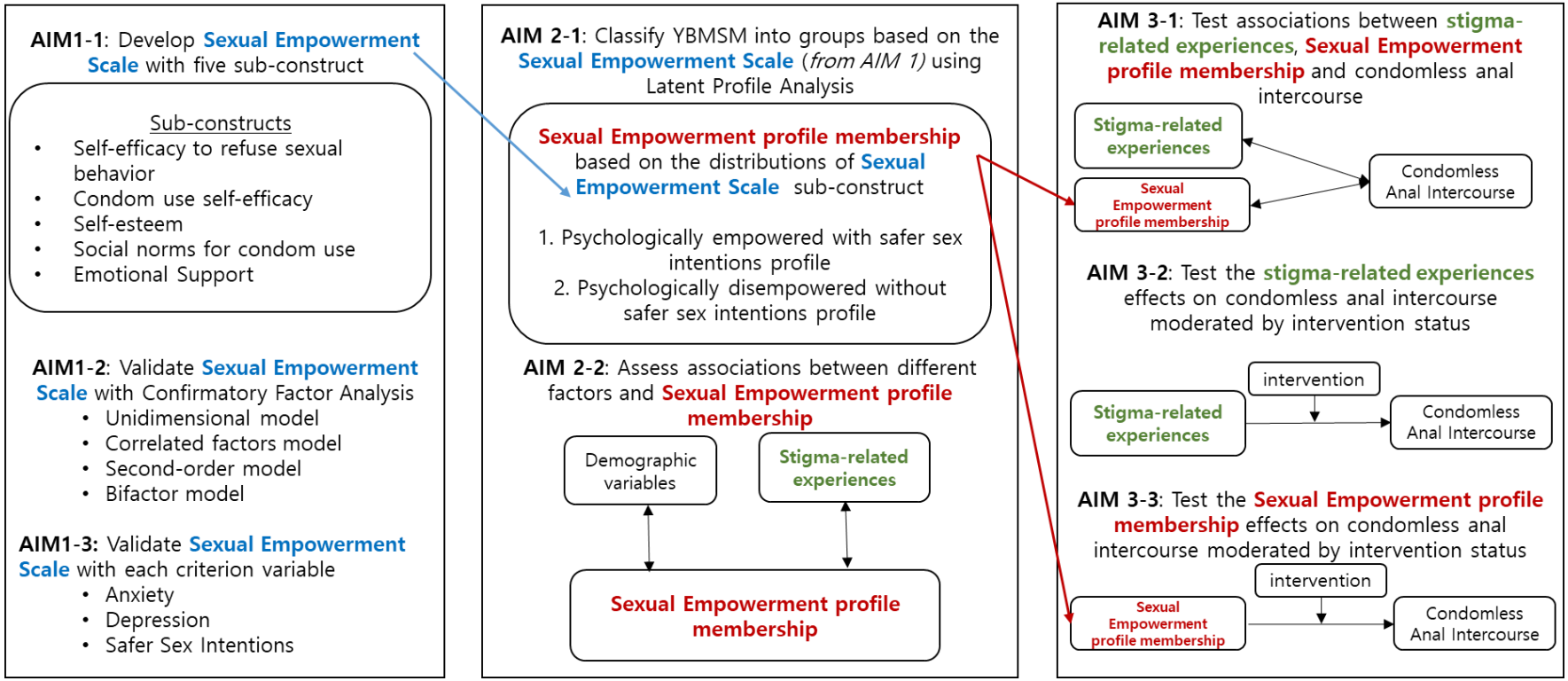
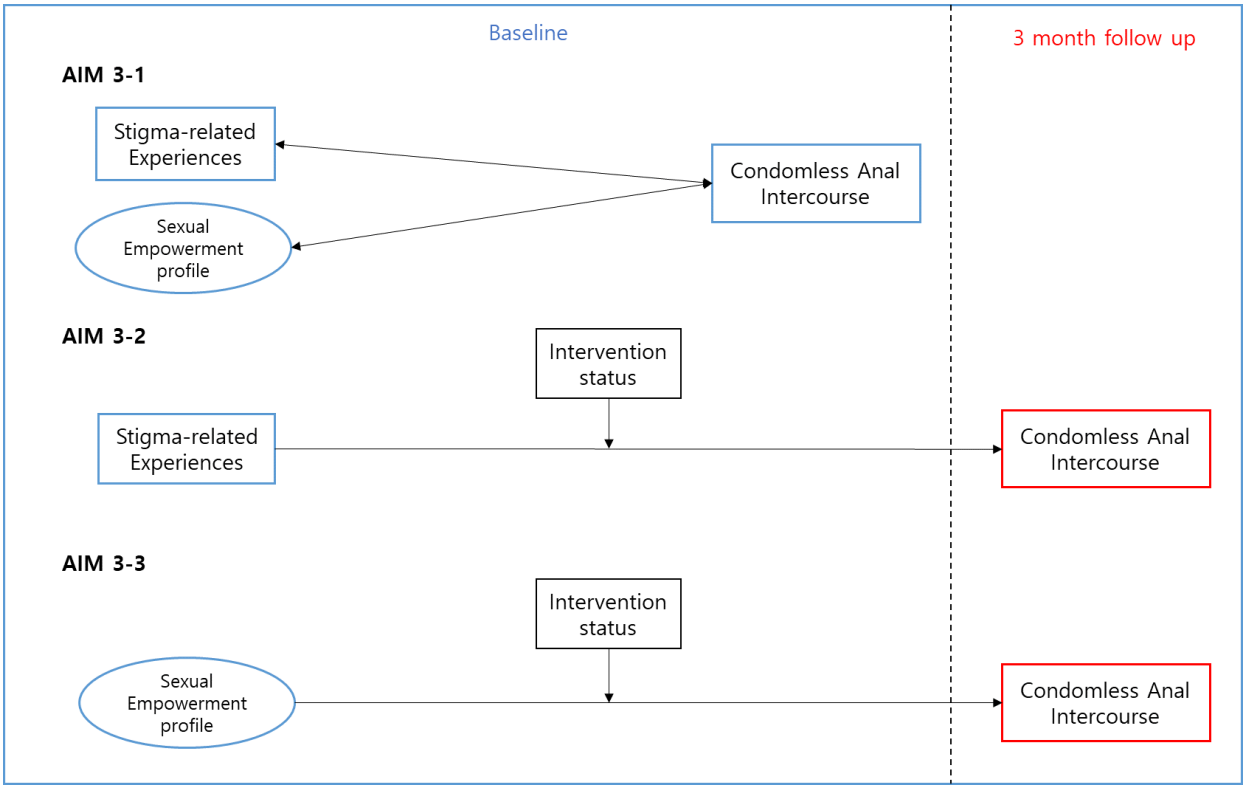


Figure 3.4. Conceptual model



CHAPTER 4. DATASET AND MEASURES

Introduction

This chapter includes methodological information pertaining to Aims 1, 2, and 3. The methodological information describes the data source, data collection, measures and participant characteristics for each wave.

Data source

Healthmpowerment.org (HMP) is a randomized controlled trial (RCT) of an Internet-based, mobile-phone-optimized, three-month intervention guided by the Integrated Behavioral Model designed to reduce sexual risk behaviors among young Black men who have sex with men (YBMSM) aged 18 to 30 in North Carolina (NC). The eligibility criteria included (1) aged between 18 and 30 years, inclusive; (2) born biologically male; (3) self-identify as Black; (4) currently residing in NC; (5) currently have access to a mobile device (e.g., smartphone, tablet) that connects to the Internet and has texting capabilities; and (6) any of the following in the past six months: (a) condomless anal intercourse (CAI) with a male partner, (b) any anal sex with more than three male sex partners, (c) exchange of money, gifts, shelter, or drugs for anal sex with a male partner, or (d) anal sex while under the influence of drugs or alcohol (i.e., high or drunk within two hours of sex). Participants were recruited from flyers posted at local venues (including bars, clubs, and college campuses), Human Immunodeficiency Virus (HIV)/ sexually

transmitted infections (STIs) clinics, case management organizations, and online advertisements (e.g., Craigslist, Facebook, Grindr). The control group had access to a website with basic informational articles about HIV/ sexually transmitted infections (STIs), while the intervention group had access to the full HMP website which included: HIV and STI information, resources on health and life issues, an HIV testing and care locator, quizzes, and social networking elements, which allowed anonymous interaction among participants. Detailed information about components of the HMP are shown in Table 4.1.

The intervention featured numerous engagement elements including gamification (points, levels, contests) and personalization (customizable avatar, profile, risk screeners, and personalized feedback). A total of 474 YBMSM were enrolled between November 2013 and October 2015 and assigned 1:1 to HMP or the information-only control condition for three months. Participants completed a Web-based survey during an in-person baseline enrollment visit, and Web-based follow-up assessments were conducted online at 3, 6, and 12 months after the baseline survey. For Aims 1 and 2, only baseline data will be used, and for Aim 3, the baseline and 3-month data will be used.

Data collection

Interested participants contacted staff affiliated with the study by phone to confirm their eligibility. Eligible participants were invited to make an in-person enrollment visit. Upon consenting to participate in the study, participants completed an online computer-assisted self-interviewing (CASI) baseline survey through Qualtrics software. After completing the baseline survey, participants were randomized into the control or intervention group. They also completed follow-up surveys online through Qualtrics at 3, 6, and 12 months after the baseline survey. The

retention rate was 85.2% at 3 months, 80.2% at 6 months, and 78.3% at 12 months. The proposed study will focus on the baseline and three-month (intervention completion) data. Six-month and 12-month follow up surveys were not included in the current analysis since those were for examining durability of the intervention, not immediate intervention effects. Descriptive statistics by intervention status are shown in Table 4.2 below.

Measures

Multiple measures will be used to accomplish Aims 1, 2, and 3 including those used to develop the sexual empowerment scale (SEMS), and to assess experiences of stigma, psychosocial factors, and sexual risk behaviors. Table 4.3 provides a summary of all measures, and detailed information about each measure is subsequently provided.

Empowerment

Self-efficacy, self-esteem, social norms, and emotional support are considered to be common components of empowerment. This study focuses on sexual empowerment. Therefore, two self-efficacy measures related to safer sex—self-efficacy to refuse sexual behavior and condom used self-efficacy—were selected.

Self-efficacy to refuse sexual behavior

The original nine-item scale developed by Kasen et al. (Kasen, Vaughan, & Walter, 1992) is used to evaluate self-efficacy to refuse sexual behavior. However, this study adopted a shortened version with four items measured on a five-point Likert scale to determine the degree to which an individual feels that their ability to say no to sexual intercourse depends on their relationship with their partner (DiClemente et al., 2010). Cronbach's alpha for the shortened

version used in this study was 0.84. The items are as follows. “How likely do you think it is that you would be able to say no to having sexual intercourse with someone…” (a) “you have known for a few days or less?”; (b) “you want to date again?”; (c) “you want to fall in love with you?”; and (d) “who is pressuring you to have sex?” A higher score indicates greater self-efficacy to refuse sexual behavior (α = 0.71).

Condom use self-efficacy

The 26-item Condom Use Self-Efficacy Scale (CUSES) was originally developed with responses rated on a 5-point Likert scale (Brafford & Beck, 1991) (α = 0.95). However, this study utilizes three distinct extracted factors—(1) Appropriation, the acquisition and use of a condom (α = 0.76); (2) Sexually Transmitted Diseases, the stigma associated with sexually transmitted diseases (α = 0.83); and (3) Partner’s Disapproval, partners' feelings about using condoms (α = 0.66)—for a total of eight items from the original scale (Barkley Jr & Burns, 2000). An example of an item that used to measure self-efficacy is “I feel confident in my ability to put a condom on myself or my partner.” A higher score indicates greater condom use self-efficacy (α = 0.83).

Self-Esteem

The 10-item Rosenberg Self-Esteem scale with responses measured on a 4-point Likert scale (strongly agree to strongly disagree) is used to determine the individual’s self-esteem (α = 0.83) (M. Rosenberg, Schooler, Schoenbach, & Rosenberg, 1995). It is scored on a scale of 0-30 with higher scores indicating higher self-esteem. Someone with high self-esteem appreciates their own merits, has self-respect, and considers themselves as a person of worth. An example of an item used to measure self-esteem is “On the whole, I am satisfied with myself.”

Social norms for condom use

The norms sub-scale of the Sexual Risks Scale is used to measure condom use norms (DeHart & Birkimer, 1997). The scale includes seven items with responses based on a five-point Likert scale from 1 = "strongly agree" to 5 = "strongly disagree." Sample items include: "If I had sex and I told my friends that I did not use condoms, they would be angry or disappointed"; "My friends talk a lot about 'safer' sex"; and "My friends and I encourage each other before dates to practice 'safer' sex." Here, the scores are reversed, so that higher scores indicate more positive norms toward condom use. The internal consistency of the scale is $\alpha = 0.87$.

Emotional support

The Medical Outcomes Study Social Support Survey (MOS-SSS) is used to measure social support (Sherbourne & Stewart, 1991). The original scale includes four sub-scales: emotional, tangible, affectionate, and positive social interaction. However, only items relating to emotional support are included in the study because of the stronger relationship demonstrated between emotional support and psychological empowerment ($\alpha = 0.97$). The emotional sub-scale consists of 8 items, scored on a 5-point Likert scale (none of the time to all of the time). All questions begin with "How often is each of the following kinds of support available to you if you need it?" An example of an item is "Someone you can count on to listen to you when you need to talk." Higher scores indicate greater perceived emotional support.

Stigma

Experienced sexual minority stigma

The Multiple Discrimination Scale is used to evaluate the degree of experienced interpersonal, institutional, and violent forms of discrimination due to HIV serostatus, race/ethnicity, and sexual orientation (Bogart et al., 2011). This study employs a gay sub-scale of Multiple Discrimination Scale (MDS-gay), which measures discrimination events in the past year caused by sexual minority status. The scale comprises 10 items asking about being treated with coldness by strangers, ignored by people close to the respondent, rejected by a potential romantic partner, and denied a job because of their sexual orientation. The response options are no (0) and yes (1), and the scale scores are computed by summing the responses of 10 items. The scale score ranges from 0 to 10, with a higher score indicating higher experienced sexual minority stigma.

Internalized homophobia

The original nine-item Internalized Homophobia scale was developed by Martin and Dean. Later, Herek revised and reduced the scale to five items (Herek & Glunt, 1995). This revised version includes the following items: (a) “I wish I were not (self-identified sexual identity)”; (b) “I have tried to stop being attracted to men in general”; (c) “If someone offered me the chance to be completely heterosexual, I would accept it”; (d) “I feel that being gay is a personal shortcoming for me”; and (e) “I would like to get professional help in order to change my sexual orientation from (self-identified sexual identity) to straight.” The revised version employs a five-point Likert scale from 1 = “strongly disagree” to 5 = “strongly agree” (α = 0.87). The scale scores are computed by summing the responses to the five items, where a higher score indicates higher internalized homophobia (range of 5–25).

Racial discrimination

As with experienced sexual minority stigma, this study uses the race sub-scale of the Multiple Discrimination Scale (MDS-race), which measures discrimination events in the past year caused by race/ethnicity (Bogart et al., 2011). The scale has 10 items asking about being treated with coldness by strangers, ignored by people close to the respondent, rejected by a potential romantic partner, and denied a job because of race. The response options are no (0) and yes (1), and the scale scores are computed by summing the responses to the 10 items. The scale score ranges from 0 to 10, with a higher score indicating higher racial discrimination.

Sexual risk behavior

At baseline and each follow-up survey, the number of acts of CAI in the preceding 3 months was derived from each participant's responses to the questions in the sexual risk domain of the survey. The total number of acts of anal intercourse was calculated as the sum of the number of self-reported instances of receptive or insertive anal sex with a male partner; the number of condomless acts was then derived as this value subtracted by the number of times the participant reported using a condom. Continuous scores were used to determine the outcome in Aim 3.

Table 4.1. Components of HMP.

Site section	Intervention user activities	Intended outcomes
House of Mpowerment	Read articles (HIV/STI, health)	-Gain new knowledge
Ask Dr. W	Post anonymous health questions for HMP doctor who responds	-Gain new knowledge -Dispel inaccurate knowledge -Decrease sexual health stigma -Decrease risk behaviors
Judge Your Skills	Complete health knowledge quizzes	-Gain new knowledge -Dispel inaccurate knowledge
Know Your Risk	Complete HIV/STI risk assessment profiles	-Increase risk awareness (e.g., sexual behaviors, alcohol/drug use) -Gain new knowledge
My Life, My Goals	Set steps to achieve health goals and receive links to support resources (e.g., tobacco quit lines)	-Increase healthy behaviors (e.g., quit smoking, increase exercise, increase condom use)
The Scene	Make behavior decisions to navigate a choose-your-own adventure game for real-life scenarios.	-Increase risk awareness -Explore potential health outcomes of decision pathways (e.g., forgoing condom use with a new partner leads to an STD)
Journal	Complete entries in private journal sections (medical history, sexual partners, free text)	-Increase risk awareness -Increase self-monitoring and assessment
Get Tested	Use GPS locator for HIV/STI testing and care resources	-Increase awareness of testing, counselling & care resources -Increase self-reported HIV/STI testing
HMP Store	Earn points by using HMP to "purchase" prizes (e.g., condom wallet, HMP t-shirt), order free HIV/STD test kits	-Sustained intervention use -Provide free self-testing resources -Increase HMP social network
Local Flavour	Read and post reviews of local businesses and health services	-Build community among YBMSM by increasing social options, shared interests and raising awareness of gay-friendly venues and providers.
Events	Read and post events to the community calendar application	-Build community among YBMSM by increasing social connections/options, shared interests and raising awareness of LGBTQ events.
Getting Real	View, create and share multi-media submissions (e.g., poetry, videos, photos) on relevant health and life issues	-Build community -Decrease HIV, race-ethnic minority and MSM-related stigma -Establish positive social norms
Forum	Post and comment to message boards for health and life topics and advice	-Build community -Establish positive social norms -Gain new knowledge

Table 4.2. Descriptive statistics of HMP participants at baseline and follow-up

	Baseline (N=474)			Three-month follow up (at intervention completion) survey (N=404)		
	Intervention (N=238)	Control (N=236)	P-value	Intervention (N=194)	Control (N=210)	P-value
Age	24.29 (SD 3.15)	24.36 (SD 3.27)	0.83	24.71 (SD 3.08)	24.49 SD 3.57)	0.49
HIV-positive	107 (44.96%)	92 (38.98%)	0.19	91 (46.91%)	83 (39.52%)	0.16
<high school graduate	28 (11.76%)	15 (6.36%)	<0.01	20 (10.31%)	16 (7.32%)	0.06
Income less than $11,000	120 (50.63%)	128 55.41%)	0.78	98 (50.78%)	122 (58.65%)	0.37
Health Insurance	173 (72.69%)	166 (70.34%)	0.61	138 (71.50%)	140 (66.99%)	0.33
Arrested last 3 months	18 (7.56%)	10 (4.34%)	0.17	19 (9.84%)	19 (9.09%)	0.87
Homelessness last 6 months	59 (24.79%)	45 (19.07%)	0.15	44 (22.92%)	40 (19.23%)	0.39
Depressive Symptoms	115 (49.15%)	117 (50.21%)	0.85	67 (41.36%)	79 (44.13%)	0.61
Social Isolation	84 (35.44%)	88 (37.29%)	0.70	54 (33.13%)	79 (42.93%)	0.06
# CAI past 3 months	5.74 (SD 19.75)	6.48 (SD 28.97)	0.74	3.93 (SD 15.91)	5.18 (SD 17.32)	0.45

Table 4.3. Description of measures

Type of construct	Specific construct	Measure
Development of the sexual empowerment scale (Aims 1, 3)	Self-efficacy to refuse sexual behavior	Self-efficacy to refuse sexual behavior scale (Kasen et al., 1992)
	Condom use self-efficacy	Condom Use Self-Efficacy Scale (Brafford & Beck, 1991)
	Self-Esteem	Self-Esteem scale (M. Rosenberg et al., 1995)
	Social norms on condom use	Condom use norms sub-scale of the Sexual Risks Scale (DeHart & Birkimer, 1997)
	Emotional support	Medical Outcomes Study Social Support Survey (MOS-SSS) (Sherbourne & Stewart, 1991)
Stigma (Aims 2, 3)	Experienced Sexual Minority Stigma	The Multiple Discrimination Scale- Sexual orientation (Bogart et al., 2011)
	Internalized Homophobia	Revised Ego-Dystonic Homosexuality Scale (Herek & Glunt, 1995)
	Racial Discrimination	The Multiple Discrimination Scale- Race/ethnicity (Bogart et al., 2011)
Sexual risk behaviors (Aim 3)	Condomless anal intercourse with male partner	The number of condomless anal intercourse with male partner in the past 3-month

CHAPTER 5: AIM 1

Introduction

What is empowerment

Empowerment is a social action process and informed by health prevention theory which focuses on linking an individual's belief about their ability to change their behavior with the social and political environment (Airhihenbuwa, 1994; Perkins & Zimmerman, 1995; Zimmerman, 1995). Empowerment promotes the participation of people, organizations and communities towards the goals of increased control over their lives, political efficacy, quality of life, social justice, and reduced marginalization (Maton, 2008; N. A. Peterson, 2014; Rappaport, 1981; Wallerstein, 1992). Empowerment can create a social trend that mobilizes collective power and resources leading to a change in social norms which can discourage risky behaviors within the community. Eventually, these changes can be "protective" for individual communities, leading to less disease. (Kelly et al., 1993; D. Kerrigan et al., 2015). Thus, empowerment is considered an effective health prevention model to change health behavior or improve life situations.

The importance of acknowledging multidimensionality of empowerment

Multidimensionality is defined as a domain consisting of a number of theoretically meaningful interrelated dimensions (Law, Wong, & Mobley, 1998), while unidimensionality is defined as the existence of a single domain that explains all the correlations observed between

the items (Falissard, B., 1999). Previous studies have recognized the multidimensionality of empowerment in different ways. Rissel defined empowerment as consisting of two different aspects, psychological empowerment, and community empowerment (Rissel, 1994). Psychological empowerment focuses on power to control individual behaviors while community empowerment focuses on power to control external resources. Zimmerman further defined the multidimensionality of psychological empowerment with three different aspects, intrapersonal, interpersonal and behavioral empowerment (Zimmerman, 1995). Eisman also maintains that empowerment is a higher-order multidimensional construct with intrapersonal, interpersonal and behavioral sub-constructs (Eisman et al., 2016).

Empowerment in HIV prevention

Previous studies have applied empowerment theory in HIV prevention among sex workers and men who have sex with men (MSM). A systematic review of community empowerment approaches focusing on sex workers' collective ownership to reduce HIV risks showed effective reductions in HIV and other sexually transmitted infections (STIs) and consistent increases in condom use (D. L. Kerrigan et al., 2013). Among MSM, interventions using an empowerment-based approach have shown reductions in sexual risk. An empowerment theory-based intervention to reduce sexual and substance use risk behavior among MSM drug users in South Florida was effective in reducing the number of acts of condomless anal intercourse (CAI) and sexual intercourse under the influence of alcohol (Kurtz et al., 2013). The Mpowerment Project, which included outreach at bars and community events, small group sessions, and public campaigns to address empowerment at the individual, interpersonal, social, and structural level, found that, compared to a control group, young MSM in the intervention group significantly reduced their engagement in CAI (Hays et al., 2003).

One possible reason for the success of empowerment theory-based interventions may hinge on the rejection of classifying these traditionally marginalized group as victims or vectors of disease (D. Kerrigan et al., 2015), but instead focusing on their human rights as agents of change. Further, these interventions facilitated community building based on existing and informal social networks, a strategy that should be encouraged (S. D. Rhodes et al., 2009; S. D. Rhodes et al., 2011).

Sexual empowerment in HIV prevention among YBMSM

In the United States (U.S.), young Black men who have sex with men (YBMSM), under the age of 30, are disproportionately impacted by HIV. In 2016, among people diagnosed with HIV, 67% were MSM, of whom, 38% were Black (CDC, 2018a). One third of Black MSM diagnosed with HIV were aged 13 to 34 compared to Whites (15%), and Hispanics/Latinos (23%) (CDC, 2018b). The disparities in HIV infection rates among YBMSM cannot be solely explained by individual level risk behaviors but are likely the result of the interplay of syndemic (a set of linked health problems interacting synergistically) conditions impacting these men (Millett et al., 2012; Millett et al., 2006; Sullivan et al., 2014). Socially disadvantaged statuses, such as being a sexual, racial, and gender minority, will expose those in the disadvantaged group to more stress than members of advantaged groups (Meyer, 2003). The stress that YBMSM experience includes expectations of rejection, internalized homophobia, racial discrimination, and prejudice. These stress-related experiences may give rise to a range of health disparities such as engagement in sexual risk behaviors or mental disorders. Young BMSM have been found to be marginalized and isolated due to the intersection of multiple identities such as race, sexual orientation, age, and (presumed) HIV status. This marginalization has in turn, been associated with a lack of engagement with protective sexual behaviors (Mimiaga et al., 2015). Thus,

empowerment-based approaches, specifically sexual empowerment, might be an effective strategy to reduce the risk for HIV infection among YBMSM (D. Kerrigan et al., 2015). Sexual empowerment can be defined as a social action process that involves not only the participation of individuals, but also interactions or paradigm shifts between different socio-ecological levels such as communities, and societies with the goal of increasing safer sex behaviors or the ability of people to have control over or change their risky sexual behavior within their social environment. This study aims to explore sexual empowerment among YBMSM.

While the importance of sexual empowerment among YBMSM has been recognized; there exists no current measurement tool that adequately quantifies levels of sexual empowerment among YBMSM or assesses changes in response to interventions targeting it. Current scales used in health-related empowerment research include the Sociopolitical Control Scale (N. A. Peterson et al., 2006; Speer & Peterson, 2000; Zimmerman & Zahniser, 1991) and the Perceived Control Scale (Sandstrom et al., 1998; Schulz et al., 1995). However, these scales do not address individual behaviors but rather focus on the intrapersonal component of psychological empowerment, and thus measure policy control and community involvement. However, given that empowerment is fundamentally about an individuals' belief in their ability to change their behavior through interactions at the individual, community, and sociopolitical level, behavior change that results should not be ignored. Further, most of the research using the aforementioned empowerment scales have not focused on quantifying empowerment directly in an attempt to measure empowerment itself or changes in empowerment within specific populations as a result of targeted interventions. Quantifying empowerment is needed not only to evaluate the impact of interventions, but also to explore the relationship between empowerment and engagement in health promotion or risk behaviors.

The multidimensionality of sexual empowerment

The lack of a validated instrument to measure sexual empowerment may be a contributing factor limiting evaluation of empowerment-based approaches on sexual risk reduction among YBMSM. This study aimed to fill that gap by developing and validating a multidimensional sexual empowerment scale (SEMS) among YBMSM. This SEMS incorporates the behavioral aspect of empowerment—condom use—given that it is the most important behavior leading to HIV transmission or acquisition among YBMSM.

To inform scale creation, a literature review was conducted to identify common constructs of sexual empowerment and to assess how these constructs impacted engagement in sexual risk behaviors among MSM. The selected constructs included; personal/perceived control (self-efficacy), self-esteem, emotional support and sense of community (Marín, 2003; Wallerstein, 1992; Zimmerman, 1995; Zimmerman, Israel, Schulz, & Checkoway, 1992). Self-efficacy is defined as individuals' beliefs that they can control their behavior (e.g., use condoms during sex); increased condom use self-efficacy has been associated with reduced sexual risk behaviors among ethnically diverse MSM in the U.S. Self-esteem refers to an individuals' subjective evaluation of their worth, a construct not limited to specific behaviors. Rural MSM with low self-esteem were more likely to have multiple sexual partners, and engage in receptive CAI compared to MSM with high self-esteem (Preston et al., 2004). Emotional support is defined as receiving support from trusted others related to issues of love, trust, empathy, affection, acceptance, encouragement, or caring from others. Emotional support has been associated with more positive health behaviors including protected sexual behavior, coping, and mental health outcomes among MSM (Deichert et al., 2008; Saleh, van den Berg, Chambers, & Operario, 2016; Wong et al., 2014). Lastly, enhancing the sense of community and community

empowerment can be linked to positive social norms, a key strategy in HIV prevention, by reducing sexual risk behavior among MSM (Berg, 2008). Social norms can be defined as social pressure regarding whether or not to perform a behavior and has been associated with greater perceived control and strong intentions to perform a given health behavior (Ajzen, 1991). Black MSM with more negative social norms around condom use are more likely to engage in sexual risk behaviors than those with more positive condom use norms (J. Peterson et al., 2008).

Current Study

Confirmatory factor analysis (CFA) was used to test the predictive validity and multidimensionality of the newly developed SEMS. Condom use self-efficacy, self-efficacy to refuse sexual behavior, self-esteem, emotional support and condom use norms were included as sub-constructs of sexual empowerment. We conducted a series of CFA models (i.e., unidimensional, correlated factors, and second-order model) to explore the factor structure of the SEMS with six sub-constructs of sexual empowerment. The study hypothesized that a bifactor model would account for the item covariance for SEMS the most since items in SEMS can be conceptualized as not only a sexual empowerment (general factor), but also a specific factor (condom use self-efficacy, self-efficacy to refuse sexual behavior, self-esteem, emotional support and condom use norms). Assuming the SEMS conforms to a bifactor model, ancillary bifactor measures will verify the dimensionality of the SEMS and the reliability of total or sub-construct scores.

Methods

Study Design and Sample

In 2014, healthMpowerment.org (HMP), a mobile-phone-optimized, Internet-based intervention was designed to reduce sexual risk behaviors among YBMSM (Hightow-Weidman et al., 2011; Muessig, Baltierra, Pike, LeGrand, & Hightow-Weidman, 2014). The study sample consisted of 474 YBMSM in North Carolina randomized to either HMP or an information-only control website for 3 months. Online surveys were administered at four time points; baseline, three months, six months, and 12 months. The current study only used baseline data.

Developing the sexual empowerment scale (SEMS)

To develop the SEMS among YBMSM, constructs relevant to empowering safer sex behaviors (self-efficacy to refuse sexual behavior, condom use self-efficacy, self-esteem, social norms on condom use and emotional support) were included as measures in the baseline survey. In line with Zimmerman, we defined the multidimensionality of psychological empowerment with three different aspects, intrapersonal, interpersonal and behavioral empowerment. The intrapersonal aspect refers to how people perceive themselves, which includes self-esteem and self-efficacy. The interpersonal aspect refers to how people are connected to their community and to the larger society, including social norms and emotional supports. Lastly, the behavioral aspect is about taking actions to influence outcomes directly. Safer sex was selected as the fundamental behavior aspect given the parent HMP study aimed to empower YBMSM to reduce HIV risks through engagement in less CAI, the most direct behavior related to acquisition or transmission of HIV infection. Safer sex related self-efficacies include self-efficacy to refuse sexual behavior and condom use self-efficacy. All of the sub-constructs were derived from pre-

existing validated scales. Negatively worded items were reverse coded so that a higher value indicates greater self-efficacy, higher self-esteem, positive social norms, and higher emotional support.

Self-efficacy to refuse sexual behavior

The original scale developed by Kasen and colleagues used 9-items to evaluate self-efficacy to refuse sexual behavior (Kasen et al., 1992). However, this study adopted a reduced version consisting of 4-items with a 5-point Likert scale to determine the degree to which an individual felt they would be able to say no to sexual intercourse depending on their relationship with partner (DiClemente et al., 2010). A higher score indicates greater self-efficacy to refuse sexual behavior (α=0.71).

Condom use self-efficacy

The Condom Use Self-Efficacy Scale (CUSES) was originally developed with 26-items with responses rated on a 5-point Likert-type scale (Brafford & Beck, 1991) (α = 0.95). In this study, eight items from the original scale were included measuring three distinct extracted factors: ‘condom appropriation’, ‘stigma associated with sexually transmitted diseases’, and ‘partners' disapproval of condom use’ (Barkley Jr & Burns, 2000). A higher score indicates greater condom use self-efficacy (α = 0.83).

Self-esteem

A scale developed by Rosenberg was used to estimate individuals’ self-esteem (M. Rosenberg et al., 1995). A person who exhibits high self-esteem appreciates their own merits, has self-respect, and considers himself as a person of worth. The 10-item scale used a 4-point

Likert-type scale (strongly agree to strongly disagree). A higher score indicates greater self-esteem ($\alpha = 0.83$).

Social norms on condom use

The norms sub-scale of the Sexual Risks Scale was used to measure social norms for condom use (DeHart & Birkimer, 1997). The scale includes seven items with responses based on a 5-point Likert scale from 1= "strongly agree" to 5= "strongly disagree" ($\alpha = 0.87$). Reversed scores were used such that higher scores indicate more positive social norms for condom use.

Emotional support

The Medical Outcomes Study Social Support Survey (MOS-SSS) was used to measure social support (Sherbourne & Stewart, 1991). Sub-scales include: emotional, tangible, affectionate, and positive social interaction. Only the emotional support items were included in the study given its established relationship with psychological empowerment. Higher scores indicate greater perceived emotional support ($\alpha = 0.97$).

Validating sexual empowerment scale

Depression, anxiety, and safer sex intentions were also included in the analysis to test the predictive validity of the SEMS. Based on the empirical and theoretical literature, poor mental health outcomes were expected to be negatively associated with psychological empowerment and healthy behaviors positively associated with psychological empowerment (Airhihenbuwa, 1994; Kurtz et al., 2013; Zimmerman, 1995). Depression and anxiety were selected as mental health constructs and safer sex intentions were considered as healthy behavioral antecedents among YBMSM.

Depression

Depressive symptoms were assessed with the Center for Epidemiologic Studies Depression Scale (CES-D), a 20-item validated survey of clinically significant distress as a marker for clinical depression (α = 0.90) (Lewinsohn, Seeley, Roberts, & Allen, 1997). Higher scores indicate greater depressive symptoms. Respondents indicated the frequency of each symptom over the past week on a 4-point Likert-type scale (range 0-60).

Anxiety

The seven-item version of the General Anxiety Disorder scale (GAD-7) was used to measure anxiety (α = 0.93) (Spitzer, Kroenke, Williams, & Löwe, 2006). Items measured the frequency in which respondents experienced anxiety symptoms in the past two weeks. Scores of 0, 1, 2, and 3, were assigned to the response categories of ―not at all, several days, more than half the days and nearly every day, respectively (range 0-21).

Safer sex intentions

Four items measured safer sex intentions –not to use drugs or alcohol before sex, to discuss condom use with partner, to use condoms, to use a condom if partner refused, and to have a condom nearby (Hightow-Weidman et al., 2012). Each item used a 4-point Likert-type scale, with response options ranging from very unlikely to very likely. Higher score indicates greater intentions toward safer sex (α = 0.79).

Statistical Analysis

Baseline descriptive characteristics were calculated to summarize sociodemographic variables including age, HIV status, sexual identity, education, and income.

Before conducting multidimensional CFA models, each sub-construct's factor structure was validated through unidimensional CFA. Based on the adequacy of model fit, those items with low factor loadings were deleted or, as appropriate, a better fitting factor structure was identified and tested.

After validating each sub-construct, we fit multiple multifactor CFA models of the SEMS—these included unidimensional, correlated factors, second order, and bifactor models (Reise, Morizot, & Hays, 2007) (Figure 5.1). Unidimensional model hypothesizes that the covariance among item is explained by one construct and this is the most restricted model. Correlated factor has more than one common construct and several factors are correlated to each other. Second order model hypothesizes the theorized construct loads into certain number of underlying sub-construct. Finally, bifactor model hypothesizes that items are loaded on not only general construct, but also additional source of common sub-construct. Comparing four CFA models will allow to verify best fitting internal structure of the data. Model fit statistics for these different models were computed; these included chi-square test of model fit, Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI), and Weighted Root Mean Square Residual (WRMR). A model was considered to have good fit if the RMSEA point estimate was less than 0.06 (Browne & Cudeck, 1993) and the CFI was greater than 0.90 (Hu & Bentler, 1999). Furthermore, a WRMR close to 1.00 was suggested for models with dichotomous outcomes (Hu & Bentler, 1999).

Calculation of ancillary bifactor measures is strongly recommended to determine the most appropriate interpretation of scale's dimensionality and the model-based reliability of the total and sub-construct scores (Reise, 2012; Rodriguez, Reise, & Haviland, 2016b). Explained Common Variance (ECV), omega Hierarchical (ωH), omega hierarchical sub-construct (ωHS),

Percentage of Reliable Variance (PRV), Individual Explained Common Variance (IECV), and Relative Parameter Bias (RPB) were included as ancillary bifactor measures in this study to determine the dimensionality of Sexual Empowerment and assess internal consistency of the total SEMS and sub-constructs of SEMS scores (Hammer & Toland, 2016). Explained Common Variance (ECV) is the ratio of variance explained by the general factor (Sexual Empowerment) divided by the variance explained by the general factor plus each sub-construct's factor (Reise, 2012). General coefficient omega hierarchical (ωH) is the percentage of systematic variance attributable to individual differences on the general factor (McDonald, 2013) and omega hierarchical sub-construct (ωHS) is the proportion of sub scale score variance that can be attributed to the specific factor after accounting for the general factor (Reise, Bonifay, & Haviland, 2013). Percentage of reliable variance (PRV) is proportion of ωH attributable to omega for total score (Hammer, McDermott, Levant, & McKelvey, 2018). General ECV greater 0.70, general ωH greater than 0.75, ωHS less than 0.50, and PRV greater than 0.75 suggest unidimensionality or permit the use of total score rather than sub-construct score (Hammer et al., 2018; H. Quinn, 2014; Stucky & Edelen, 2014).

Individual Explained Common Variance (IECV) is a proportion of common variance for each item explained by the general factor which tells how strongly each item measures the general factor (Stucky & Edelen, 2014). Relative Parameter Bias (RPB) compares factor loadings on the general factor from the bifactor model to factor loadings from the unidimensional model, which was computed by differences between an item's factor loading in the unidimensional model and its general factor loading in the bifactor model, divided by the general

factor loading in the bifactor model (Rodriguez, Reise, & Haviland, 2016a). Individual Explained Common Variance (IECV) greater than 50% indicate an item measures a general factor more than sub-construct factor (Hammer & Toland, 2016) and an average RPB less than 10-15% is acceptable and poses no serious concern in an unidimensional model (B. Muthén, Kaplan, & Hollis, 1987).

Lastly, Structural Equation Modeling (SEM) including depression, anxiety, and safer sex intentions were used to assess the predictive validity of the finalized model. Based on the empirical and theoretical literature, mental health outcomes (depression and anxiety) were expected to be negatively associated with psychological empowerment and healthy behaviors (safer sex intentions as healthy behavior antecedents) positively associated with psychological empowerment (Airhihenbuwa, 1994; Kurtz et al., 2013; Zimmerman, 1995).

Sexual empowerment scale latent factors were used to predict each criterion variable's composite score. This model evaluated whether the finalized model predicts the criterion variable theoretically or not. Items in six sub-constructs were considered as ordinal since response options were assessed on a Likert scale. All analyses were conducted with M*plus* 8.0 (Muthén & Muthén).

Results

Demographics

The mean age of the 474 participants was 24.33 (SD=3.22) and 42% were HIV-positive. Most participants identified as gay (67%), had a high school degree or less (76%), and had an income under $11,000 (53%).

Model selection

Unidimensional models with items belonging to each sub-construct loaded on the sub-construct were assessed to confirm each sub-construct factor structure before conducting the main analysis. Self-efficacy to refuse sexual behavior (CFI=0.90) and emotional support (CFI=0.99) models showed adequate fit and factor loadings greater than 0.60. However, the unidimensional model with condom use self-efficacy items loaded on condom use self-efficacy was marginally adequate with CFI 0.89 with factors loadings ranging from 0.60 to 0.86. After deleting the item with the lowest factor loading (0.60), the model fit increased to 0.90. Given the study used a validated scale and the incremental increase of CFI was not significant, the original scale was retained. The unidimensional model for social norms on condom use showed CFI 0.96, but factor loadings of two items were less than 0.60 (0.43 and 0.58). A decision to remove these two items from the social norms construct was made from both the statistical and empirically lens. On review, both items asked participants about the degree of anger or concerns their friends would have with them for not using condoms. These questions were much more subjective in requiring the participant to place themselves in the mind/emotion of their friends which might reduce the reliability of the scale. In addition, one of the deleted items was negatively worded item while all the others were positively worded. After removal, CFI was 0.97with factor loadings range from 0.72 to 0.93. The unidimensional model for self-esteem had CFI of 0.86. Assessment of the loading indicated systematic differences between the positively and negatively worded self-esteem measures. Based on the factor structure of the unidimensional model with all self-esteem items loaded on self-esteem, self-esteem was divided into two dimensions, positive and negative self-esteem. Each unidimensional model was tested with positive self-esteem and negative self-esteem, and both showed adequate fit with CFI 0.96 for positive self-esteem and

0.98 for negative self-esteem. In summary, based on this pre-analysis, two items with low factor loading in social norms for condom use were deleted and self-esteem was divided into two sub-constructs, positive and negative self-esteem. Therefore, 35 items with six sub-constructs; condom use self-efficacy, self-efficacy to refuse sexual behavior, positive self-esteem, negative self-esteem, emotional support and condom use norms; were included in the measurement model testing.

Measurement model testing results indicated that correlated factors, second-order, and bifactor models met most of criteria for adequate model fit (Table 5.1). To examine whether a unidimensional treatment of the SEMS would be appropriate, a unidimensional model with all 35 items were loaded on a single factor resulting in a poor fitting model (CFI=0.86; RMSEA=0.19, 90% CI 0.198-0.19; WRMR=5.46). To assess the multidimensionality of the SEMS, three different types of multidimensional models were tested—a correlated factors model, second-order factor model, and bifactor model. In all cases items for each of the six sub-scales were loaded on their respective factors. In the correlated factors model, these six latent constructs were correlated with each other. In the second-order factor model the six sub-constructs were on a higher order general SE factor. In the bifactor model, items loaded on each sub-construct were also loaded again on a general SE factor, with correlations between all factors fixed to zero. Correlated factors (CFI=0.98; RMSEA=0.07, 90% CI 0.07-0.07; WRMR=1.61), second-order (CFI=0.98; RMSEA=0.07, 90% CI 0.06-0.07; WRMR=1.82), and bifactor models (CFI=0.96; RMSEA=0.06, 90% CI 0.06-0.07; WRMR=.1.1.70) satisfied with fit statistics. Therefore, we can conclude that correlated factors, second-order, and bifactor models show adequate model fit. Among those three models, the bifactor model fit exhibited significantly better model fit compared to the correlated factors model (df=20, chi-square differences=254, p<0.0001) as well

as compared to the second-order bifactor model (*df*=29, chi-square differences=133, $p<0.0001$). These results indicate that some (but not all) of the shared variability between the SEMS items is explained by a general sexual empowerment factor; however, there are still meaningful domains (i.e., sub-factors) for this scale.

Dimensionality

Among the four different models tested, the bifactor model had the best fit. Therefore, ancillary bifactor measures were calculated to determine the dimensionality of sexual empowerment and address the reliability of the composite SEMS and sub-constructs. As shown in Table 5.2, 33.5% of the common variance (ECV=0.335) in the SEMS was due to the general factor, sexual empowerment. Two thirds of the common variance was not due to the general factor, this supports multidimensionality rather than unidimensionality.

The coefficient omega hierarchical was computed for the general factor (ωH) and specific sub-construct factor (ωHS). Reise suggests the use of total score rather than sub-construct score when the omega hierarchical (ωH) is over 0.75 (Reise, 2012). The results indicated that the general factor accounted for 71% of the explained variance (ωH=0.714). Moreover, 39% to 79% of specific sub-construct score variance (ωHS) was due to the specific factor after considering the general factor. This indicates that the condom use self-efficacy specific sub-construct score's variance (ωHS=0.39) was due to the general factor rather than this specific factor. Except for the condom use self-efficacy specific factor, the other five specific

factor scores' variances were due to the specific factor rather than the general factor (ωHS >0.50). In addition to ωH and ωHS, Li suggests that at least 0.75 PRV needs to be achieved for using general factor scores, and the study found that the general factor accounted for 73% of the reliable variance (PRV=0.732) (Li et al., 2016). These numbers were quite close to the cutoff but were not strong enough to conclude using total general factor scores instead of specific factor scores.

Table 5.3 includes standardized loadings for the unidimensional and bifactor model with RPB and IECV ancillary bifactor measures. In the bifactor model, the factor loading on the general factor ranged from 0.41 to 0.72, except for eight items which loaded below 0.4 (range 0.16-0.37). The factor loadings on the specific factors range from 0.55 to 0.87 except for four items which loaded below 0.4 (range 0.26-0.35). Only four items among the 35 total items had IECV greater than 50%. Factor loadings on general and specific factors and IECV results indicate that most items measure specific factors rather than the general factors (Table 5.3). The average relative parameter bias across the 35 items was 40%. According to Muthén and colleagues, an average RPB less than 10-15% is acceptable and poses no serious concern in unidimensional models (B. Muthén et al., 1987). However, 40% is above the suggested limit which means serious concerns can be identified using a unidimensional model.

The results of the ancillary bifactor measures suggest that the SEMS was primarily multidimensional, although some unidimensional features were captured, especially borderline ωH and PRV. The results indicate that use of sub-scale scores instead of general factor composite scores is preferred, thus acknowledging the multidimensionality of the SEMS.

Predictive Validity

Predictive validity was tested using a model with the six SEMS sub-constructs predicting three criterion variables (i.e., anxiety, depression, and safer sex intentions). Ancillary bifactor measures supported a multidimensional factor structure, and consequently the use of specific sub-construct scores instead of a single general factor composite score when conducting analyses using the SEM (Figure 5.2). Composite scores for each criterion variable were used since the model with criterion variable as factor structure was not satisfied. Table 5.4 summarizes the standardized coefficient from the model described in Figure 5.2. As hypothesized, the five specific sub-constructs of the SEMS (but not self-efficacy to refuse sexual behavior) were negatively associated with anxiety and depression (respectively, *p*s<0.0001). In addition, the five sub-constructs of the SEMS (but not negative self-esteem) were positively associated with safer sex intentions ($p<0.0001$) with greater scores on the SEMS related to greater intentions toward engaging in safer sex. Most of the results were as theoretically and empirically expected such that mental health outcomes are negatively associated with psychological empowerment and healthy behavior antecedents are positively associated with psychological empowerment (Airhihenbuwa, 1994; Kurtz et al., 2013; Zimmerman, 1995).

Discussion

This study supports the use of a newly developed multidimensional SEMS consisting of six specific sub-constructs to measure the degree of psychological empowerment for engagement in safer sex behaviors (i.e., condom use during anal sex) among YBMSM. The scale resulted in 35 items with six sub-constructs: emotional support (8 items), self-efficacy for condom use (8 items), negative self-esteem (5 items), positive self-esteem (5 items), self-efficacy to refuse sexual behavior (4 items), and social norms for condom use (5 items).

Among four different measurement models, the bifactor model proved the best fitting model. The bifactor model allows one to examine not only the relationship between the general factor of sexual empowerment, as well as all 35 items in six specific factors, but also the relationship between the six specific factors and individual items. The bifactor model showed that both the general factor, sexual empowerment, and specific factors, condom use self-efficacy, self-efficacy to refuse sexual behavior, positive self-esteem, negative self-esteem, emotional support and condom use norms, accounted for common variance on each item. However, the bifactor solution itself does not provide enough evidence to support multidimensionality or use of sub-construct scores instead of general scores. Therefore, ancillary bifactor measures were used to determine the dimensionality of SEMS. The ancillary bifactor measures show that the use of raw scores for condom use self-efficacy, self-efficacy to refuse sexual behavior, positive self-esteem, negative self-esteem, and emotional support and condom use norms specific factors instead of total scores is a meaningful way to represent sexual empowerment among YBMSM. This is a significant contribution because ignoring multidimensionality can mislead results. When SEMS is a unidimensional, someone with high self-efficacy and low self-esteem and the other with low self-efficacy and high self-esteem would be considered same as medium empowered. However, multidimensionality can distinguish those two by defined sub-constructs.

Previous studies support our finding that sexual empowerment is a multidimensional construct. Rissel defined general empowerment with two dimensions, psychological empowerment and community empowerment (Rissel, 1994). Zimmerman defined psychological empowerment with three dimensions, intrapersonal, interpersonal and behavioral psychological empowerment (Zimmerman, 1995) and Eisman proved Zimmerman's definition statistically with higher-order model with urban youth (Eisman et al., 2016). This study focused on psychological

empowerment and defined its multidimensionality with behavior specific self-efficacies, positive self-esteem, negative self-esteem, social norms, and emotional support. This aligns well with Zimmerman's three-dimensional definition of psychological empowerment. The SEMS's positive self-esteem, negative self-esteem, and self-efficacies align with Zimmerman's intrapersonal aspect, while social norms and emotional support correlates with Zimmerman's interpersonal aspect, and behavior specific self-efficacies and norms align with Zimmerman's behavior aspect. Notwithstanding its similarity, this study is unique in that it focuses on empowerment related to a specific behavior (i.e., sexual empowerment), and is targeted to YBMSM, a population disproportionately affected by HIV in the U.S. (Balaji et al., 2012). In addition, this study reinterpreted Zimmerman's three aspects of psychological empowerment by disassembling each aspect and identifying concrete and behavior specific aspects. Moreover, this study adapted and combined existing scales in order to impart them with new meaning and create a new sexual empowerment measure.

The study also investigated the predictive validity of the developed SEMS using three criterion variables (i.e., depression, anxiety, and safer sex intentions). The study hypothesized that the six SEMS factors would be negatively associated with anxiety and depression and positively associated with safer sex intentions. Our results mostly supported these hypotheses except for a lack of association between self-efficacy to refuse sexual behavior and anxiety and between negative self-esteem and safer sex intentions.

Some limitations of the study exist. Empowerment is a social action process that needs to be considered not only on an individual level, but also through interactions between different socio-ecological levels such as community, organization, and society. While the study acknowledges the importance of a social action process, this study only addresses psychological

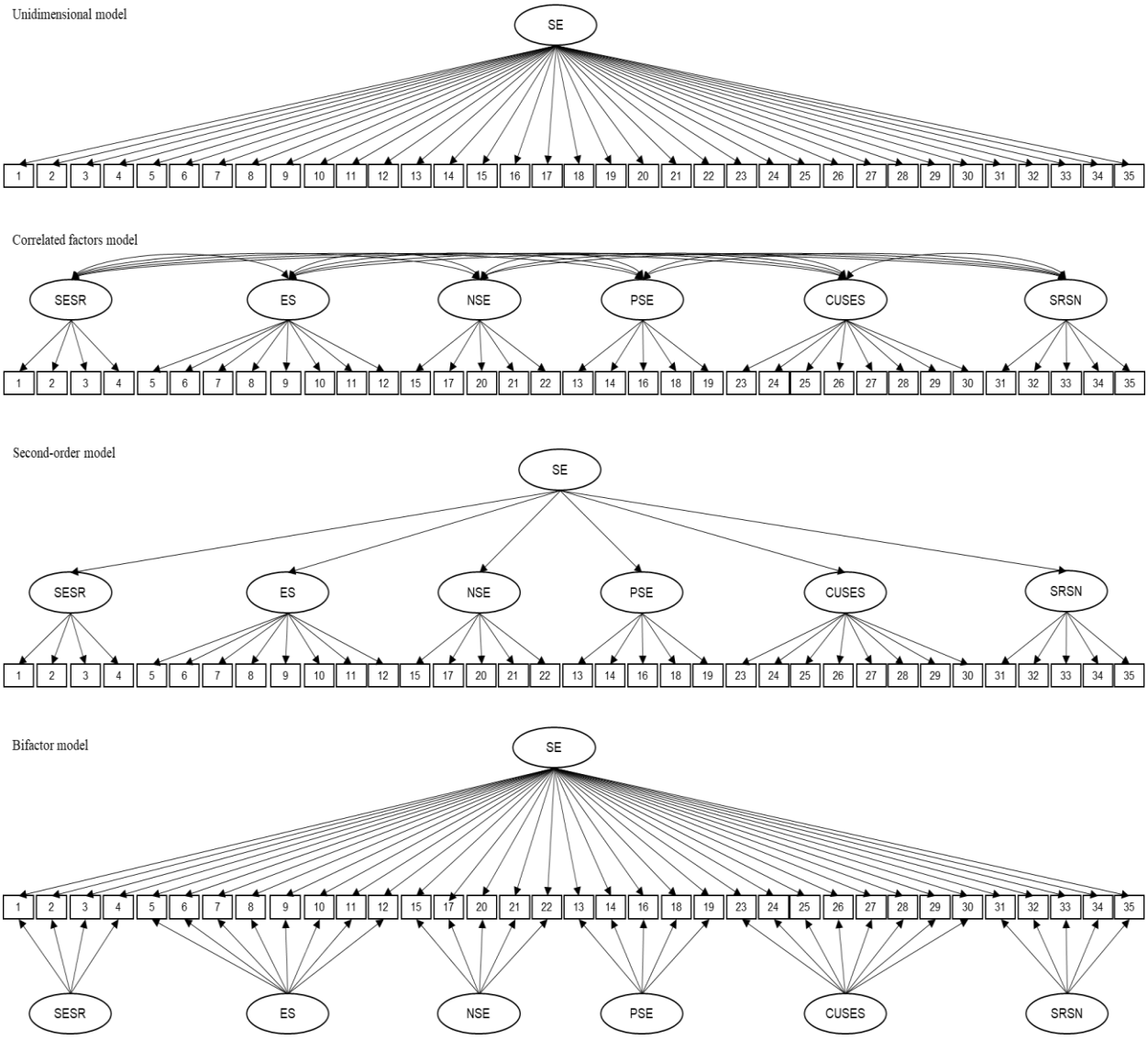
empowerment. Psychological empowerment refers to empowerment at the individual level of analysis (Wallerstein, 1992; Zimmerman, 1990). In addition, there is currently no literature that measures this process aspect within empowerment scales. Due to the relatively small and non-representative nature of the sample it would be valuable to validate this scale with other YBMSM populations in other geographic locations. The study is reliable with goodness of model fit, but other types of tests to estimate reliability were not possible in this study. For example, test-retest and alternative methods are additional options for estimating reliability, but this study cannot conduct those since data collection was already done at the time of analyzing the data.

Although the developed scale in this study cannot be applied to health behaviors of the general population, given the urgency to address the HIV epidemic among YBMSM, the newly developed SEMS has important potential uses. While, it is true that perceptions, beliefs and constructs that encompass psychological empowerment can differ across situations and change over time (Zimmerman, 1995), it does not mean that developing a scale to fit a certain context is unnecessary. Developing and validating an empowerment scale relevant to certain populations and certain contexts is meaningful even if this scale cannot be used in other contexts. The SEMS can be helpful in extending empowerment theory and quantifying the relationship between empowerment and sexual risk among YBMSM as well as for developing and evaluating interventions based on those relationships. An intervention targeting the sub-constructs of the SEMS to reduce CAI among YBMSM could be developed and the intervention effect evaluated through changes in the SEMS. Moreover, this measure can be modified and applied to other MSM related behaviors that require some level of empowerment for engagement such as HIV testing and Anti-Retroviral Therapy (ART)/ Pre-Exposure Prophylaxis (PrEP) uptake and adherence. In addition, the SEMS is an efficient tool to use in future research because of

reducing number of items from existing scales to the most relevant situation and refining the factor structure.

Empowerment is an important framework that can be applied to marginalized populations to both understand, evaluate and promote their health through social action processes. While the importance of empowerment theory to develop interventions has been acknowledged in studies with other populations, less work has been done among YBMSM. This study validated a multidimensional SEMS for YBMSM, using a bifactor approach. Future risk reduction interventions should consider targeting the six specific sub-constructs of the SEMS as either an outcome or a mediator.

Figure 5.1. Four different sexual empowerment measurement models



Note. SE=Sexual Empowerment. SESR= Self-Efficacy to Refuse Sexual Behavior. ES=Emotional Support. NSE=Negative Self-Esteem. PSE=Positive Self-Esteem. CUSES= Condom Use Self-Efficacy. SRSN= Sexual Risk Social Norm.

Table 5.1. Goodness of fit statistics for four different measurement models

Model	Chi-Square Test of Model Fit			RMSEA [90% CI]	CFI	WRMR
	Value	df	p-value			
Unidimensional	10264.831	560	<0.0001	0.19 [0.19, 0.19]	0.86	5.46
Correlated factors	1806.283	545	<0.0001	0.07 [0.07, 0.07]	0.98	1.61
Second-order	1684.524	554	<0.0001	0.07 [0.06, 0.07]	0.98	1.82
Bifactor	1551.738	525	<0.0001	0.06 [0.06, 0.07]	0.96	1.70

Note. df=degree of freedom. RMSEA=Root Mean Square Error of Approximation. CI=Confidence Interval. CFI=Comparative Fit Index. WRMR=Weighted Root Mean Square Residual.

Table 5.2. Ancillary Bifactor Measures: addressing dimensionality and model-based reliability

	ECV	Omega Hierarchical	PRV
Sexual Empowerment Scale	0.335	0.714	0.732
SESR	0.073	0.697	0.842
ES	0.198	0.684	0.693
NSE	0.095	0.592	0.644
PSE	0.089	0.609	0.655
CUSES	0.090	0.389	0.420
SRSN	0.121	0.790	0.853

Note. SESR= Self-Efficacy to Refuse Sexual Behavior. ES=Emotional Support. NSE=Negative Self-Esteem. PSE=Positive Self-Esteem. CUSES= Condom Use Self-Efficacy. SRSN= Sexual Risk Social Norm. ECV=Explained Common Variance. PRV=Percentage of Reliable Variance.

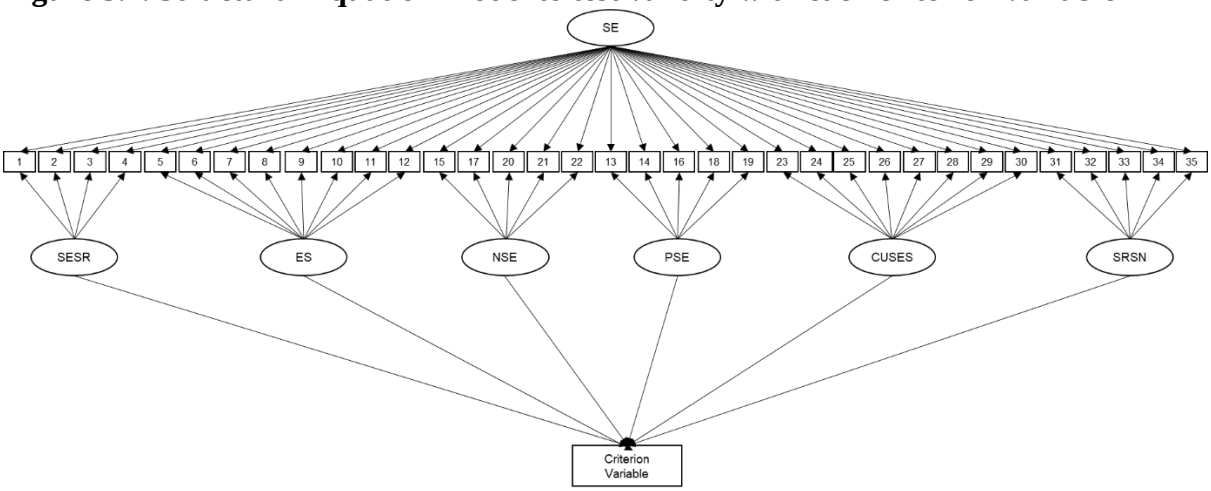
Table 5.3. Confirmatory Factor Analysis: Standardized loadings

Item	Uni	RPB	Bifactor		
			IECV	General	Specific
Self-Efficacy to Refuse Sexual Behavior					
i1	.32	24%	.35	.42	.56
i2	.19	6%	.04	.18	.83
i3	.17	6%	.04	.16	.76
i4	.31	24%	.39	.41	.52
Emotional Support					
i5	.93	55%	.40	.60	.74
i6	.94	57%	.39	.60	.75
i7	.96	60%	.38	.60	.76
i8	.94	77%	.31	.53	.80
i9	.90	84%	.28	.49	.78
i10	.91	94%	.25	.47	.81
i11	.95	107%	.23	.46	.85
i12	.91	98%	.24	.46	.82
Negative Self-Esteem					
i15	.48	0%	.32	.48	.55
i17	.52	8%	.29	.48	.62
i20	.43	39%	.22	.31	.70
i21	.68	48%	.31	.46	.80
i22	.69	30%	.42	.53	.75
Positive Self-Esteem					
i13	.62	22%	.47	.51	.71
i14	.67	22%	.44	.55	.75
i16	.54	4%	.30	.52	.58
i18	.61	7%	.39	.57	.67
i19	.56	0%	.36	.56	.62
Condom Use Self-Efficacy					
i23	.58	12%	.78	.66	.35
i24	.62	14%	.87	.72	.28
i25	.54	16%	.82	.64	.30
i26	.66	25%	.38	.53	.68
i27	.68	31%	.35	.52	.71
i28	.62	29%	.33	.48	.69
i29	.67	22%	.39	.55	.68
i30	.48	13%	.82	.55	.26
Sexual Risk Social Norm					
i31	.36	64%	.10	.22	.68

i32	.51	38%	.21	.37	.71
i33	.62	72%	.18	.36	.78
i34	.68	119%	.12	.31	.85
i35	.73	103%	.15	.36	.87

Note. See Appendix for detailed questionnaire for each item. Uni=factor loading on Unidimensional Model. Bifactor=Bifactor model. RPB=Relative Parameter Bias. IECV=Individual Explained Common Variance. General= factor loadings on General (Sexual Empowerment) factor. Specific=factor loadings on Specific (Self-Efficacy to Refuse Sexual Behavior, Emotional Support, Negative Self-Esteem, Positive Self-Esteem, Condom Use Self-Efficacy, Sexual Risk Social Norm) factor. All factor loadings are significant at $p < 0.0001$.

Figure 5.2. Structural Equation Model to test validity with each criterion variable



Note. Criterion variables are the degree of anxiety, depression, and safer sex intentions. SE=Sexual Empowerment. SESR= Self-Efficacy to Refuse Sexual Behavior. ES=Emotional Support. NSE=Negative Self-Esteem. PSE=Positive Self-Esteem. CUSES= Condom Use Self-Efficacy. SRSN= Sexual Risk Social Norm

Table 5.4. The standardized coefficient between each sub-scale of sexual empowerment scale and criterion variables

Sub-scale of sexual empowerment scale	Anxiety	Depression	Safer Sex Intentions
SESR	-0.030 (0.055)	-0.148 (0.056)**	0.297 (0.049)***
ES	-0.303 (0.055)***	-0.533 (0.056)***	0.188 (0.058)**
NSE	-0.380 (0.053)***	-0.596 (0.058)***	0.031 (0.059)
PSE	-0.368 (0.064)***	-0.562 (0.069)***	0.221 (0.065)**
CUSES	-0.135 (0.068)*	-0.378 (0.069)***	0.482 (0.057)***
SRSN	-0.124 (0.048)*	-0.147 (0.052)**	0.307 (0.046)***

Note. SESR= Self-Efficacy to Refuse Sexual Behavior. ES=Emotional Support. NSE=Negative Self-Esteem. PSE=Positive Self-Esteem. CUSES= Condom Use Self-Efficacy. SRSN= Sexual Risk Social Norm. ***=p<0.001. **=p <0.01. *=p <0.05.

CHAPTER 6: AIM 2

Introduction

Stigma among young Black men who have sex with men

Young Black men who have sex with men (YBMSM) are the population most at risk for Human Immunodeficiency Virus (HIV) in the United States (U.S.). Black men who have sex with men (BMSM) have a 50% chance of HIV infection in their lifetime, while the percentage is 20% for Hispanic/Latino MSM and less than 10% for White MSM. Moreover, modeling studies have estimated that if current incidence rates continue, 40% of BMSM will be diagnosed with HIV by age 30 (CDC, 2016c; Matthews et al., 2016). Despite BMSM being disproportionately affected by HIV in the U.S., there are no significant differences in individual risk behaviors (i.e., engagement in condomless anal intercourse [CAI], drug use, or injecting drugs) between Black MSM and White MSM (Harawa et al., 2004; Millett et al., 2007; Sullivan et al., 1998). Thus higher rates of HIV infection among BMSM are attributed to broader social, cultural, and institutional factors rather than individual risk factors alone (Millett et al., 2006; E. S. Rosenberg et al., 2014; Sullivan et al., 2014). Stigma and discrimination can be considered as broader social, cultural, and institutional factors contributing to HIV infection disparities among BMSM.

Black MSM experience profound levels of compounding stigma due to the intersectionality of sexual identity, and race (Earnshaw et al., 2013; K. Quinn et al., 2017; Turan et al., 2017; Watkins-Hayes, 2014). This intersectionality exposes BMSM to more stigma and

discrimination than other sexual minority populations. Meyer's model contains two aspects of stigma, externalized stigma (e.g., discriminatory events in everyday life) and internalized stigma (e.g., absorbing society's negative views as one's identity). For the purpose of this dissertation, the focus will be on the three common stigma-related experiences that BMSM can face—namely, experienced sexual minority stigma, internalized homophobia, and racial discrimination (experienced racial stigma) (Earnshaw et al., 2013; Hatzenbuehler et al., 2009; Overstreet et al., 2013).

Externalized and internalized stigma among BMSM are related to various health outcomes, such as depressive symptoms, anxiety, substance use, eating disorders, suicidality, and engagement in sexual risk behaviors (Bogart et al., 2013; Bogart et al., 2011; Hatzenbuehler et al., 2011; Maulsby et al., 2014; Williamson, 2000). Sexual minority stigma has been associated with various sexual risk behaviors such as the number of sex acts, the number of different partners, and the number of acts of CAI among young Black and Latino MSM (Balaji et al., 2017; Rosario et al., 1996). In addition, the effect of stigma on sexual risk behaviors was found to be mediated by psychological distress and difficult sexual situations (Diaz et al., 2004). While individual risk factors alone could not explain HIV infection disparities in BMSM, a linkage between stigma and sexual risk behaviors has been found. Thus, stigma reduction should be considered a key strategy to address HIV prevention among BMSM.

Empowering YBMSM in HIV prevention

Stigma and marginalization experiences can make YBMSM feel undervalued, worthless, and disempowered. Stigma and marginalization can be reduced by social and community mobilization and by empowering a marginalized population to create an environment where

stigma and discrimination are no longer accepted (Parker et al., 2002). The role of empowerment in HIV prevention by increasing safer sex behavior has been examined among sex workers and MSM (Hays et al., 2003; D. L. Kerrigan et al., 2013; Maiorana et al., 2016). A community mobilization intervention was designed to change social norms, increase social support, and empower gay men in Peru to engage in safer sex, thereby protecting each other from HIV (Maiorana et al., 2016). This study provides evidence that empowering marginalized groups against discrimination and stigma has the potential to reduce rates of HIV infection (Parker et al., 2002). To date, however, the concept of empowerment has not been conceptualized as a social action that involves the participation of individuals, communities, and societies to increase safer sex behavior. Thus, this study introduces the concept of sexual empowerment— a novel area of study that may be important in understanding both stigma and engagement in sexual risk behaviors among YBMSM.

Multidimensionality of Sexual Empowerment

Previous empowerment-based intervention studies did not measure empowerment directly, rather they incorporated the concept of empowerment as part of the intervention. Further, as mentioned above, sexual empowerment was neither included as a concept within the intervention or as a measure. To move the field forward, the concept of sexual empowerment was explored through scale development and validation in Chapter 5. The newly created sexual empowerment scale (SEMS)—a measure of the degree of psychological empowerment an individual possesses for engagement in safer sex behaviors — was found to be multidimensional, with 35 items and 6 specific sub-constructs: emotional support, self-efficacy for condom use,

negative self-esteem, positive self-esteem, self-efficacy to refuse sexual behavior, and social norms for condom use.

The six sub-constructs of sexual empowerment align well with the three components of psychological empowerment characterized by Zimmerman namely, intrapersonal, interactional, and behavioral (Zimmerman, 1995) as presented in Table 6.1.

The importance of sexual empowerment and stigma in sexual risk behaviors

In addition to acknowledging the multidimensionality of sexual empowerment, it is important to examine the relationship between stigma-related experiences and sexual empowerment since stigma experiences likely impact sexual empowerment among YBMSM. Empowering marginalized groups against discrimination and reducing stigma-related experiences is a key strategy that has the potential to reduce rates of HIV infection among YBMSM (Mahajan et al., 2008). While there have been no studies that have examined all of the constructs that comprise the SEMS in total, there has been work examining the relationship between SEMS sub-constructs and stigma-related experiences among MSM, including BMSM. There was a negative relationship between stigma and emotional support among drug-using HIV-positive MSM (Semple, Strathdee, Zians, & Patterson, 2012). Dowshen and colleagues have found a correlation between experienced HIV stigma, perceived social support from family, friends and significant others, and self-esteem among young MSM (Dowshen, Binns, & Garofalo, 2009). Homophobia was associated with lower self-esteem among BMSM (Stokes & Peterson, 1998), lesbians, gays, and bisexuals (Ryan, Legate, Weinstein, & Rahman, 2017). Moreover, the relationship between homophobia and sexual risk behavior was mediated by self-efficacy for condom use among MSM in South Africa (Tucker et al., 2014). However, none of

the previous literature statistically examined the association between all six factors identified in the SEMS and stigma–related experiences.

Current study

In Chapter 5, a SEMS for YBMSM was developed and validated. In this Chapter, latent profile analysis (LPA) will be used to identify profiles for sexual empowerment based on the patterns of the six sub-constructs of sexual empowerment (emotional support, self-efficacy for condom use, negative self-esteem, positive self-esteem, self-efficacy to refuse sexual behavior, and social norms for condom use). Latent profile analysis is a statistical method for identifying unmeasured profile membership based on variables of interest (Berlin, Williams, & Parra, 2014). Based on previous research that has confirmed the multidimensionality of empowerment, this study hypothesizes that at least two latent sexual empowerment profiles will be identified: (1) a psychologically empowered with safer sex intentions profile and (2) a psychologically disempowered without safer sex intentions profile. The first profile will be characterized by high self-esteem, emotional support from friends and family, high self-efficacy for condom use, high self-efficacy to refuse to sex, and positive social norms about condom use. The second profile will be characterized by low self-esteem, lack of emotional support from friends and family, low self-efficacy for condom use, low self-efficacy to refuse to sex, and negative social norms about condom use. Applying Zimmerman's concepts to the domain of safer sex behaviors, sexual empowerment will be distinguished by how competent individuals are over their social environment, how individuals relate to themselves in their social environment, and how individuals' behavior influences their social environment (Zimmerman, 1995). After identification of sexual empowerment profiles, latent profile logistic regression will be used to

explore the relationship between the sexual empowerment profiles and racial and sexual minority stigma-related experiences. The study expects that those in the psychologically disempowered without safer sex intentions profile would report a higher level of stigma related experiences compared to those in the psychologically empowered with safer sex intentions profile.

Methods

Study design and sample

In 2014, healthMpowerment.org (HMP), a mobile-phone optimized and Internet-based intervention website, was designed to reduce sexual risk behaviors among YBMSM (Hightow-Weidman et al., 2011; Muessig et al., 2014). A total of 474 YBMSM in North Carolina were enrolled between November 2013 and October 2015 and randomized to either HMP or an information-only control website for 3 months. Online surveys were administered at 4 time points: during the enrollment visit (baseline), at the end of the intervention period (3 months), and 2 follow-up assessments (6 months and 12 months). The current study only used baseline data.

Measures

Latent Profile Analysis

To identify the sexual empowerment profile membership, the mean score for each confirmed sub-construct in Chapter 5 will be used in this study. Using the SEMS to measure the degree of psychological empowerment for engagement in safer sex behaviors (e.g., condom use during anal sex) among YBMSM resulted in 35 items with 6 sub-constructs: emotional support (8 items), self-efficacy for condom use (8 items), negative self-esteem (5 items), positive self-

esteem (5 items), self-efficacy to refuse sexual behavior (4 items), and social norms for condom use (5 items).

Emotional support

The Medical Outcomes Study Social Support Survey (MOS-SSS) was used to measure social support (Sherbourne & Stewart, 1991) in the SEMS. Sub-scales include the following: emotional, tangible, affectionate, and positive social interaction. Only the emotional support items (8 items) were included in the study given their established relationship with psychological empowerment. Higher scores indicate greater perceived emotional support (range 0-5; α =0.97). All of the original emotional support scale items were kept in the SEMS.

Self-efficacy for condom use

The Condom Use Self-Efficacy Scale (CUSES) was originally developed with 26 items with responses rated on a 5-point Likert-type scale (Brafford & Beck, 1991) (α = 0.95). In this study, eight items from the original scale were included to measure 3 distinct extracted factors: appropriation, sexually transmitted diseases, and partners' disapproval (Barkley Jr & Burns, 2000). A higher score indicates greater self-efficacy for condom use (range 1-5; α=0.83), and the original self-efficacy for condom use scale was kept in the finalized SEMS.

Self-esteem

A scale developed by Rosenberg was used to estimate individuals' self-esteem (M. Rosenberg et al., 1995). The 10-item scale used a 4-point Likert-type scale (strongly agree to strongly disagree). A higher score indicates greater self-esteem (range 0-3). Self-esteem was divided into 2 sub-constructs in the SEMS study: positive self-esteem (5 items) and negative self-esteem (5 items). Therefore, positive self-esteem (α =0.85) and negative self-esteem (α

=0.86) were included in the LPA. A higher positive self-esteem score and a lower negative self-esteem score indicate strong self-esteem.

Self-efficacy to refuse sexual behavior

The original scale with 9-items, which was developed by Kasen and colleagues, was used to evaluate self-efficacy in refusing sexual behavior (Kasen et al., 1992). However, this study adopted a reduced version of the scale consisting of 4 items with a 5-point Likert-type scale to determine the degree to which individuals felt they would be able to say no to sexual intercourse depending on their relationship with their partner (DiClemente et al., 2010). A higher score indicates greater self-efficacy to refuse sexual behavior (range 1-5; α=0.71).

Social norms on condom use

The norm sub-scale of the Sexual Risks Scale was used to measure social norms for condom use (DeHart & Birkimer, 1997). The scale includes 7 items with responses based on a 5-point Likert-type scale from 1= “strongly agree” to 5= “strongly disagree.” Reversed scores were used such that higher scores indicate more positive social norms for condom use. Two items with low factor loadings were deleted in the SEMS study. Therefore, 5 items were included in the study (range 1-5; α=0.85).

Associations with latent sexual empowerment profiles

After defining profile membership, the associations between latent sexual empowerment profiles and stigma-related experiences (experienced sexual minority stigma, internalized homophobia, and racial discrimination) will be examined.

Experienced sexual minority stigma

The Multiple Discrimination Scale is used to evaluate the degree of interpersonal, institutional, and violent forms of discrimination experienced due to HIV serostatus, race/ethnicity, and sexual orientation (Bogart et al., 2011). The study employs a revised multiple discrimination scale limited to sexual orientation as the reason for discrimination. The scale comprises ten items with the response options of "no" (0) and "yes" (1) (α =0.88). The scale score is computed by summing the responses of the 10 items; a higher score indicates more sexual minority stigma experienced.

Internalized homophobia

The original 9-item Internalized Homophobia scale was developed by Martin and Dean. Later, Herek revised and reduced the scale to 5 items (Herek & Glunt, 1995). The revised version employs a 5-point Likert-type scale from 1 = "strongly disagree" to 5 = "strongly agree" (α = 0.87). The scale scores are computed by summing the responses to the 5 items; a higher score indicates a higher level of internalized homophobia.

Racial discrimination

As with experienced sexual minority stigma, this study uses a revised Multiple Discrimination Scale limited to race as the reason for discrimination (Bogart et al., 2011). The response options are "no" (0) and "yes" (1), and the scale scores are computed by summing the responses to the ten items. A higher score indicates a higher level of racial discrimination (α =0.88).

Demographics

Four demographic characteristics—age, education, income, and HIV status—were included in the study. Age was included as a continuous variable, and HIV status was coded as "negative/do not know" or "positive." Education was dichotomized as "less than college graduate" or "college graduate or more than college." Income was dichotomized as "less than $21,000" or "equal to or more than $21,000."

Statistical Analysis

Latent Profile Analysis will be used to identify the number of sexual empowerment profiles based on the distribution of SEMS sub-constructs. Latent Profile Analysis is a statistical method for identifying unmeasured class membership based on variables of interest. In this study, the participants will be categorized into different types of sexual empowerment (latent profiles) on the basis of their scores for the sexual empowerment sub-constructs.

Several models with different numbers of profiles will be examined, and the best fitting model will be selected in accordance with Akaike Information Criteria (AIC), Bayesian Information Criteria (BIC), Vuong-Lo-Mendell-Rubin Likelihood Ratio (LRT), and entropy (Nylund, Asparouhov, & Muthén, 2007). Lower AIC and BIC scores indicate a better balance of fit, and a higher entropy score indicates a greater class separation. The significant LRT between the *k*-1 profile model and the *k* profile model indicates the model fit improved from the *k*-1 profile model to the *k* profile model. After selecting the best fitting model, each profile will be defined based on the distribution of the mean score for the six sub-constructs.

After the class enumeration based on the four fit indices mentioned above, the study will include the demographic variables as auxiliary variables to the optimal number of class models

in order to determine whether there are any demographic differences between the profiles (Clark & Muthén, 2009; Wang, Hendricks Brown, & Bandeen-Roche, 2005). Demographic auxiliary variables showing significant differences in sexual empowerment profiles will be included as covariates in logistic regression analysis.

The bivariate and multivariate latent profile logistic regressions will assess the associations between latent sexual empowerment profiles and stigma-related experiences. Individual stigma-related experiences will be examined separately in bivariate latent logistic regression. Significant stigma-related experiences in bivariate logistic regression will be included in the multivariate logistic regression. For highly correlated significant bivariate factors, the factor with the lowest AIC in the model will be retained in the multivariate model. All analyses will be conducted in Mplus version 7 (L. Muthén & Muthén, 2015).

Results

Sample Characteristics

The mean age of the 474 participants was 24.33 (SD=3.22), and 42% were HIV positive. Most participants had an income under $21,000 (72%), and a quarter of them (28%) had at least a college degree.

Class enumeration

A 3-latent-profile solution was selected as the optimal number of profiles in this study based on the four fit indices shown in Table 6.2 as well as on the empirical and theoretical perspectives. The AIC and BIC decreased, and entropy increased steadily as the number of profiles increased. This pattern indicated that no one solution provides the better balance of fit

and greater class separation. The LRT favored the 3-profile solution over the 4-profile solution, as the LRT between the 3-profile and 4-profile solutions turns out to be non-significant, which indicates that the 4-profile solution model is not a statistically significant better fit than the 3-profile solution (p=0.719). In addition to the results of LRT, the 3-profile solution was theoretically and empirically acceptable.

The 3-profile solution

The results of the 3-profile solution with auxiliary variables are shown in Table 6.3 and Figure 6.1. Classification probability refers to the probability that the individuals who were assigned to a certain class are true members of that class. For example, the probability that the members in the first profile are true members is 88%; an 80% probability for the second profile and 96% for the third profile. Classification probability of over 80% indicates low measurement error and correct classification. The second profile shows lower classification probability than the other two profiles due to its small size.

Profile one—the psychologically disempowered without safer sex intentions profile (26% of the sample)—had lower behavior specific empowerment. Young BMSM in this profile had significantly lower self-efficacy to refuse sexual behavior and use condoms than the other two profiles. Moreover, they had fewer positive social norms around condom use than the other two profiles and exhibited lower level of self-esteem. However, they on average reported moderate levels of emotional support from others.

The second profile (10% of the sample) was characterized by psychologically disempowered with safer sex intentions profile. This profile showed a high level of safe-sex related traits, such as self-efficacy to refuse sexual behavior, self-efficacy for condom use, and

social norms around condom use. However, similar to those assigned to first profile, these YBMSM were had relatively lower levels of self-esteem, and unlike the first profile, had lower levels of perceived emotional support. These YBMSM reported having intentions toward safe sex but reported lower level of self-esteem and emotional support.

The third profile, the majority of the sample (64%), was characterized by relatively high levels of psychologically empowered with safer sex intentions. These YBMSM reported a high levels of self-efficacy to refuse sexual behavior, and positive social norms around condom use. In addition, they had high self-esteem and reported high levels of emotional support from others.

There are two aspects explaining sexual empowerment profile membership: psychological empowerment and safe sex intentions. The first and second profiles were similar in that each could be characterized as being psychologically disempowered and having low self-esteem. However, the second profile had higher intentions to practice safe sex and higher self-efficacy and social norms than the first profile. Members in the third profile were psychologically empowered and practiced safer sex; they also had high self-esteem and emotional support.

When each demographic variable (age, education, income, and HIV status) was added as an auxiliary variable to the 3-latent-profile solution, income was the only auxiliary variable that turned out to be significant. Young BMSM with an income greater than $21,000 were more likely to be in the third profile, compared to the first one (p=0.046). Therefore, income was included as a covariate in the latent logistic regression analyses.

Associations between sexual empowerment profiles and stigma-related experiences

In bivariate latent profile logistic regression, the relationships between stigma-related experiences and latent sexual empowerment profile membership was tested, and the results are shown in Table 6.4. All three stigma-related experiences were associated with latent profile membership. Income, a significant auxiliary variable, was added to each model. When the level of experienced sexual minority stigma, internalized homophobia, and racial discrimination increased, a 13%, 7%, and 14% decrease, respectively, was seen in the odds of someone being in the third profile (psychologically empowered with safer sex intentions) as compared to the first profile (psychologically disempowered without safer sex intentions). There were no significant differences in stigma-related experiences between profile 1 (psychologically disempowered without safer sex intentions) and profile 2 (psychologically disempowered with safer sex intentions).

All stigma-related experiences were statistically significant in bivariate analyses and were included in the multivariate latent logistic model, with income included as a covariate. The results show that a one unit increase in the level of experienced sexual minority stigma and internalized homophobia led to a decrease in being in the third profile as compared to the first profile (Odds Ratio [OR]=0.85 and OR=0.94, respectively). However, YBMSM experiencing higher levels of racial discrimination were 21% less likely to be in the second profile as compared to the first profile (OR=0.79, 95% Confidence Interval [CI] =0.64-0.97).

These results indicate significant relationships between sexual empowerment profile membership and stigma-related experiences—YBMSM who reported fewer experienced sexual minority stigma and lower internalized homophobia were more likely to be in the “psychological

empowered with safer sex intentions profile" and lower racial discrimination were more likely to be in the "psychologically disempowered with safer sex intentions profile" compared to "psychologically disempowered without safer sex intentions profile."

Discussion

In this study, we identified 3 profiles that captured six dimensions of sexual empowerment: emotional support, self-efficacy for condom use, negative self-esteem, positive self-esteem, self-efficacy to refuse sexual behavior, and social norms for condom use. The three profiles were as follows: psychologically disempowered without safer sex intentions (profile 1); psychologically disempowered with safer sex intentions (profile 2); and psychologically empowered with safer sex intentions (profile 3). More than half of the YBMSM were members of the third profile (64%); 24% were in the first profile, and 10% in the second profile.

Latent profiles of sexual empowerment also were associated with stigma-related experiences. The results indicate psychologically empowered with safer sex intentions YBMSM are less likely to report stigma-related experiences than psychologically disempowered without safer sex intentions YBMSM in bivariate analysis. These results are consistent with previous findings. The interactional aspects (emotional support and social support) of empowerment have been associated with stigma among drug-using and HIV-positive MSM (Deichert et al., 2008) and young MSM. Homophobia has been shown to be associated with intrapersonal and behavioral aspects of empowerment among BMSM and MSM in South Africa (Tucker et al., 2014). In multivariate analysis, the relationship between experienced minority stigma, internalized homophobia, and sexual empowerment profile coincided with bivariate analysis. However, psychologically disempowered without safer sex intentions YBMSM are more likely

to report racial discrimination than psychologically disempowered with safer sex intentions YBMSM. There were no statistically significant differences in racial discrimination between psychologically disempowered without safer sex intentions profile and psychologically empowered with safer sex intentions profile. The discordance in racial discrimination results in multivariate analysis can be explained by multicollinearity between different types of stigma-related experiences.

Findings from this study add to the existing literature in three ways. First, this study methodologically identified sexual empowerment profile membership based on the distribution of six sexual empowerment dimensions among YBMSM. In addition, the results of the study are consistent with existing literature on empowerment. Zimmerman has defined psychological empowerment with 3 different dimensions: intrapersonal, interactional, and behavioral (Zimmerman, 1995). The second profile supported Zimmerman's perceived control in intrapersonal and behavioral aspects, but weakness in the interactional aspect. The first and third profiles showed either low or high distributions on the 3 aspects Zimmerman described. Second, this study demonstrated the association between components of sexual empowerment measured with a newly developed SEMS and stigma-related experiences. While previous studies have shown associations between each sub-construct of the SEMS and stigma-related experiences, this is the first to evaluate the association using a composite measure. Third, this study showed how different sexual empowerment patterns are associated with stigma. Stigma was higher among YBMSM who were disempowered in terms of intrapersonal, interactional, and behavioral aspects (profile 1, the psychologically disempowered without safer sex intentions profile), as compared to YBMSM who were empowered in terms of intrapersonal, interactional, and behavioral aspects (profile 3, the psychologically empowered with safer sex intentions profile).

However, perceived control in intrapersonal and behavioral aspects of empowered YBMSM (profile 2, the psychologically disempowered with safer sex intentions profile) was not statistically different with the general disempowered group. The psychologically empowered with safe sex intention group had interactional and self-esteem features of empowerment, which was not present in the other 2 groups. This indicates that, in this sample, stigma was more important in the interactional and intrapersonal aspects of empowerment than the behavioral aspect of empowerment.

This study has several limitations. First, this study's findings cannot be generalized. There is a possibility that the study sample cannot represent population. In addition, in the nature of exploratory LPA study design, the number of latent profiles is not specified. In other words, there is the possibility that the number of latent profiles and the distribution of dimensions for each profile could vary in another sexual empowerment study. Second, this sexual empowerment latent profile did not account for the social action process aspect of empowerment. Empowerment needs to consider interactions between individuals, communities, and society. However, these sexual empowerment latent profiles only include the individual level of empowerment. Third, the study only examined the association between sexual empowerment profiles and stigma-related experiences, but there is a possibility that past engagement in sexual risk behaviors or other unmeasured stigma related constructs (e.g., perceived HIV stigma, internalized HIV stigma, perceived homophobia) can affect sexual empowerment profile membership. Fourth, posterior probabilities were used in latent logistic regression to predict profile membership with stigma-related experiences. This generally does not take into account classification uncertainty, and some individuals could have been misclassified into other profiles when the stigma-related experiences were added to the logistic model from the original LPA

without predictors (L. M. Collins & Lanza, 2010). Lastly, cross-sectional data does not reveal the causal relationship between sexual empowerment profiles and stigma-related experiences. To address these limitations, future studies should longitudinally investigate changes in sexual empowerment profile membership, stigma-related experiences and safer sex intentions.

Despite these limitations, it is noteworthy that this study theoretically and methodologically identified sexual empowerment profile membership based on the distribution of six sexual empowerment dimensions among YBMSM. This study suggested three different profiles of sexual empowerment among YBMSM with 2 traits, psychological empowerment and intentions for practicing safe sex, and suggested associations between higher stigma-related experiences and the psychologically disempowered without safer sex intentions profile.

The results of this study extend the understanding of sexual empowerment by examining the associations between stigma-related experiences and patterns of sexual empowerment. The importance of empowerment in social, behavioral, and health science research among marginalized populations has been acknowledged, but limited research has been done with YBMSM. This study provides a more in-depth understanding about sexual empowerment among YBMSM and a guide for future sexual empowerment intervention studies. Differentiated intervention strategies are needed to empower different profiles of YBMSM. Psychologically disempowered but safe sex intentioned YBMSM require interventions to increase self-esteem and emotional support. Psychologically disempowered without safer sex intentions YBMSM, meanwhile, need interventions focusing on increasing safe sex practices, self-efficacy, and self-esteem. In addition, stigma reduction could have an impact on YBMSM's sexual empowerment, since psychologically disempowered without safer sex intentions YBMSM had a higher level of

stigma compared to psychologically empowered with safe sex intentions YBMSM. In the future, sexual empowerment with other MSM related behavior self-efficacy can be applied to HIV testing, Anti-Retroviral /therapy (ART), as well as Pre-Exposure Prophylaxis (PrEP) uptake and adherence. Sexual empowerment is an important framework among MSM to promote healthy behavior and, ultimately, to potentially prolong life.

Table 6.1. Comparison of sexual empowerment sub-constructs and Zimmerman's psychological empowerment construct

Zimmerman Construct	Description	Sexual Empowerment sub-constructs
Intrapersonal	Self-perceptions of competence over one's social environment.	Self-esteem (negative and positive), self-efficacy for condom use and self-efficacy to refuse sexual behavior
Interactional	How people understand themselves and relate to their social environment.	Emotional support and social norms for condom use
Behavioral	Specific actions aimed at influencing the sociopolitical environment through participation in community activities	Social norms for condom use, self-efficacy for condom use and refuse to sexual behavior

Table 6.2. Fit indices for Sexual Empowerment Latent Profile Analysis

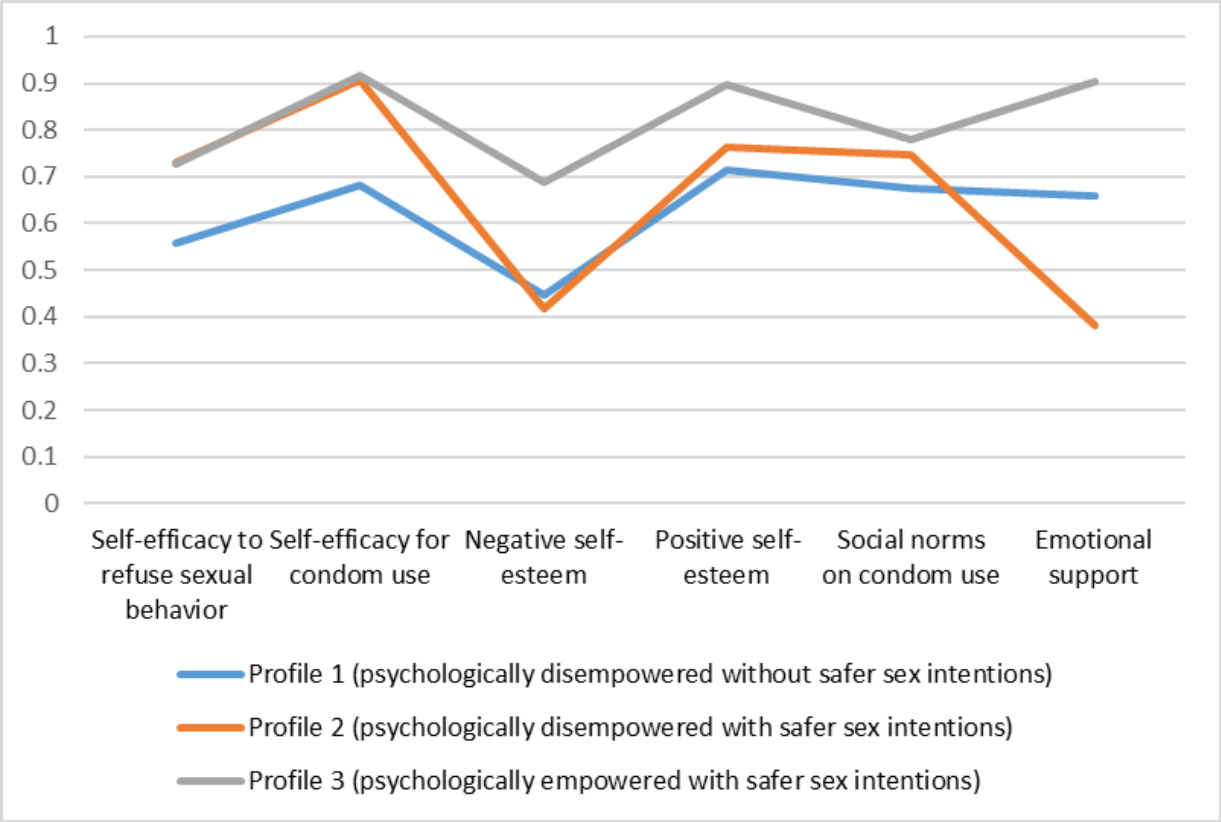
The number of profiles	AIC	BIC	Entropy	Vuong-Lo-Mendell-Rubin LRT	LRT – p value
2 profiles	6933.01	7012.07	0.78	292.67	0.008
3 profiles	6836.38	6944.57	0.84	110.63	0.017
4 profiles	6748.83	6886.15	0.88	101.54	0.719
5 profiles	6632.23	6798.68	0.91	130.60	0.014
6 profiles	6554.73	6750.31	0.92	91.51	0.402

Note. AIC= Akaike Information Criteria. BIC=Bayesian Information Criteria. LRT= Likelihood Ratio (LRT).

Table 6.3. Sexual Empowerment Latent Profiles

	Profile 1 (n=122)	Profile 2 (n=47)	Profile 3 (n=305)
Classification probability	0.88	0.80	0.96
Indicators' mean and standard deviation			
Self-efficacy to refuse sexual behavior	2.78 (0.13)	3.66 (0.31)	3.63 (0.06)
Self-efficacy for condom use	3.40 (0.07)	4.54 (0.14)	4.59 (0.05)
Negative self-esteem	1.34 (0.08)	1.25 (0.17)	2.06 (0.05)
Positive self-esteem	2.14 (0.07)	2.29 (0.15)	2.69 (0.04)
Social norms on condom use	3.37 (0.10)	3.73 (0.25)	3.90 (0.06)
Emotional support	3.29 (0.20)	1.90 (0.17)	4.51 (0.05)

Figure 6.1. Sexual Empowerment Latent Profiles



Note. Six sub constructs were transformed to a range of 0-1, with higher numbers reflecting greater self-efficacy to refuse sexual behavior and for condom use, lower negative self-esteem, greater positive self-esteem, social norms on condom use, and emotional support.

Table 6.4. Associations between profile membership and stigma-related experiences among YBMSM in North Carolina

	Profile 1 (n=122)	Profile 2 (n=47)	Profile 3 (n=305)
		OR (95% CI)	OR (95% CI)
Bivariate analysis			
Experienced sexual minority stigma	reference	1.10 (0.94, 1.29)	**0.83 (0.75, 0.91)**
Internalized homophobia	reference	1.03 (0.93, 1.14)	**0.93 (0.89, 0.97)**
Racial discrimination	reference	0.91 (0.75, 1.10)	**0.86 (0.78, 0.94)**
Multivariate analysis			
Experienced sexual minority stigma	reference	1.26 (0.99, 1.61)	**0.85 (0.75, 0.97)**
Internalized homophobia	reference	1.03 (0.91, 1.18)	**0.94 (0.89, 0.98)**
Racial discrimination	reference	**0.79 (0.64, 0.97)**	0.97 (0.85, 1.10)

Note. Models control for income. Bold = *p* value less than 0.05. OR = Odds Ratio; CI= Confidence Interval.

CHAPTER 7: AIM 3

Introduction

HIV disproportionate population, YBMSM

Young Black men who have sex with men (YBMSM) aged 18–30 are the group most disproportionately affected by HIV in the United States (U.S.). Among new HIV diagnoses in 2016, 67% were men who have sex with men (MSM) of which Black MSM (BMSM) accounted for 39% (CDC, 2018b). Moreover, modeling studies have estimated that 50% of BMSM will be diagnosed with HIV in their lifetime, and 40% will be infected by age 30 (CDC, 2016a; Matthews et al., 2016). However, it has been suggested that the higher rates of HIV among BMSM may be explained by broader social, cultural, and institutional factors, such as stigma and discrimination, rather than individual behavioral risk factors alone. Black MSM are particularly vulnerable to HIV due to the intersection of their racial and sexual identities (Millett et al., 2006; E. S. Rosenberg et al., 2014; Sullivan et al., 2014). Young BMSM experience profound levels of stigma and marginalization (K. Quinn et al., 2017) which have been shown to negatively influence engagement in protective sexual behaviors (Huebner et al., 2014). Empowering marginalized groups against discrimination and stigma is helpful for reducing the rates of HIV infection among disproportionately impacted groups like YBMSM (Parker et al., 2002). Therefore, it is imperative to explore stigma and empowerment in an effort to slow or prevent new HIV infections in this population.

Stigma-related stress and empowerment among YBMSM

Black MSM experience compounding stigma and discrimination due to the intersectionality of sexual identity, race, and (presumed) HIV status (Earnshaw et al., 2013; Turan et al., 2017; Watkins-Hayes, 2014). The effects of stigma and discrimination on sexual risk behaviors have been studied across diverse MSM (Diaz et al., 2004; Hatzenbuehler et al., 2008; Preston et al., 2007; Rosario et al., 1996). It has been shown that sexual minority discrimination is related to condomless anal intercourse (CAI) at last sex, CAI in the past 12 months, the number of sexual partners, and the number of sexual acts among MSM (Balaji et al., 2017) and BMSM (Rosario et al., 1996). In addition, internalized homophobia is found to predict HIV risk behaviors (the number of times each sex act occurred and the number of different partners with whom the act occurred) among bereaved gay men (Hatzenbuehler et al., 2008). There is also an indirect effect of stigma on sexual risk behaviors among Latino MSM and rural MSM (Diaz et al., 2004; Preston et al., 2007).

Empowerment has also been found to be associated with engagement in sexual risk behaviors and can impact stigma. Empowerment mobilizes collective power and resources that change social norms, and these social norms can discourage risky behaviors in the community (Kelly et al., 1993; D. Kerrigan et al., 2015). Additionally, this collective power can reduce pervasive stigma in the community. Therefore, empowerment can be considered an effective health prevention strategy to change individual health behavior, improve life situations, change social norms, and reduce stigma in the community. Previous studies have applied empowerment theory to HIV prevention among sex workers and various MSM sub-populations. Community empowerment approaches were shown to reduce risk of HIV infection and increase condom use among sex workers and drug-using MSM (D. L. Kerrigan et al., 2013; Kurtz et al., 2013).

However, despite author conclusions that these empowerment-based interventions were effective in reducing HIV risk behaviors, none of the studies measured empowerment directly.

Investigating the roles of empowerment and stigma-related stress experienced by YBMSM in sexual risk behaviors in the U.S. is an important strategy for reducing HIV among this disproportionately affected population (Bogart, Wagner, Galvan, & Banks, 2010; Hatzenbuehler et al., 2008; D. Kerrigan et al., 2015). In addition, developing a deeper understanding of empowering stigmatized populations and communities may offer novel approaches for intervention development aimed at stress reduction and sexual empowerment leading to less engagement in CAI, the behavior most likely to cause HIV transmission.

The efficacy of a theory-based sexual risk reduction intervention, HMP

A theory-based online intervention to reduce sexual risk behaviors among YBMSM in North Carolina was developed in 2013. HealthMPowerment.org (HMP) is an integrated, behavioral model-based, randomized controlled trial (RCT) of a mobile-phone-optimized, Internet-based intervention designed to reduce sexual risk behaviors as well as explore the effects of stigma among HIV-positive and HIV-negative YBMSM. A pilot study showed feasibility and acceptability of the intervention (Hightow-Weidman et al., 2012). Primary results from the RCT showed the rate of self-reported CAI at three months was 30% lower in the HMP intervention group compared to the control group (Hightow-Weidman et al., 2018).

Current study

This chapter aimed to explore the relationship between stigma, sexual empowerment, and sexual risk behavior, and the influence of the HMP intervention on these relationships. While Chapter 6 investigated the relationship between sexual empowerment profiles and stigma-related

experiences, the current study investigates the relationship between sexual empowerment, stigma-related experiences (experienced sexual minority stigma, internalized homophobia, and racial discrimination), engagement in sexual risk behaviors, and the effects of HMP, an integrated, behavioral model-based, online intervention on these relationships. The study's hypotheses are listed below:

1) There are positive associations between stigma-related experiences and sexual risk behaviors among YBMSM at baseline.

2) YBMSM who are members of sexual empowerment profile 3 (psychologically empowered with safer sex intentions) will report less sexual risk behaviors at baseline compared to profile 1 (psychologically disempowered without safer sex intentions profile) and profile 2 (psychologically disempowered with safer sex intentions profile).

3) HMP intervention status will moderate the baseline stigma-related experience effect on sexual risk behaviors at three months, such that the relationship between stigma-related experiences and sexual risk behaviors at three months will be stronger among the control group than the intervention group.

4) HMP intervention status will moderate the baseline sexual empowerment profile effect on sexual risk behaviors at three months, such that YBMSM who are members of profile 3 in the control group will be more likely to report sexual risk behaviors than YBMSM who are members of profile 3 in the intervention group.

Methods

Data collection

This study used data from HMP, which is an RCT of a mobile-phone-optimized, Internet-based intervention designed to reduce sexual risk behaviors among HIV-positive and HIV-negative YBMSM. Data were collected at four time points: baseline, three months (end of the intervention), six months (three-month follow-up after the end of the intervention, six months after the baseline survey), and 12 months (six-month follow-up after the end of the intervention, 12 months after the baseline survey). This study employed data from only the baseline and three-month surveys. Detailed information about HMP, the recruitment process, and eligibility criteria is provided in Chapter 4.

Measures

Descriptive and preliminary

Age, HIV status, level of education, income level, three types of stigma-related experiences, and the number of instances of CAI in the past three months were used to describe participants and for preliminary analyses.

Stigma-related experiences

The three types of stigma-related experiences used in this study are: 1) externalized stigma related to being a sexual minority (experienced sexual minority stigma), 2) internalized stigma related to one's sexual identity (internalized homophobia), and 3) externalized stigma related to being a racial minority (racial discrimination). A higher score indicates higher level of

stigma. Measures of stigma at baseline were used to test the association with sexual risk behaviors at baseline and to predict sexual risk behaviors in this chapter.

Sexual empowerment profiles

Sexual empowerment profiles at baseline was used to test the association with sexual risk behaviors at baseline and to predict sexual risk behaviors at three months. Chapter 5 describes the development and validation of a sexual empowerment scale (SEMS) with six sub-constructs. Chapter 6 distinguishes three sexual empowerment profile memberships based on the scale. Profile 1 was characterized by members who were psychologically disempowered without safer sex intentions, profile 2 was identified as including psychologically disempowered with safer sex intentions, and profile 3 was defined as psychologically empowered with safer sex intentions.

Sexual Risk Behaviors

The number of instances of CAI measured at baseline and the three-month time-point (i.e., the end of the intervention) was used as the outcome of the study. This reflects occurrences of CAI in the prior three months. Outliers were deleted and CAI at baseline was controlled in the analysis as covariates.

Statistical Analysis

Preliminary analyses

Preliminary analyses were conducted to test the baseline equivalence between the intervention group and control group on baseline demographic characteristics, stigma-related

experiences, sexual empowerment profile, and CAI (Table 7.1). In addition, attrition was tested among 404 participants who remained for the three-month survey and 70 participants who were lost from baseline to three months. Differential attrition between remaining participants and those lost to follow-up by intervention status were tested.

Zero-Inflated Poisson models

A zero-inflated Poisson (ZIP) advanced count model was used in this study because the primary outcome of the study was a counting process with excessive zero observations and a highly positively skewed distribution. Zero-inflated Poisson models allow simultaneous modeling for two components of CAI. The first model is Poisson regression focused on the count portion of the model, which is the number of instances of CAI. Poisson regression is a form of regression analysis to model count data and assumes that count data has a Poisson distribution. The regression coefficients for count portion of the model are exponentiated and presented as an incidence rate ratio (IRR) which compares the constant effect of a predictor on the incidence rate of count data. The second model, a logistic regression, accounts for the inflated portion of the model. The inflated portion of the model predicts excess zeros in outcome by dichotomizing count data (i.e., binary outcomes comparing who reported a zero CAI count and who reported more than one CAI). The regression coefficients for the inflated portion of the model are exponentiated and presented as an odds ratio (OR), the constant effect of a predictor on the likelihood of one of dichotomous outcome will occur. A 95% confidence interval which includes one indicates statistically non-significant results.

There were two analysis phases. The first phase examined cross-sectional associations between stigma-related experiences (experienced sexual minority stigma, internalized

homophobia, and racial discrimination) and the sexual empowerment profiles and acts of CAI at baseline. The second phase examined how stigma-related experiences and sexual empowerment at baseline predicted CAI at three months, and how this relationship was moderated by intervention status by adding an interaction term for each predictor by intervention status. CAI at baseline was included as a covariate in the second phase. A sensitivity analysis was conducted with the model including significant variables in the preliminary analyses as covariates in addition to CAI at baseline. All analyses were conducted using SAS 9.4 software.

Results

Preliminary analyses

There was a total of 474 YBMSM at baseline and 404 YBMSM remaining at the three-month follow-up (intervention completion). At baseline, the mean age was 24.3 (SD 3.22), 42% were HIV positive, and 28% had at least a college degree. Most participants had an income less than $21,000 (72%) and most had health insurance (72%). The mean experienced sexual minority stigma was 2.4 (range 0-10), internalized homophobia was 11.6 (range 5-25), and racial discrimination was 2.2 (range 0-10). More than half were members of profile 3 (64%), followed by profile 1 (26%), and profile 2 (10%).

An attrition analysis was conducted to identify differences in demographic variables, predictor and primary outcomes among those participants lost at three months, compared to participants who remained at three months (Table 7.1). The same analyses were conducted in differential attrition analyses among the intervention group and control group. The results showed that more uninsured participants were lost to follow up at 3 months compared to those who remained in the study at three months. Differential attrition was not found by intervention or

control group. Sensitivity analysis was conducted using the ZIP model including the insurance variable to deal with attrition. However, the insurance variable was not included in the final model since the results did not differ between the model with the insurance variable and the model without the insurance variable.

The association between stigma, sexual empowerment, and CAI at baseline

Table 7.2 shows simple associations between stigma-related experiences and sexual empowerment profile, and CAI at baseline. In the CAI count portion of the model, experienced sexual minority stigma and sexual empowerment profile at baseline were associated with CAI at baseline. When experienced sexual minority stigma increased, the incidence rate for CAI at baseline increased 3% (IRR = 1.03, 95% CI = 1.02–1.05). Moreover, profile 3 (psychologically empowered with safer sex intentions) had a 35% (IRR = 0.65, 95% CI = 0.59–0.71) lower incidence rate ratio for CAI compared to profile 1 (psychologically disempowered without safer sex intentions). There were negative associations between racial discrimination and CAI in the inflated portion of the model. The odds of reporting any CAI was reduced 8% when one unit of racial discrimination increased (OR = 0.92, 95% CI = 0.86–0.99).

The effect of stigma and sexual empowerment at baseline on CAI at 3-months with HMP intervention as a moderator

Table 7.3 shows whether or not the effect of predictors at baseline (i.e., experienced sexual minority stigma, internalized homophobia, racial discrimination, and sexual empowerment profile) on CAI count at three months varied by intervention status. The moderation effects were significant for experienced sexual minority stigma and internalized homophobia in the CAI count portion of the model. The effects of sexual minority stigma on the

CAI incidence rate at three months was 14% lower among the intervention group compared to the control group (IRR = 0.86, 95% CI = 0.83–0.90). This indicates the effect of experienced sexual minority stigma on CAI at three months was weaker for the intervention group. However, the positive effect of internalized homophobia on CAI at three months was stronger for the intervention group (IRR = 1.04, 95% CI = 1.02, 1.06). The effects of racial discrimination and sexual empowerment profile on CAI at three months were not moderated by intervention status in the CAI count portion of the model. However, there were no moderation models that were statistically significant in the inflated portion of the model. All models controlled the effect of CAI at baseline.

Discussion

Findings from this study support the hypothesized relationships between stigma-related experiences and sexual empowerment, and the number of acts of CAI. Furthermore, the effect of experienced sexual minority stigma on the number of acts of CAI varied by intervention status, such that the effect of experienced sexual minority stigma at baseline on CAI at three months was weaker for the intervention group, suggesting a theory-based online intervention like HMP had a significant positive impact. However, the direction of the intervention effect varied by predictors.

Young BMSM who experienced more sexual minority stigma at baseline reported a higher number of acts of CAI at three months. Furthermore, the relationship between sexual minority stigma at baseline and the number of acts of CAI at three months was weaker among those in the intervention group compared to those in the control group. These results echo those found in previous literature (Balaji et al., 2017; Rosario et al., 1996). Among 9,819 MSM in the

U.S. in 2011, CAI at last sex with a discordant partner and CAI in the past 12 months were associated with experiencing discrimination due to sexual orientation (Balaji et al., 2017). Sexual orientation-related discrimination events were associated with the number of sexual partners and the number of sexual acts among Black and Hispanic adolescent MSM (Rosario et al., 1996). Results of this study indicate that a theory-based, online intervention, HMP, was effective in reducing the effect of experienced sexual minority stigma on sexual risk behavior. One potential explanation for this is the explicit design of HMP to address and attempt to reduce stigma. There are several intervention features in HMP where participants can share information and experiences, receive social support, and reduce stigma. The Forum session of an online community is where participants can discuss interactively and share content relevant to their daily lives. The Ask Dr. W is a session where participants could ask question to a infectious disease doctor. Last one is the Getting Real where people can share various type of multimedia content relevant to their daily lives. Bauermeister and colleagues analyzed posts from three intervention features in HMP. The study showed that there are four stigma domains from stigma-related posts in the forum session, and one of four domains was experienced stigma and 62 participants among the intervention group contributed to the forum session, and 61% of conversations were stigma-related discussions (Bauermeister et al., 2018).

Internalized homophobia was not associated with the number of acts of CAI at baseline, but there was an interactive effect of internalized homophobia and intervention status on the number of acts of CAI at three months. However, the direction of moderation was not in the expected direction in that the effect of internalized homophobia on CAI was stronger among the intervention group than the control group. This means that the intervention group reported higher counts of CAI at three months compared to the control group accounting for the level of

internalized homophobia at baseline. One possible explanation for this finding is the higher level of internalized homophobia among the intervention group at baseline; the mean score for internalized homophobia at baseline was significantly higher among the intervention group compared to the control. Thus, the effect of internalized homophobia on CAI could be weaker among the control group since they reported significantly less internalized homophobia at the beginning. Alternatively, internalized homophobia is unlikely to solely explain sexual risk behaviors. A meta-analysis found only a small effect size between experiencing internalized homophobia and sexual risk behaviors, concluding that internalized homophobia alone could not explain sexual risk behaviors among MSM (Newcomb & Mustanski, 2011). Among young MSM, while no significant effect of internalized homophobia on the frequency of insertive CAI was observed, the effect was significant in terms of frequency of receptive CAI (Puckett, Newcomb, Garofalo, & Mustanski, 2017). This study and previous studies did not fully examine an underlying mechanism or pathway regarding internalized homophobia. A future study examining the complexity of internalized homophobia is warranted.

Contrary to expectations, YBMSM who experienced less racial discrimination at baseline were more likely to report any CAI in the past three months. Intervention status did not moderate the effect of racial discrimination on CAI. However, previous study found that racism was associated with sexual risk behaviors among Latino gay men in the United States (Diaz et al., 2004). Discrepant results can be explained by the loss of quantitative information from dichotomous CAI (zero CAI vs. more than one episode of CAI) could obscure the true association (Schroder, Carey, & Vanable, 2003). Lastly, the true association between racial discrimination and sexual risk behavior could be hidden by intersectionality of sexual identity

and race stigma among BMSM (Earnshaw et al., 2013; Turan et al., 2017; Watkins-Hayes, 2014).

There was an association observed between sexual empowerment profile membership and CAI. Those YBMSM who were members of profile 3 (psychologically empowered with safer sex intentions) were less likely to report a high number of acts of CAI compared to those in profile 1 (psychologically disempowered without safer sex intentions) at baseline. In a previous study (Hays et al., 2003), a community-based intervention utilizing an empowerment model designed to reduce sexual risk behaviors among young MSM in the U.S. reduced the rate of CAI significantly. This study adds to the previous literature by supporting the association between measurement of constructs of sexual empowerment and engagement in sexual risk behaviors. However, HMP did not moderate the sexual empowerment profile effect on CAI at three months. This may be because HMP was not specifically designed to empower YBMSM. While the intervention has components with features that might empower YBMSM by increasing emotional support and self-esteem as well as increasing safer sex related self-efficacy and social norms. However, these features did not fully mitigate the effect of low sexual empowerment on CAI.

Most of the models in Table 7.2 and Table 7.3 were not statistically significant in the inflated portion of the model except for the association between racial discrimination and any report of CAI. Meanwhile, several hypotheses were supported in the count portion of the model. These findings suggest a complex etiology underlying any report of CAI (inflated portion) versus the degree of CAI report (count portion). This study mainly identified significant predictors of count of CAI are warranted. Future studies can focus on discovering underlying stories on any

report of CAI. Notably, using a count of CAI or dichotomized CAI is a controversial issue since dichotomizing the number of episode of CAI results in losing valuable information regarding frequency of condom use (Noar, Cole, & Carlyle, 2006). This study also showed different results when using a different way of defining CAI. Therefore, future research needs to describe the best way to measure CAI.

Several limitations apply to this study. The study used self-reported sexual risk behavior measures which can be biased due to recall and social desirability issues. Participants may have exaggerated the number of incidences of CAI to boost themselves, or they might have been too embarrassed to reveal risky sexual behaviors. However, computer-assisted self-administered interviewing (CASI), used in this study, has been demonstrated to reduce interview bias and improve validity in sexual behavior research (Kissinger et al., 1999; Newman et al., 2002; Turner et al., 1998). Even though CASI is a valid tool to collect information on sexual behavior, to minimize a validity issue, outliers were deleted and the baseline values were controlled as covariates, which could compensate for this self-report issue. Second, the study cannot assume that participants had the same level of exposure to the intervention. While the content available to each intervention participant was the same, the actual dosage of the intervention that each participant received was different based on their total time of use, content accessed and discussions either read or contributed to. Some people frequently used the website, while others barely visited the website. Third, a cross-sectional analysis design was used to test the association between stigma and empowerment, and CAI. This approach does not allow for any inference of causality. To avoid confusion, the models with causality issues are expressed as "associations" rather than "predictions." Moreover, the study was not able to fully assess how three months of exposure to the intervention was effective in reducing the effects of stigma and

sexual empowerment on CAI, given that only self-reported CAI over the past three months was assessed. Thus, this study assessed the effects of intervention during the three months in which they were receiving the intervention and behaviors at the start may not have been the same as those at the end. Lastly, three measures of stigma-related experiences were chosen because of the intersectionality and complexity of stigma among YBMSM. As stigmatization comprises externalized and internalized aspects, there is a question about how the intervention might have changed externalized stigma because participants in the intervention group might have perceived stigma differently after the intervention even if the stimulus remained the same. Furthermore, there is a possibility that internalized stigma can simultaneously affect perceived externalized stigma.

Despite these limitations, this study highlights the importance of sexual empowerment and stigma in HIV prevention and suggests novel approaches to reduce HIV disparities among YBMSM. Behavior risk factors alone do not explain disparities in HIV infection between BMSM and White MSM. However, structural inequalities including stigma could help to explain the disproportionate HIV infection rate between BMSM and White MSM. The results of this study support this contention by demonstrating the positive associations between stigma and sexual risk behaviors and the efficacy of a theory-based online intervention to reduce the effect of experienced sexual minority stigma on sexual risk behaviors. Sexual empowerment was negatively associated with engagement in sexual risk behaviors, but the intervention in this study was not effective in increasing the effect of sexual empowerment on reducing sexual risk behaviors. Future research is need to develop theory-based interventions targeting sexual empowerment and to examine how sexual empowerment and stigma work together to impact sexual risk behaviors. Results could then be more widely applied to other preventative behaviors that could be improved by increasing

empowerment to make change, such as HIV testing, Anti-Retroviral Therapy (ART) uptake, and Pre-Exposure Prophylaxis (PrEP) uptake.

Table 7.1. Equivalence between the intervention and control groups: attrition and differential attrition

	Total (N=474)			Intervention (N=238)			Control (N=236)		
	Lost at 3 -month (N=70)	Remained (N=404)	p-value	Lost at 3 -month (N=44)	Remained (N=194)	p-value	Lost at 3 -month (N=26)	Remained (N=210)	p-value
Age	24.4 (3.3)	24.3 (3.2)	0.86	23.8 (3.5)	24.4 (3.1)	0.27	25.4 (2.7)	24.2 (3.3)	0.10
HIV-positive	38.6%	42.6%	0.53	38.6%	46.4%	0.35	38.5%	39.1%	0.95
<high school graduate	8.6%	9.2%	0.94	13.6%	11.3%	0.90	0%	7.1%	0.28
Income less than $21,000	72.9%	70.3%	0.66	77.3%	68.0%	0.23	65.4%	72.4%	0.46
Insurance	61.4%	73.3%	**0.04**	63.6%	74.7%	0.14	57.7%	71.9%	0.13
Experienced Sexual Minority Stigma	2.1 (2.8)	2.5 (2.9)	0.30	2.3 (3.0)	2.6 (2.9)	0.53	1.8 (2.6)	2.4 (2.9)	0.32
Internalized Homophobia	11.1 (5.3)	11.7 (5.5)	0.41	11.7 (5.7)	12.2 (5.4)	0.60	10.0 (4.6)	11.2 (5.4)	0.32
Racial Discrimination	2.5 (2.8)	2.2 (2.7)	0.31	2.7 (2.8)	2.3 (2.7)	0.32	2.2 (2.8)	2.0 (2.8)	0.83
Sexual Empowerment Profile			0.39			0.60			0.69
Profile 1	31.4%	24.8%		34.1%	27.8%		26.9%	21.9%	
Profile 2	11.4%	9.7%		9.1%	7.2%		15.4%	11.9%	
Profile 3	57.1%	65.5%		56.8%	65.0%		57.7%	66.2%	
CAI	6.4 (24.1)	4.5 (9.1)	0.27	8.0 (30.3)	4.2 (8.9)	0.14	3.6 (5.9)	4.8 (9.3)	0.35

Note. Profile 1=psychologically disempowered without safer sex intentions profile. Profile 2= psychologically disempowered with safer sex intentions profile. Profile 3=psychologically empowered with safer sex intentions profile.

Table 7.2. The associations of stigma-related experiences and sexual empowerment, and the CAI at baseline: The simple Zero-Inflated Poisson model.

	Count portion	Inflated portion
	Incidence Rate Ratio (95% Confidence Interval)	Odds Ratio (95% Confidence Interval)
Model 1: SMS	**1.03 (1.02, 1.05)**	1.00 (0.94, 1.07)
Model 2: IH	1.01 (1.00, 1.01)	0.99 (0.96, 1.02)
Model 3: RD	0.99 (0.97, 1.00)	**0.92 (0.86, 0.99)**
Model 4: SEP (reference Profile 1)		
Profile 2	0.98 (0.85, 1.14)	1.37 (0.71, 2.71)
Profile 3	**0.65 (0.59, 0.71)**	0.94 (0.62, 1.44)

Note. SMS=experiences sexual minority stigma. IH=internalized homophobia. RD=racial discrimination. SEP=sexual empowerment profile. Profile 1= psychologically disempowered without safer sex intentions. Profile 2= psychologically disempowered with safe sex intentions profile. Profile 3=psychologically empowered with safe sex intentions profile.

Table 7.3. The moderation effect of intervention on the relationship between stigma-related experiences and sexual empowerment, and the CAI at 3-month: The moderated Zero-Inflated Poisson model.

	Count portion	Inflated portion
	Incidence Rate Ratio (95% Confidence Interval)	Odds Ratio (95% Confidence Interval)
Model 1: Moderation by SMS		
Study condition	0.94 (0.82, 1.09)	0.80 (0.47, 1.38)
SMS	**1.07 (1.05, 1.09)**	1.05 (0.94, 1.16)
Study condition*SMS	**0.86 (0.83, 0.90)**	1.04 (0.90, 1.21)
Model 2: Moderation by IH		
Study condition	**0.39 (0.29, 0.52)**	1.25 (0.46, 3.39)
IH	0.99 (0.97, 1.00)	1.02 (0.97, 1.08)
Study condition*IH	**1.04 (1.02, 1.06)**	0.97 (0.90, 1.05)
Model 3: Moderation by RD		
Study condition	**0.66 (0.57, 0.77)**	0.96 (0.57, 1.62)
RD	**1.09 (1.07, 1.11)**	1.05 (0.94, 1.18)
Study condition* RD	0.98 (0.95, 1.01)	0.95 (0.82, 1.11)
Model 4: Moderation by SEP		
Study condition	**0.63 (0.50, 0.79)**	0.78 (0.33, 1.83)
SEP		
Profile 2	1.22 (0.99, 1.50)	1.02 (0.34, 3.07)
Profile 3	1.14 (0.97, 1.33)	0.63 (0.31, 1.31)
Study condition* SEP		
Profile 2	1.07 (0.70, 1.62)	0.80 (0.16, 4.15)
Profile 3	1.00 (0.76, 1.31)	1.25 (0.46, 3.36)

Note. SMS=experiences sexual minority stigma. IH=internalized homophobia. RD=racial discrimination. SEP=sexual empowerment profile. Profile 2= psychologically disempowered, safe sex practicing profile. Profile 3=psychologically empowered, safe sex practicing profile.

CHAPTER 8: CONCLUSION

The purpose of this dissertation was to more fully develop the concept of sexual empowerment through scale development, explore the association between sexual empowerment and stigma, and examine the effect of an online intervention on the relationship between sexual empowerment, stigma, and sexual risk behaviors among young Black men who have sex with men (YBMSM). Findings from this dissertation support a focus on both increasing sexual empowerment and reducing stigma as a way to address Human Immunodeficiency Virus (HIV) prevention among sexual minority populations. The purpose of this chapter is to provide a brief summary of the findings from each chapter, synthesize the strengths and limitations of the dissertation, and provide implications and offer future directions based on dissertation results.

Summary of Findings

The concept of sexual empowerment was explored through scale development and validation. The newly created sexual empowerment scale (SEMS)—a measure of the degree of psychological empowerment an individual possesses for engagement in safer sex behaviors — was found to be multidimensional, with 35 items and 6 specific sub-constructs: emotional support, self-efficacy for condom use, negative self-esteem, positive self-esteem, self-efficacy to refuse sexual behavior, and social norms for condom use. Among four different measurement models (unidimensional, correlated factors, second-order, and bifactor model), the bifactor model proved to have the best fit. The dimensionality of the SEMS was confirmed with ancillary

bifactor measures; the results of which suggested that the SEMS was primarily multidimensional with some unidimensional features. Thus, sub-scale scores should be used instead of general factor composite scores. Lastly, the predictive validity of the SEMS was tested using the bifactor models with each sub-construct predicting each criterion variable. Most of the sub-constructs of the SEMS were negatively associated with anxiety and depression, and positively associated with safer sex intentions. These results were both theoretically and empirically expected; thus providing validation of the SEMS as measuring what it purports to measure.

In Chapter 6, the multidimensionality of the newly developed SEMS was further investigated using latent profile analysis (LPA). Specifically, LPA was used to identify sexual empowerment profile membership, including the optimal number of profiles and patterns of the six sub-constructs of sexual empowerment defined in Chapter 5. Based on four fit indices, a 3-latent-profile solution was determined be the optimal number of profiles among YBMSM in this sample. These three profiles were denoted as psychological empowered with safer sex intentions, psychologically disempowered without safer sex intentions, and psychologically disempowered with safe sex intentions based on patterns of the six sub-constructs of sexual empowerment (emotional support, self-efficacy for condom use, negative self-esteem, positive self-esteem, self-efficacy to refuse sexual behavior, and social norms for condom use). The majority of the sample was classified as psychological empowered with safer sex intentions (64%), followed by psychologically disempowered without safer sex intentions (26%), and psychologically disempowered with safer sex intentions (10%). In multinomial logistic regression, associations between stigma-related experiences (experienced sexual minority stigma, internalized homophobia, and racial discrimination) and sexual empowerment profiles were tested. As YBMSM reported more stigma-related experiences, the odds of someone being in the

psychologically empowered with safer sex intentions profile decreased compared to being in psychologically disempowered without safer sex intentions profile, indicating a significant association between sexual empowerment and stigma-related experiences.

Lastly, associations between sexual empowerment profile membership, stigma-related experiences, and sexual risk behaviors were tested. After defining these associations, the effect of the online intervention (HMP) on those associations was tested in Chapter 7. The results showed that YBMSM who reported more sexual minority stigma and YBMSM who belonged to the psychologically disempowered without safer sex intentions profile had a higher rate of condomless anal intercourse (CAI) at baseline. Exposure to HMP moderated the relationship between experienced sexual minority stigma and internalized homophobia, and self-reported CAI at the end of the 3-month intervention. The effect of sexual minority stigma on the CAI incidence rate at 3-months was weaker among the intervention group compared to control group. However, the effect of internalized homophobia on the CAI incidence rate at 3-month was stronger among intervention group, a finding potentially explained by the significantly higher levels of internalized homophobia among the intervention group compared to the control group.

Strengths and Limitations

This dissertation study informs future HIV prevention efforts for YBMSM, the group most disproportionately affected by HIV in the United States, by addressing sexual empowerment, stigma, and sexual risk behaviors among YBMSM. First, this dissertation developed a new measure to quantify sexual empowerment among YBMSM. Second, the multidimensionality of sexual empowerment was explored by identifying six sub-constructs in the SEMS and sexual empowerment profiles based on similar distributions of these sub-

constructs. Third, the complexity of stigma, sexual empowerment, and sexual risk behaviors was examined. Sexual empowerment and stigma-related experiences were negatively correlated with each other. In addition, sexual empowerment was negatively correlated with sexual risk behaviors and stigma-related experiences were positively correlated with sexual risk behaviors. Lastly, the moderating effect of an online intervention on sexual empowerment, stigma-related experiences, and sexual risk behaviors was examined, a notable step towards better understanding the multidimensional nature that places YBMSM at risk for HIV.

While the strengths of the dissertation are substantial, there are several limitations. First, while empowerment is recognized to be a social action process, which exists on both an individual level and at the socio-ecological level, only individual level constructs were included in the development of the SEMS. The decision to limit scale development to the individual level was done due to analytical difficulty and the lack of availability of community and society level measures. Further, given the focus solely on psychological empowerment and limited to individual level analysis, the dissertation was not able to address interactions or paradigm shifts between different levels.

A lack of generalizability underlies this dissertation. The SEMS and latent sexual empowerment profiles cannot be applied to general populations' sexual health since the focus population of the dissertation was limited to YBMSM. Moreover, the number of latent sexual empowerment profiles were not specified in an exploratory study which means there is the possibility that the number of latent profiles and patterns of profiles could vary in another study. However, given the urgency of addressing the HIV epidemic among YBMSM, developing a scale to better understand profiles of sexual empowerment for this specific population is both

timely and needed. The dissertation also recognizes that the perceptions, beliefs, and constructs that informs an individuals' level of sexual empowerment can change over time and be influenced by factors not measured in this study. An additional limitation is related to validity issues related to respondent bias in terms of self-reported sexual risk behaviors and other sensitive topics such as experiences of stigma. Participants may have exaggerated the number of incidences of CAI to boost themselves, or they might have been too embarrassed to reveal risky sexual behaviors. To minimize this issue, outliers were deleted and the baseline value were controlled. Further computer-assisted self-administered interviewing (CASI) was used which has been shown to reduce interview bias and improve validity in sexual behavior research (Kissinger et al., 1999; Newman et al., 2002; Turner et al., 1998).

The causal relationship between sexual empowerment and stigma-related experiences was not identified due to the cross-sectional study design. Thus, it is not possible to discern if YBMSM become sexually empowered due to low stigma-related experiences or if YBMSM who are sexually empowered report less stigma-related experiences. Similarly, the causal relationships between stigma-related experiences and sexual empowerment, and sexual risk behaviors could not be determined. To avoid confusion, results with causality issues are expressed as "associations" rather than "predictions". Future studies could investigate longitudinally delineated pathways between sexual empowerment profile membership and stigma-related experiences. Defining this pathway would help address the multidimensional and intersectional nature of HIV risks among YBMSM.

There are several issues related to assessing the intervention effect. While all participants had access to the same intervention content, intervention exposure, or dosage,

varied. For example, some YBMSM used HMP daily, while others did not log-on after their initial enrollment visit. The impact of HMP on sexual empowerment, stigma-related experiences, and sexual risk behaviors may have differed among those who were actually exposed to more (or less) intervention content. Moreover, for both the baseline and three-month assessment, self-report of engagement in CAI reflected the three-months prior. Thus, the dissertation was not able to fully assess the effects of stigma and sexual empowerment on CAI after receipt of the full intervention but rather CAI that occurred during intervention period.

Three measures of stigma-related experiences (externalized sexual minority stigma, internalized homophobia, and racial discrimination) were chosen because of the intersectionality and complexity of stigma among YBMSM. As stigmatization comprises externalized and internalized aspects, there is a question about how the intervention might have changed externalized sexual minority stigma. There is a possibility that participants in the intervention group might have perceived externalized sexual minority stigma differently after the intervention even if the external stimulus remained the same or internalized stigma can simultaneously affect perceived externalized stigma. Furthermore, there is a possibility that internalized stigma can simultaneously affect perceived externalized stigma which reduced perceived degree of externalized sexual minority stigma.

Implications

Despite these limitations, this dissertation demonstrates the significance of the theoretical constructs of empowerment theory and minority stress theory as they apply to a population of YBMSM participating in an online intervention and improves our understanding of their engagement in sexual risk behaviors.

Empowerment is a framework that can be applied to sexually marginalized populations to understand and promote their health by encouraging participation of people, organizations and communities towards the goals of achieving increased control over their lives, political efficacy, improved quality of life, social justice, and reduced marginalization. While the importance of including empowerment theory in the development of HIV prevention interventions has been acknowledged in previous studies of other populations, the application to YBMSM has been limited. Further, research addressing empowerment as it applies to intentions to engage, or actual engagement in sexual risk behaviors, e.g., sexual empowerment, is even scarcer. This study filled this gap by developing and validating a measure to quantify sexual empowerment among YBMSM. The SEMS should be explored in future studies as an intervention outcome or as a mediator that might impact an interventions effect on sexual risk behaviors among YBMSM.

Demonstrating the multidimensionality of the scale was just as important as validation. While previous research provided substantial evidence supporting the multiple dimensions of empowerment in general, there has been no research examining the multidimensionality of sexual empowerment specifically. This study proved both theoretically and methodologically the multidimensionality of sexual empowerment based on the distribution of six sexual empowerment sub-constructs among YBMSM. These findings reinforce that YBMSM's intention and ability to engage in protective behaviors are complex, and thus, intervention strategies aiming to empower YBMSM effectively must address this with this multidimensional framework in mind. For example, for those YBMSM who were psychologically disempowered with safer sex intentions, intervention components focusing on increasing self-esteem and emotional support may be most effective. While psychologically disempowered without safer sex intentions YBMSM might require an intervention focused on reinforcing social norms

supporting engaging in safe sex practices and building self-efficacy to practice these behaviors, in addition to increasing self-esteem and emotional support.

Associations between stigma-related experiences (experienced sexual minority stigma, internalized homophobia, and racial discrimination), sexual empowerment, and sexual risk behaviors were explored in this study. Those YBMSM belonging in the latent class deemed psychologically disempowered without safer sex intentions were more likely to report stigma-related experiences than those psychologically empowered with safer sex intentions YBMSM. While, as mentioned previously, causality cannot be inferred, the clear association between stigma and sexual empowerment provides researchers with additional evidence of the importance of targeting stigma reduction to impact HIV among YBMSM.

Findings from this dissertation provide additional insight into the effect that a theory-based intervention, designed to address the multidimensional nature of HIV risk for BMSM can impact stigma, sexual empowerment and CAI. The main outcome evaluation among YBMSM participating in HMP found that the rate of self-reported CAI at 3-months was 32% lower in the intervention group compared to the control group (IRR 0.68, 95% CI 0.43, 0.93) (Hightow-Weidman et al., 2018). In this study, while the intervention was effective in reducing the effect of experienced sexual minority stigma on sexual risk behavior, HMP was not found to be effective at changing the effect of sexual empowerment on sexual risk behaviors. In this study, the majority of the men in this sample were members of the profile classified as psychological empowered and safer sex intentioned. It is possible that among YBMSM with these characteristics at baseline, addressing sexual risk behaviors and thus, the interventions impact on sexual risk behaviors was achieved through another pathway.

Finally, findings from the dissertation can be applied to other HIV prevention behaviors. Future research should look towards expansion of adaptation of the SEMS to include constructs such as self-efficacy to engage in HIV testing, Pre-Exposure Prophylaxis (PrEP) uptake and adherence among HIV-negative MSM, as well as Anti-Retroviral Therapy (ART) adherence among HIV-positive MSM. Given the impact of stigma on these behaviors (Bogart, Wagner, Galvan, & Klein, 2010; Eaton et al., 2017), having a valid measurement tool of YBMSM's empowerment to adopt them would be invaluable.

Young BMSM are the group most disproportionately affected by HIV in the U.S. However, behavioral risk factors alone do not explain disproportionate HIV infection rates between BMSM and White MSM and higher rates of HIV among BMSM may be defined by structural inequalities including stigma. This study provides initial evidence to support both sexual empowerment and stigma reduction as a strategy to slow or prevent new HIV infections in this population. Intervention strategies that aim to empower YBMSM, reduce stigma and improve their overall health and well-being remains the ultimate goal.

APPENDIX

Item used to develop Sexual Empowerment Scale by sub-construct
Self-Efficacy to Refuse Sexual Behavior
i1 able to say no to having sexual intercourse with someone you have known for few days or less
i2 able to say no to having sexual intercourse with someone you want to date again
i3 able to say no to having sexual intercourse with someone you want to fall in love with you
i4 able to say no to having sexual intercourse with someone who is pushing you to have sexual intercourse
Emotional Support
i5 Someone you can count on to listen to you when you need to talk
i6 Someone to give you information to help you understand a situation
i7 Someone to give you good advice about a crisis
i8 Someone to confide in or talk to about yourself or your problems
i9 Someone whose advice you really want
i10 Someone to share your most private worries and fears with
i11 Someone to turn to for suggestions about how to deal with a personal problem
i12 Someone who understands your problems
Negative Self-Esteem
i15 All in all, I am inclined to feel that I am a failure.
i17 I feel I do not have much to be proud of
i20 I wish I could have more respect for myself
i21 I certainly feel useless at times
i22 At times I think I am no good at all
Positive Self-Esteem
i13 I feel that I'm a person of worth, at least on an equal plane with others
i14 I feel that I have a number of good qualities
i16 I am able to do things as well as most other people
i18 I take a positive attitude toward myself
i19 On the whole, I am satisfied with myself
Condom Use Self-Efficacy
i23 I feel confident in my ability to put a condom on myself or my partner
i24 I feel confident I could purchase condoms without feeling embarrassed
i25 I feel confident I could remember to carry a condom with me should I need one
i26 If I were to suggest using a condom to a partner, I would feel afraid that he or she would reject me
i27 If I were unsure of my partner's feelings about using condoms, I would not suggest using one
i28 If my partner and I were to try to use a condom and did not succeed, I would feel embarrassed to try to use one again
i29 I would not feel confident suggesting using condoms with a new partner because I would be afraid he or she would think I have a sexually transmitted disease or HIV
i30 I feel confident in my ability to use a condom correctly
Sexual Risk Social Norm
i31 My friends talk a lot about "safer" sex.
i32 My friends and I encourage each other before dates to practice "safer" sex.
i33 If I thought that one of my friends had sex o n a date, I would ask them if they used a condom
i34 If a friend knew that I might have sex o n a date, he/she would ask me if I were carrying a condom.
i35 When I think that one of my friends might have sex o n a date, I ask them if they have a condom.

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