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SUFFOLK UNIVERSITY

IDENTIFYING RESILIENCE IN HIV-NEGATIVE SEXUAL MINORITY MEN WITH
SYNDEMIC CONDITIONS

A DISSERTATION SUBMITTED TO
THE FACULTY OF THE COLLEGE OF ARTS AND SCIENCES
IN CANDIDACY FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY

DEPARTMENT OF PSYCHOLOGY

BY

EVA N. WOODWARD

BOSTON, MASSACHUSETTS

SEPTEMBER 2015

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Acknowledgements

In this document, I used the pronoun “I” to describe ownership of my ideas and work. A good scientist knows that any phenomenon, including a dissertation, is not predicted by a single factor. There are several people who represent the “we” responsible for my work.

One of those people must be a gambler—Dr. David Pantalone. He took a chance on me in 2009, even though my odds were questionable, given where I came from and how novice I was (yes, I know I shouldn’t end a sentence with a verb). Thank you to David, for spending the most time, money, and energy cultivating thoughtful, scientific skills and perspectives in me. I also owe much gratitude to Dr. Amy Marks for letting her passion, thoughts, and knowledge flow like water over my rock, carefully polishing the edges. To Dr. Lance Swenson, for his special attention to interpersonal needs and this exciting systematic review. A flock of others have directly contributed—namely, Regina Banks—who shared even the most mundane tasks with me. Thank you!

One of the most important things I learned from LGBTQ people is that, in the absence of “traditional” families, we benefit from building families of our choosing. Thank you to my family: my partner and husband, Jack Lamoreaux, for taking part in my process; Jacque Guidry, for listening, profoundly; Lucille Stocker, reminding me what women can do; Jamie Hildabrand, for being unwaveringly proud of me; Mary and Jeff Lamoreaux, for always checking on me. To Camry Woodward, who embodies the passion needed to work in service of others; to Trey Woodward, telling me I could do whatever I set my

mind to; and finally, to Mary and Roger Woodward, for regularly sending me vitamins and popcorn via snail mail. Sometimes, it's the little things.

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ABSTRACT

HIV/AIDS is a major public health concern for sexual minority men, especially men with risk factors for the virus. Most HIV prevention programs target relatively few behaviors, such as increasing individual condom use (Coates, Richter, & Caceres, 2008) through an exclusive focus on reducing high-risk behaviors (Herrick et al., 2011). Some researchers have posited whether more effective interventions, based on identifying and bolstering strengths of sexual minority men, should be developed. To that end, I conducted (a) a systematic review and (b) a qualitative study to serve as foundational steps in identifying resilience resources in samples of high risk, HIV-negative, sexual minority men. Both research inquiries examined samples of HIV-negative sexual minority men who endorsed at least one *syndemic condition*—empirically supported psychosocial risk factors identified as significantly increasing risk for HIV—including childhood sexual abuse, partner abuse, substance abuse, or mental health problems. In the systematic review, I identified 34 distinct resilience resources, including identity descriptors, behaviors related directly and indirectly to sex, cognitions, emotions, and relationships. I utilized these results to develop a qualitative interview guide. Results from interviews with 13 sexual minority men buttressed findings from the review: that resilience resources occurred at multiple ecosystem levels. More work is needed on ecosystem frameworks in HIV prevention to address the comprehensive issues influencing HIV infection. In addition, one hypothesis I generated from the interviews is that psychosocial risk factors for HIV may trigger stress-related growth for a certain subset of sexual minority men, leading to development of factors that decrease their HIV risk.

CHAPTER 1

Introduction

The term “sexual minority men” is inclusive of individuals who identify with a sexual minority label, such as gay, queer, bisexual, homosexual, or any number of other sexual orientation descriptors denoting an identity other than heterosexual (Savin-Williams, 2005). I also use the term to include men who have sex with men who may not identify as gay, bisexual, etc. I use “minority” not only because it is established in current literature (P. N. Halkitis, Wolitski, & Millett, 2013; Reisner et al., 2011), but also because this group of men represent both a numeric minority and a socially marginalized group in society. Men who identify with a non-heterosexual sexual orientation are subject to overt harassment (Herek, 2009) as well as institutionalized discrimination, such as the inability to marry in many U.S. states (Human Rights Campaign [HRC], 2013), or legal punishment for anal intercourse with another man in some countries (Hollander, 2009). These unique life stressors are associated, through direct and indirect pathways, with poorer mental and physical health (Meyer, 1995, 2003). Federal scientific agencies have recently called for more research to understand and alleviate such health disparities among sexual minority men (Institute of Medicine [IOM], 2011; U.S. DHHS, 2010), with a top priority being the prevention of new HIV infections using the best available behavioral and biomedical approaches.

HIV/AIDS a major public health concern for sexual minority men (Centers for Disease Control and Prevention [CDC], 2013). HIV is especially concerning for the men who are at highest risk of acquiring the virus, by virtue of the psychosocial stressors they

face (e.g., sexual abuse) that have been shown to precipitate greater engagement in HIV risk behaviors (e.g., Stall et al., 2003). Although sexual minority men represent a numeric minority of the population—approximately 2%—current figures indicate that 50% of all people living with HIV are sexual minority men, and that sexual minority men comprised 63% of new HIV infections in 2010 (CDC, 2013). Thus, sexual minority men represent the demographic group with the highest prevalence and incidence of HIV/AIDS in the U.S. (Jaffe, Valdiserri, & De Cock, 2007).

As a way to prevent HIV transmission, national-level health policies contain specific objectives related to the reduction of condomless anal sex among sexual minority men, (i.e., *Healthy People 2020*, U.S. DHHS, 2011; HIV policy #18). Most HIV prevention programs focus on reducing condomless anal sex (CAS) because it is the top contributor to new cases of HIV among men who have sex with men (CDC, 2013). A systematic review of existing behavioral HIV interventions targeting condomless sex revealed that such risk behaviors decreased in 27-43% of sexual minority men who were exposed to existing behavioral interventions (Herbst et al., 2007). Although promising, the question remains: What would help the other two-thirds of sexual minority men to decrease their engagement in condomless anal sex and, subsequently, their likelihood of HIV acquisition?

One potential strategy is to develop and disseminate more effective interventions to address the individual and environmental psychosocial health problems (e.g., sexual abuse; Stall et al., 2003) that are associated with a greater likelihood of HIV acquisition for sexual minority men (Halkitis, Wolitski, & Millett, 2013). As suggested by public health researchers, one way to implement such a strategy is to infuse existing

interventions with cognitive or behavioral strategies that enhance *resilience* of sexual minority men at risk for HIV (e.g., Herrick et al., 2011). Because resilience is a process, rather than a static trait, I identify resources indicative of the resilience process (referring to them as *resilience resources* or *resilience*), in accordance with recommendations by Schetter and Dolbier (2011). The question remains: are there elements that could be included in HIV prevention programs that would build upon the unique resources of sexual minority men, in order to potentiate the intervention's effects? Recently published research has called for a paradigm shift towards a greater focus on resiliency in HIV research on sexual minority men, by identifying and testing strengths-based intervention approaches (e.g., Mustanski et al., 2007). Yet, the extant literature lacks foundational data on what exactly would constitute resilience resources for this population, especially among individuals with increased HIV risk, or published work about the mechanisms by which resilience might mitigate sexual risk behaviors.

Thus, my research aims in this dissertation were twofold: (1) to conduct a systematic review of the published literature on resilience in sexual minority men at highest risk for HIV, that will serve as a basis for (2) a qualitative study of resilience in HIV-negative sexual minority men. Resilience resources are operationalized in the current study as positive traits, behaviors, relationships, or norms in populations who have exposure to adversity that increases their risk for HIV (i.e., syndemic conditions), but have not acquired HIV (Masten & Reed, 2002). In this document, I:

- (1) Explain key psychosocial health problems—referred to as *syndemic conditions*—that are significantly associated with HIV risk behaviors;

- (2) Showcase how current HIV prevention literature utilizes an ecosystems framework to situate findings into multiple ecological levels that new interventions may be designed and tailored to address (e.g., Earnshaw, Bogart, Dovidio, & Williams, 2013);
- (3) Make explicit my rationale for using an investigator-created coding strategy and define elements of this framework as it applies to the current study; and
- (4) Describe current operational definitions of resilience (e.g., Masten & Reed, 2002; Stall & Herrick, 2011), and how they have been used in research on HIV.

The HIV Syndemic for Sexual Minority Men

Researchers have utilized one framework, syndemics theory, to identify and explain how certain health problems increase the likelihood that sexual minority men will acquire HIV (e.g., Stall et al., 2003; Singer, 1996). In general, syndemics theory asserts that co-occurring health problems interact with each other to negatively impact the health of a specific population, related to a specific disease or condition (Singer, 1996). When Stall and colleagues (2003) tested a syndemics model to explain higher prevalence of HIV in sexual minority men, indeed, results suggested an additive effect of co-occurring psychosocial health problems. Greater frequency of specific psychosocial health problems was associated with significantly higher likelihood of both high-risk sexual behaviors and of HIV acquisition. The four syndemic conditions that Stall and colleagues (2003) identified as disproportionately high, and often co-occurring among sexual minority men, include poor mental health, polysubstance abuse, childhood sexual abuse, and partner abuse. These have been substantiated as well by researchers from other

institutions with samples from other geographic locations (e.g., Mustanski, Garofalo, Herrick, & Donenberg, 2007), and with longitudinal data indicating that more syndemic conditions are associated with higher likelihood of HIV seroconversion (Mimiaga et al., 2015). Sexual minority men reporting one or more of these syndemic conditions have been found to engage in more HIV risk behaviors than sexual minority men without these conditions (e.g., Dyer et al., 2012), thus, putting the men at increased risk for acquiring HIV. For example, in a sample of Black gay and bisexual men living in Michigan, higher frequency of sexual or physical traumas were associated with depression and substance abuse (i.e., co-occurring health problems). In addition, more traumatic events have been found to be associated with inconsistent condom use (Miller, Reed, McNall, & Forney, 2013). Clearly, risky sexual behaviors are partially explained by these co-occurring psychosocial conditions.

Not only do substance abuse, mental health problems, and trauma interact to create a syndemic effect, thereby increasing HIV incidence, some of these conditions also occur at disproportionately high levels in samples of sexual minority men. For example, partner abuse has been self-reported at significantly higher levels among gay men than heterosexual men, and was not better accounted for by binge drinking or psychological distress (Goldberg & Meyer, 2013). In a large, multisite study in the U.S., childhood sexual abuse was reported by approximately 40% of sexual minority men and was significantly correlated with higher levels of substance abuse and depressive symptoms (Mimiaga et al., 2015). Current data indicate that sexual minority men are significantly more likely to meet criteria for psychiatric disorders and suicidal ideation than heterosexual men (Cochran & Mays, 2006; King et al., 2008). Results from several

population-based datasets suggest no differences in drug or alcohol abuse between sexual minority and heterosexual men (Cochran & Mays, 2006); however, as substance levels increase, levels of risky sex (e.g., multiple partners, no condoms) have been shown to increase (Lim et al., 2012), suggesting substance abuse contributes to the syndemic effect on HIV infection. Unfortunately, these syndemic conditions tend to occur at higher levels in sexual minority men than heterosexual men, likely because of increased stress associated with the experienced of being a sexual minority person in a generally heterosexist society (Meyer, 1995).

Further, research has demonstrated evidence of a syndemic effect on HIV infection in sexual minority men across groups, methodologies, and ecosystem levels. The syndemic effect has been robust across different ethnic groups including, for example, racially diverse men living in Chicago (Mustanski et al., 2007), African American men living in Philadelphia (O’Leary et al., 2014), and White men in the U.S. (Mimiaga et al., 2015). Empirical studies have also identified syndemic conditions for HIV infection at both individual (e.g., substance use) and environmental (e.g., childhood sexual abuse) levels, suggesting that a multilevel, ecosystems framework is important as part of comprehensive HIV prevention for sexual minority men (Coates et al., 2008).

Syndemic conditions for HIV infection have been measured with a variety of assessment instruments. Poor mental health has been operationalized as scoring above the recommended cutoffs on depression-specific screeners (e.g., Dyer et al., 2012), and also as general psychological distress on the Brief Symptom Inventory (i.e., Mustanski et al., 2007). Abuse histories have been defined as childhood sexual abuse (CSA) separate from other types (Mimiaga et al., 2015), and also by composites of abuse types during one’s

lifetime (i.e., physical, sexual, emotional; Kurtz et al., 2012). Substance abuse inclusion criteria have included use of three or more substances in the past six months (excluding alcohol; Stall et al., 2003), and endorsement of three or more DSM-IV-TR criteria for substance dependence in the past year (i.e., Kurtz et al., 2012). Regardless of the operational definitions of the syndemic condition, findings are consistent across studies: prior physical or sexual abuse, drug abuse, and poor mental health appear to exacerbate men's risky sexual behaviors and increase their likelihood for acquiring HIV (Dyer et al., 2012; Kurtz, Buttram, Surratt, & Stall, 2012; Mimiaga et al., 2015; B. Mustanski, Garofalo, Herrick, & Donenberg, 2007; Stall et al., 2003).

A Paradigm Shift in HIV Prevention

A paradigm shift in HIV prevention toward resilience has begun, driven partly by a plethora of research on HIV risk showing that most sexual minority men are *not* at high risk for acquiring HIV (Herrick et al., 2011), and partly by overwhelming data that current HIV prevention efforts have plateaued in reducing new HIV infections (Coates et al., 2008). Although sexual minority men with multiple syndemic conditions are more likely to acquire HIV than men without such conditions (Dyer et al., 2012), most HIV-negative men with one or more syndemic conditions do not report having condomless sex (89%) and do not acquire HIV (79.1%; Stall et al., 2003). These and other data imply that sexual minority men at higher HIV risk, despite adversity, must exhibit strengths or utilize some resources to prevent HIV acquisition (Kurtz, Buttram, Surratt, & Stall, 2012). For example, in a large, multi-site, longitudinal study assessing drug use over time, most sexual minority men (78%) reported never or rarely using stimulant drugs

(Lim et al., 2012), suggesting that most sexual minority men do not meet criteria for this syndemic indicator.

In addition, a meta-analysis indicated that the majority of existing HIV prevention efforts was effective for less than half of sexual minority men, and for even fewer men with exposure to syndemic conditions, such as those reporting substance abuse (Herbst et al., 2007). A hypothesis that follows is that interventions may overlook existing strengths within sexual minority individuals and communities, and may inadvertently create an image of deficiency for sexual minority men that increase treatment disengagement and dropout (Herrick et al., 2011). For example, one goal of some HIV interventions is to “increase ability to perform technical, personal, or interpersonal skills for risk reduction,” such as teaching a man to properly use a condom or negotiate condom usage (Herbst et al., 2007, p. S41). These are vital skills for individual HIV prevention. However, by primarily targeting CAS from a skills deficit perspective, rather than a strengths perspective, the current state of intervention delivery may imply that sexual minority men are less capable than expected by society. In fact, across 19 studies that examined efficacy of HIV prevention programs, the biggest barrier to intervention was participant retention, with some authors specifically citing that interventions were “not sufficiently motivating and captivating” (Herbst et al., 2007, p. S50). Thus, the framing of current interventions may contribute unintentionally to strained therapeutic alliances and precipitate client disengagement or dropout (e.g., APA Task Force on Appropriate Therapeutic Responses to Sexual Orientation, 2009). One possible way to improve the relevance of existing HIV prevention programs is to emphasize participants’ strengths to mobilize behavior change. An example of an existing strengths perspective would be to

evaluate and explore commitments to living healthy, or close networks of friends as reasons and ways to increase condom use (Herrick et al., 2011), and enhance resilience.

Defining Resilience

One issue that makes resilience difficult to study scientifically—and may contribute to the dearth of research on resilience and HIV—is that there are a variety of ways to operationalize and measure resilience. Resilience research is currently in its fourth wave, characterized by empirical attention to the interaction of resilience resources at different ecological levels (Masten & Wright, 2009), such that resilience may derive from protective factors at both physiological and environmental levels (Rutter, 2006). Based on the literature, resilience is currently described as (a) a process, rather than a static, individual trait; (b) an achievement of positive outcomes or avoidance of negative outcomes despite exposure to risk or stress; and (c) dynamic within and between individuals over time, such that one outcome may be positive for some individuals, and negative for others (Fergus & Zimmerman, 2005; Herrick et al., 2011; Masten & Wright, 2009; Wexler, DiFluvio, & Burke, 2009).

Earlier theoretical work has defined resilience as the presence of protective factors that modify risk between stressors and health outcomes (Rutter, 1985). Without a protective factor to moderate that association, a person who experiences a stressor could develop a negative health outcome. A person who experiences a stressor in the presence of a protective factor could either develop a positive health outcome or at least could avoid a negative one. Some researchers argue that the absence of negative outcomes (e.g., no mental health problems) is not sufficient to qualify someone as demonstrating resilient processes (Stall & Herrick, 2011). However, within developmental psychology, there is

some dissent, arguing that resilience could also be defined as a trait or experience that helps one to avoid physical or mental health problems (Fergus & Zimmerman, 2005). One example of such a definition is a study conducted by Hatzenbuehler and colleagues (2011), in which researchers studied protective effects (e.g., living in states with high density of same-sex couples) against developing psychiatric diagnoses. The biggest resource for guidance on defining and studying resilience comes from the field of developmental psychology. Most developmental psychologists argue that resilience is evidenced by the presence of positive outcomes, such as positive adaptation or meeting a developmental milestone after exposure to risk (Masten & Reed, 2002).

In developmental psychology, there is disagreement about whether resilience should be defined as the presence of positive outcomes or the absence of negative outcomes. In published HIV research, researchers have operationalized resilience in both ways. Gwadz and colleagues (2006) operationalized resilience in young sexual minority men who experienced childhood maltreatment using both the absence of negative outcomes (e.g., no incarceration) and presence of positive ones (e.g., completed high school). Another study on sexual minority men operationalized resilience as the absence of negative problems (e.g., no substance use, no distress, etc.; Herrick et al., 2013a). This definition makes empirical sense in HIV research because the absence of problematic behaviors, such as substance abuse, is associated with a lower prevalence of HIV risk behaviors (e.g., Muriuki, Fendrich, Pollack, & Lippert, 2011). Therefore, measuring the absence of negative outcomes appears to be helpful, so long as those negative outcomes are associated with HIV transmission. However, measuring the absence of negative

outcomes more generally is insufficient to provide clear, specific data on what and how positive resources are involved in maintaining an absence of negative outcomes.

Given the state of the literature, it appears that the next important step in resilience research for HIV prevention would be to utilize operational definitions consistent with the predominant developmental psychology perspective (e.g., Masten & Reed, 2002), and also to draw from syndemics theory-based research on HIV infection in sexual minority men. The operational definition for resilience in recent studies has been, for the most part, the absence of syndemic conditions. There is some work, also, showing that the presence of resilience resources (rather than the absence of problems) is associated with fewer syndemic conditions. The latter is a potentially novel, comprehensive approach to resilience research for HIV prevention, as it does not infer that resilience is simply the inverse of risk. Rather, by investigating positive adaptation as an addition to classic vulnerability-based approaches, researchers should be able to identify protective factors and personal strengths that can be more easily developed through intervention than risk reduction alone.

The Case for Resilience

If HIV interventions were infused with strategies based on or indicative of resilience, they may be more appealing, seem more relevant, improve therapeutic engagement and, thus, reduce risk for HIV transmission (Herrick et al., 2013b). Components of strengths-based interventions may include capitalizing on protective factors or personal strengths, such as values clarification exercises, to assist in behavior change.

Some researchers in public health have begun resiliency research for sexual minority men (i.e., Herrick et al., 2011), calling for additional studies, especially exploratory ones, to identify resilience in sexual minority men (Eaton et al., 2013). HIV researchers have called for an alternative to “vulnerability-based approaches to [HIV] intervention design” for sexual minority men, stating that current interventions overly rely on treating vulnerabilities of at-risk sexual minority men as a way to reduce HIV infection (Lim et al., 2010, p. 7). Lim and colleagues (2010) discussed two options for future intervention design: (1) to continue the tradition of treating at-risk sexual minority men for vulnerabilities that put them at risk for HIV (e.g., maladaptive coping with drug abuse), or (2) to identify strengths used by low-risk sexual minority men to develop novel interventions. This conceptualization leaves out a third potential strategy: to identify positive resources or strengths in high-risk sexual minority men who are HIV-negative, and target these and other mechanisms of adaptive coping to avoid negative outcomes related to HIV (e.g., substance abuse). This resilience-based approach to HIV intervention may be more effective to prevent HIV—in combination with traditional risk reduction strategies such as increasing condom usage—in the hopes of tipping the balance in favor of helping more sexual minority men avoid infection with HIV.

Current Research on HIV and Resilience

There is a dearth of published research specific to the relation between HIV and resilience in any population, although researchers have called for exploration of these domains (De Santis, 2008). One recent study on resilience related to HIV in other populations demonstrated that, among sexually abused adolescents, social support, hope, and caregiver education predicted resilience (Williams & Nelson-Gardell, 2012). Authors

of a qualitative study interviewed men in Bangkok and New York City who injected drugs, inquiring about how they have managed to avoid HIV infection despite engagement in high risk behaviors. Most men in both cities (85% and 90%, respectively) identified their “own efforts” as reasons for their HIV-negative status, such as only using their own needles, monogamy, or using condoms (Des Jarlais et al., 1997). However, few data have been published on relations among HIV, risk, and resilience specific to sexual minority men (e.g., Wei, Guadamuz, Lim, Huang, & Koe, 2012).

Burgeoning research on resilience and HIV has identified some evidence of resilience (e.g., protective factors, strengths) among sexual minority men. O’Leary and colleagues (2014) found that, in a cross-sectional study on 593 African American sexual minority men, higher levels of optimism and post-high school education mediated the relation between syndemic conditions and HIV prevalence, such that men who reported these protective factors were less likely to test positive for HIV. Notably, there were many factors that did not significantly mitigate risk of HIV prevalence, though, including social network size, connection to gay community, religiosity, Black pride, or income (O’Leary, Jemmott, Stevens, Rutledge, & Icard, 2014). Research on HIV and resilience is minimal, outdated, and wholly nonspecific—no real patterns have been identified as common elements of resilience among any population, especially sexual minority men at high risk for HIV. More recent, detailed data are necessary to identify common patterns of resilience among sexual minority men at highest risk for HIV.

From a resilience perspective, to increase the efficacy and effectiveness of HIV interventions, researchers must develop or adapt interventions that better incorporate strengths and that target risks at multiple ecological levels (e.g., individual, group,

institution; e.g., Earnshaw et al., 2013). This comprehensive approach to HIV prevention would target the multilevel syndemic conditions that appear to exacerbate the occurrence of sexual risk behaviors. In fact, multilevel HIV prevention programs have been effective in countries outside the U.S. (e.g., China, Zambia, etc.; Coates et al., 2008). If researchers can successfully study resilience for sexual minority men, at multiple levels—especially those at high risk—interventions could be infused with strengths-based strategies to help prevent HIV among those for whom traditional interventions are ineffective.

This dissertation provides vital preliminary data on resilience of HIV-negative sexual minority men with high HIV risk. I first conducted a systematic review to identify specific resilience resources already reported in the literature, and then used those results to develop qualitative interviews. I conducted both the review and qualitative study using frameworks from the bioecological model (Bronfenbrenner, 1995) to address multilevel factors, and also from the HIV syndemic literature (e.g., Stall et al., 2003) to address men at highest risk for HIV.

CHAPTER 2

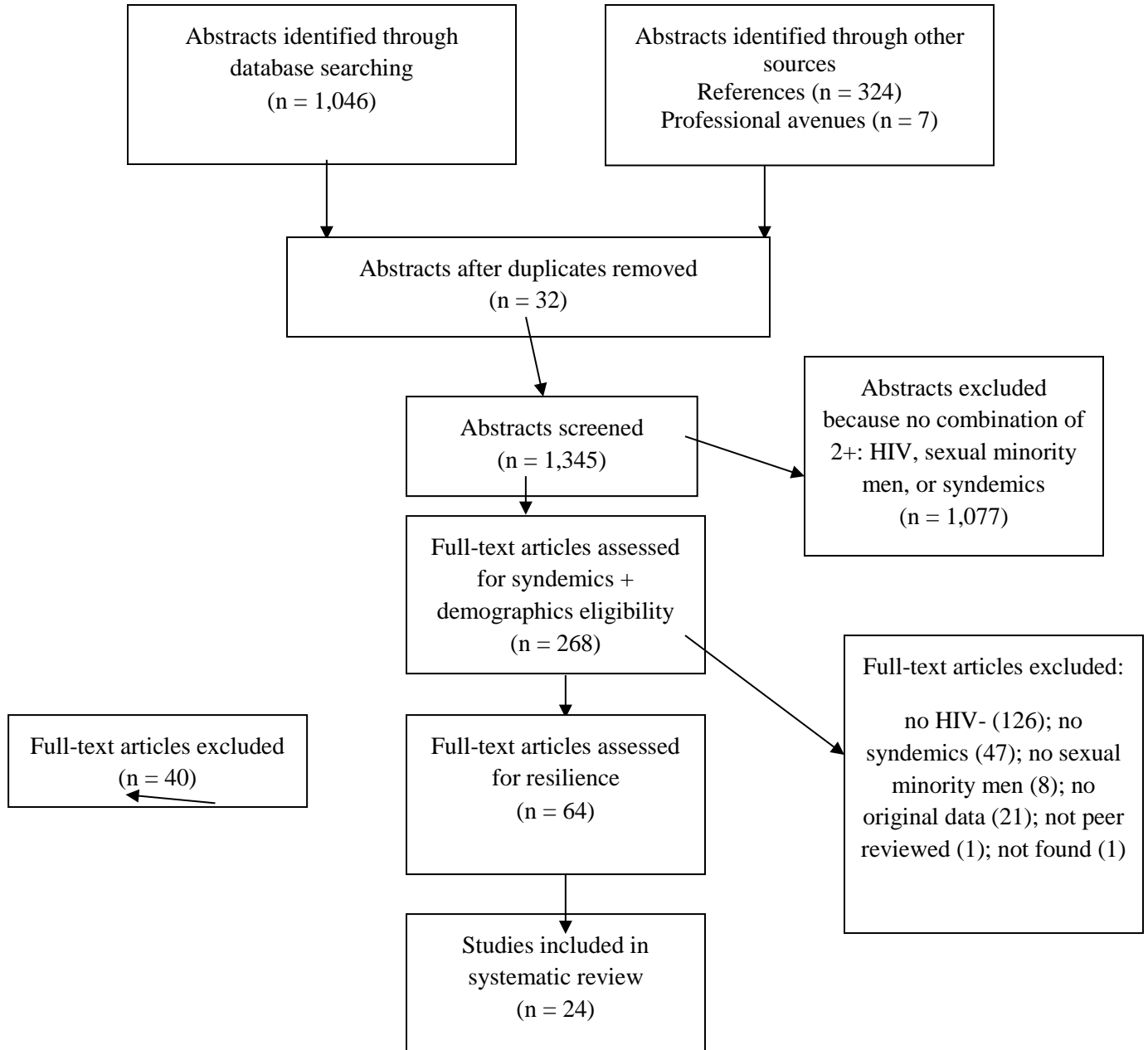
Systematic Review

Methods

Data collection and analysis followed the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines outlined by Moher and colleagues (2009), when possible. Articles were retrieved from three sources: (1) electronic databases (PsycINFO, PsycARTICLES, PubMed), (2) reference lists of screened articles, and (3) electronic professional venues, including listservs and Research Gate (see Figure 1).

Figure 1

Flowchart of Identification of Articles for Systematic Review



I searched databases for any relevant articles published before April 2014 using the following Boolean statement to search keywords, titles, and abstracts: (men who have sex with men *OR* gay men *OR* bisexual men) *AND* (HIV) *AND* [(protective factors *OR* strengths *OR* resilience) *OR* (syndemic *OR* polydrug use *OR* polysubstance use *OR* child sexual abuse *OR* CSA *OR* mental health *OR* depression *OR* suicide *OR* anxiety *OR* partner abuse *OR* domestic violence *OR* intimate partner violence)]. I selected articles for inclusion if they were published, peer-reviewed articles with a sample of quantitative or qualitative data (no case studies, dissertations, or chapters in edited volumes). Articles were selected if they were published in English and met the following criteria:

1. Identified as a sexual minority man (e.g., gay, bisexual) or man who had sex with men (MSM);
2. Reported on data from an HIV-negative sample or subsample;
3. The HIV-negative sample or subsample met criteria for at least one syndemic condition;
4. Reported on any resilience resources.

To meet the syndemic condition inclusion criterion, a majority of the sample (50%) had to (1) endorse one of the four syndemic conditions (i.e., substance abuse, childhood sexual abuse, partner abuse, or mental health problems) or (2) report elevated scores on measures of a syndemic condition. I excluded articles if any of the above inclusion criteria were not met.

On the basis of the inclusion criteria, results of this review can be considered to apply to samples of HIV-negative sexual minority men or MSM who, overall, meet criteria for at least one syndemic condition. Because syndemic conditions are associated

with greater engagement in HIV risk behaviors, findings in this review may also be applicable to cisgender male samples with high prevalence of HIV risk behaviors. I cannot speak to the generalizability of my work to men engaging in several HIV risk behaviors. This review only assessed syndemic conditions that are a proxy for HIV risk behavior.

My dissertation committee co-chairs and I developed inclusion criteria for coding potentially relevant articles before search procedures began. The coding team comprised a clinical psychology doctoral student and two research assistants trained in the coding scheme. Two coders independently screened a sample of 10% of potentially relevant abstracts for demographic criteria and syndemic conditions (see Figure 1). Inter-rater reliability was high ($k = .90$); thus, coders divided and screened remaining abstracts separately. Then, I examined references of all articles included at this step for key terms to identify other prospective articles. Disagreements were resolved by consensus. After identifying samples with syndemic conditions, two coders analyzed articles for resilience resources; inter-rater reliability for resilience was high ($k = .80$). I attempted to contact study authors to obtain additional information, if needed, to make eligibility decisions (e.g., Antoni, 1991).

The coding team extracted all data from the articles, and I checked all data extraction once more. Information was collected from each study on sample resources, syndemic conditions, and resilience resources. I did not conduct an assessment of bias of individual studies, as suggested by PRISMA guidelines (Moher et al., 2009), because most of the articles were not intervention studies.

I created a second, multi-person coding team who was responsible for creating a coding scheme for categorization of resilience resources identified in this review. The multi-person coding team consisted of multiple faculty, doctoral students, and lab research assistants. We created a coding scheme once we extracted all resilience resources. Coders categorized resources into themes. To ensure reliability, the first author's results were compared to results of each coding team member (Hruschka et al., 2004). All coders approximated adequate inter-rate reliability with the first author: ($k = 0.828$ [Coder A], 0.656 [Coder B], 0.785 [Coders C], 0.806 [Coder D], 0.914 [Coder E], 0.914 [Coder F]).

Results

I compiled abstracts from three search techniques, illustrated in Figure 1, identified 1,388 abstracts of interest and excluded 1,363 because they did not meet the aforementioned inclusion criteria. My final sample included 24 articles published between 1991 and 2012 (1990-1999 $n = 11$; 2000-2009 $n = 6$; 2010-present $n = 7$). The predominant research design was quantitative ($n = 22$), with one article using only qualitative methods (Viney et al., 1991), and one using mixed methods (Brooks et al., 2012). Most articles were cross-sectional ($n = 17$) and some were longitudinal ($n = 7$). Only one article met the inclusion criterion for childhood sexual abuse (Berg et al., 2008). No articles clearly reported on partner abuse. Most of the included articles met inclusion criteria for either substance abuse or poor mental health (e.g., clinically significant depressive symptoms). Three of 24 articles reported more than one syndemic condition in their sample (see Table 1).

Table 1.

Characteristics And Syndemic Indicators Of Studies On HIV-Negative Sexual Minority Men

Citation	Year, Location	Descriptives	Methodology	Substance Abuse	CSA	Partner Abuse	Mental Health
Antoni (1991)	Southeastern city, pre-1990	N = 47 HIV- n = 30 M age = 32, 18-40	L, QUANT	N	N	N	Y, POMS mood states & STAI elevated prior to HIV serostatus notification
Berg (2008)	Boston, 2000	N = 92 M age = 35.6, 18-58 83.5% W; 6.5% LAT; 4.3% AA; 1.3% AS	CS; QUANT	Y, substance abuse; alcohol, marijuana, and cocaine use lifetime	Y	N	Y, suicidal ideation and psychiatric diagnoses; DSM-IV-TR
Brooks (2012)	Los Angeles	N = 25 M age = 37 W = 5; LAT = 8; AA = 10; O = 2	CS, QUAL, QUANT	Alcohol, marijuana, meth last 30 days	N	N	N
Buchbinder (1996)	Chicago; Denver; San Francisco, 1993	N = 1,975 M age = 31 W = 1,545; LAT = 219; AA = 117; O = 93	L, QUAL, QUANT	Y, injection drugs, cocaine, poppers, amphetamine, marijuana, narcotics, alcohol, hallucinogens, barbiturates in last 12 mos	N	N	N
Conley (1999)	Los Angeles, 1984-1985	N = 224 HIV- n = 120 M age = 32, 18-50 95% W or LAT	L, QUANT	N	N	N	Y, POMS mood states; hopelessness scale

Table 1, continued

Citation	Year, Location	Descriptives	Methodology	Substance Abuse	CSA	Partner Abuse	Mental Health
Folkman (1996)	San Francisco 1990-1994	N = 110 HIV- n = 73 M age = 39.4 W = 70; Non W = 3	L, QUANT	N	N	N	Y, depressed mood
Forney (2012)	13 U.S. cities, 1999-2002	N = 8,235 HIV- n = 8,064 M age = 22, 15-25 W = 1,875; LAT = 2,808; AA = 2,281	CS, QUANT	Y, substance + alcohol use	N	N	N
Gray (1999)	London	N = 35 HIV- n = 35 M age = 37 W = 35	CS, QUANT	N	N	N	Y, distress; COPE scale; HADS Anxiety Scale; HADS Depression Scale
Halkitis (2006)	NYC, 2001-2002	N = 450 HIV- n = 284 M age = 33, 18-67 W = 157; LAT = 56; AA = 26; O = 45	L, QUANT	Y, club drugs; # of days used	N	N	N
Hays (1990)	San Francisco, 1987	N = 530 HIV- n = 149 M age = 39, 22-66 91% W	L, QUANT	N	N	N	Y, psychological distress

Table 1, continued

Citation	Year, Location	Descriptives	Methodology	Substance Abuse	CSA	Partner Abuse	Mental Health
Kurtz (2012)	Miami/Ft. Lauderdale, 2008-2010	N = 504 HIV- n = 265 M age = 36, 18-66 W = 134; LAT = 79; AA = 39	L, QUANT	Y, last 1 mos; 5+ drinks; drugs 3+ times; marijuana 20+ days; Cognitive Escape Scale	N	N	Y, mental distress; General Mental Distress Scale; DSM-IVR
Leserman (1994)	Chapel Hill, North Carolina	N = 169 HIV- n = 71 M age = 30.6, 18-50 15% AA	L, QUANT	N	N	N	Y, depressed mood; Carroll Rating Scale; POMS
Liu (2008)	San Francisco; Palm Springs; San Diego, 2006	N = 1,819 W = 1,099; LAT = 309; AA = 114; AS = 181; O = 127	CS, QUANT	Y, alcohol, speed/crystal, cocaine, poppers, ecstasy, GHB, ketamine, sildenafil, injection drugs in last 6 mos	N	N	N
Lyons (2012)	Australia	N = 1,029 HIV- n = 840 M age = 49, 40-81	CS, QUAL, QUANT	N	N	N	Y, level of psychological distress; K10 measure
Mansergh (2010)	Chicago; Los Angeles; New York City; San Francisco, 2004-2006	N = 1,540 HIV- n = 817 Age range = 18-29 38% W; 32% AA; 19% LAT; 11% O	L, QUANT	Y, overuse of alcohol + drugs past year	N	N	N
Muriuki (2011)	San Francisco, New York, Los Angeles, Chicago; 1996-1998	N = 1,857 W = 1,485; Non-W = 372	L, QUANT	Y, substance use past 6 mos; excluded marijuana	N	N	N

Table 1, continued

Citation	Year, Location	Descriptives	Methodology	Substance Abuse	CSA	Partner Abuse	Mental Health
Pakenham (1994)	Australia	N = 129 HIV- n = 33 W = 114	CS, QUAL	N	N	N	Y, stress; problems checklist
Philip (2010)	Six U.S. cities 1999-2003	N = 4,295 W = 3,112; AA = 281; LAT = 652; O = 250	L, QUANT	Y, alcohol and/or drug use (amphetamines, injection drugs) last 12 mos	N	N	N
Rosengard (1997)	San Francisco, 1990-1992	N = 253 HIV- n = 167 90% W; 3% AA; 4% LAT; 3% O	L, QUAL	N	N	N	Y, suicidal ideation and depression; Structured Clinical Interview (SCID) - DSM III-R; CES-D
Schneider (1991)	Los Angeles, 1988	N = 778 HIV- n = 112 M age = 36 W = 91%	L, QUANT	N	N	N	Y, suicide intent; CES-D
Shoptaw (2002)	Hollywood, 1998- 1999	N = 68 HIV- n = 26 M age = 36, 18-65 77.9% W; 17.6% LAT; 1.5% AA; 1.5% AS; 1.5% NA	L, QUAL, QUANT	Y, methamphetamine; structured inventory (DSM-IV)	N	N	N
Strathdee (2000)	Greater Vancouver, 1995	N = 1,156 HIV- n = 330 M age = 27, 24-50 W = 256; AS = 32; NA = 16; O = 26	L, QUANT	Y, cocaine, poppers, ecstasy use	N	N	Y, depression; CES-D

Table 1, continued

Citation	Year, Location	Descriptives	Methodology	Substance Abuse	CSA	Partner Abuse	Mental Health
Theodore (2002)	NYC	N = 287 M age = 35, 18-66 61.6% W; 20.9% LAT; 10.9% AA; 1.6% AS; 0.8% NA; 4.2% O	L, QUANT	N	N	27% adult sexual, physical, or emotional	Y, 58.4% reported mild or moderate depressive symptoms on BDI
Viney (1991)	Sydney, Australia	N = 60 M age = 38, 23-64	CS, QUAL	N	N	N	Y, depression, anxiety, anger; Cognitive Anxiety Scale; Hostility In Scale

Note. Entire sample was HIV-negative unless reported (HIV-). Racial groups: W = White, AA = African American/Black, LAT = Latino/Hispanic, AS = Asian/Pacific Islander, NA = Native American, O = Other (including multiracial). Methods: L = L; CS = cross-sectional; QUAL = qualitative analysis; QUANT = quantitative analysis; CSA = childhood sexual abuse; Y = yes, characteristic reported in sample; N = no

Authors of included studies reported their participants as both MSM—that is, men who, behaviorally, reported a sexual encounter with another man (6 studies)—and men who identified with a sexual minority label (e.g., gay or bisexual; 18 studies). Although there are sometimes distinctions between these two groups, we refer to both as “sexual minority men” since several studies indicate that men who have sex with men also identify with a sexual minority label. For example, in Forney and colleagues’ (2012) study, men were eligible for enrollment if they reported sexual activity with man past 12 months; of the men who enrolled, 74% of participants identified as gay, 20% as bisexual, 5.4% as other, and only 0.5% as heterosexual. Thus, although labels “MSM” and “sexual minority men” measure different constructs, whether authors targeted one or the other group, they often enrolled the same population (MSM with a sexual minority identity).

From each article, we extracted data about resilience resources, consistent with my inclusion criteria (see Table 2). We coded resilience resources only if they were the presence of a resource (e.g., higher optimism) rather than the absence of a problem (e.g., fewer depressive symptoms). We coded an outcome as a resilience resource if it met one of the following criteria:

1. Significantly associated with lower prevalence of HIV, transmission risk behaviors for HIV (e.g., condomless anal sex [CAS]), or HIV-related syndemic conditions;
2. Inherently indicative of lower HIV risk behavior (e.g., intent to use condoms);
3. Positive adaptation, not accounted for by the first or second criteria, occurring in greater than 75% of the sample or above the 75th percentile of total possible

scores for the construct—even if it was not significantly associated with lower HIV risk behavior (e.g., social support $M = 4$, $Range = 0 - 5$).

Rationale for resilience criteria. I incorporated the definition of resilience (Garmezy, Masten, & Tellegen, 1984; Masten & Reed, 2002) in operationalizing resilience related to HIV prevention: avoiding negative outcomes (HIV) or achieving positive ones (resilience resources) despite adversity (syndemic conditions). I conceptualized resilience resources as protective factors utilized in adverse situations to prevent HIV; therefore, to meet criteria as a resilience resource in this review, a resource demonstrated that it was associated with lower HIV prevalence, risk behavior, or syndemic conditions. I modeled the third criterion ($> 75^{\text{th}}$ percentile) after Kurtz et al. (2012)—one of few studies on this topic. If participants scored above the 75^{th} percentile on measures of positive factors, then my rationale posits they demonstrate resilience by achieving a positive milestone two standard deviations above the average person despite their adversity (syndemic conditions).

Themes of Resilience Resources

To achieve my first aim, I identified 34 distinct resilience resources and grouped them into higher-order themes created by the research team (see Table 2). We categorized each resilience resource into one of the four themes, which were strongly influenced by my training in cognitive behavior therapy (e.g., Beck, 2011) and ecosystems models (e.g., Bronfenbrenner, 1995). The themes included (1) *identity descriptors*, (2) *behavioral coping strategies*, (3) *cognitions or emotions*, and (4) *relationships*. Identity descriptors were defined as static descriptors of a person that could imply social context and possible identity, namely demographics. Specifiers were either innate or environmental. Two

examples of identity descriptors included being at least 30 years old (innate, to denote its ability to change only by the passage of time and not by environmental influences) and having earned a college degree (environmental, to denote that a person could always go back to school and earn a degree if they had not already). We coded two distinct resilience resources as innate identity descriptors (e.g., age), and four environmental identity descriptors (e.g., education level; see Tables 2 & 3 for elaboration).

Behavioral coping strategies were defined as behaviors or activities that were actions that may or may not be the result of cognitions, and represented a coping skill. Specifiers included *about sex*, *about HIV*, or *general*. Behavioral coping strategies include, for example, engaging in mental health treatment. Engaging in mental health treatment involved thought process (i.e., cognition) and also exhibited a behavior, consistent with a general specifier, rather than one specific to sex or HIV. We identified six distinct resilience resources representative of behavioral coping strategies about HIV or sex (e.g., HIV testing), and four resources representative of behavioral coping strategies, in general (e.g., progressive muscle relaxation).

My third theme was cognitions or emotions, which I defined as an internal process, affective state, emotion, or attitude that represented participants' views or judgments about themselves, others, or the world. Two examples of cognitive or emotive resources were positive meaning of caregiving and acceptance of a situation; both imply participants' attitudes toward a situation. I identified 12 distinct resources as cognitions or emotions (e.g., optimism).

My final theme was relationships, which I defined as states or descriptions of one's relationships with others, rather than a coping strategy involving other people (e.g.,

negotiating condom use with a sex partner which was better captured as a behavior). Two examples from the relationships theme included adequate social support and positive peer norms about condom use. Sufficient social support revealed one's level of support from others, consistent with the relational aspect of this theme. Similarly, positive peer norms around condom use may have affected one's condom use tendencies in relation to the tendencies of their friends, suggesting relationships are important to one's personal choices about condom use. I identified six resilience resources representative of relationships (e.g., primary committed relationship).

Are resources of resilience associated with low HIV risk?

My second aim was to evaluate if there were any associations between resilience resources and HIV prevalence or HIV risk in each article. Because HIV-related syndemic conditions are predictive of HIV acquisition (e.g., Mimiaga et al., 2015), syndemic conditions serve as a proxy for HIV risk. Therefore, I extracted data from each article about associations reported between resilience resources and either (a) syndemic conditions, or (b) behaviors associated with lowered HIV risk (e.g., condom use), or (c) HIV prevalence or seroconversion.

All positive or negative associations were judged by the respective manuscript's authors using standard statistical significance criterion ($p < .05$). There were instances in which a resource had both negative and positive associations with HIV risk and, therefore, I differentiate between findings and resources, as there may be more than one finding per resource and associations may be in different directions. For example, doctor visits were associated with higher awareness of postexposure prophylaxis (PEP), but not pre-exposure prophylaxis (PrEP; Liu et al., 2008). Thus, the results include two separate

findings for this resource (doctor visits). Out of 34 distinct resilience resources, 27 findings reported an association between resilience resource and lower HIV risk (see Table 3).

Table 3.

Associations Between Resilience Resources and HIV Risk

Citation ^a	Lower HIV prevalence or risk	Higher HIV prevalence or risk	No association
Identity Descriptors, Innate			
Forney (2012)	Identifying as black or Latino associated with lower prevalence of CAS ^b ($p < .01$).	--	--
Mansergh (2010)	No data reported for race, age, education.	--	--
Muriuki (2011)	Being 30-49 years old associated with lower rates of: CAS with a secondary sex partner ($p < .10$), with HIV+ or unknown status partner ($p < .05$), and casual sex ($p < .01$). ^c	--	--
Identity Descriptors, Environmental			
Liu (2009)	Income > \$100,000 was associated with greater likelihood of having heard of PEP ^d ($p < .001$).	--	Income not associated with awareness of PrEP ^e ($p = .30$).

Citation ^a	Lower HIV prevalence or risk	Higher HIV prevalence or risk	No association
			Health care coverage was not associated with awareness of PEP or PrEP*
Lyons (2012)	Annual incomes < \$50,000 (Australian dollars) higher likelihood of being in mental health treatment than incomes > \$50,000* People who are unemployed are more likely to be in mental health treatment than people who have part- or full-time jobs**	--	--
Muriuki (2011)	College degree associated with lower rates of: CAS with secondary sex partner**, and with HIV+/unknown status partners* Earning >\$80,000 annually was associated with lower rates of: CAS with secondary sex partners* and casual sex**	--	--
Behavioral Coping Strategies, About HIV, About Sex			
Brooks (2012)	Condom use protective from HIV.	--	--

Citation ^a	Lower HIV prevalence or risk	Higher HIV prevalence or risk	No association
Conley (1999)	Choosing to learn one's HIV status associated with fewer AIDS-related worries**	--	--
Forney (2012)	Being HIV- and seroconcordant with main partner reduces likelihood of acquiring HIV.	--	--
Halkitis (2006)	Seroconcordance with main partner is protective sexual behavior.	--	--
Hays (1990)	--	MSM who reported more help-seeking behavior reported more AIDS-related worry*	--
Philip (2010)	Serosorting negatively associated with HIV seroconversion**	--	--
Strathdee (2000)	--	--	Discussing HIV with others not associated with willingness to participate in HIV-vaccine trial ($p = .35$).

Behavioral Coping Strategies, In General

Citation ^a	Lower HIV prevalence or risk	Higher HIV prevalence or risk	No association
Antoni (1991)	Progressive muscle relaxation negatively correlated with depressive symptoms**	--	--
Leserman (1994)	Parental disclosure associated w/ higher levels mastery**, self-esteem**, & lower levels of depression** and tension*	--	--
Liu (2009)	Doctor visit past 12 months associated with greater awareness of PEP*	--	Doctor visits not associated with awareness of PrEP ($p = .90$).
Rosengard (1997) ^f	Confrontive coping levels were higher in high SI sample ($M = 3.42, SD = 1.11$) and lifetime SI ($M = 4.04, SD = 2.32$) than the no SI ($M = 3.22, SD = 1.71$) and low SI groups ($M = 2.81, SD = 1.42$)*	--	--

Cognitions or Emotions

Buchbinder (1996)	Of participants who were “might be, probably, or definitely” willing to participate in HIV vaccination trials, 1.6 - 3.7/100 persons acquired HIV after 18 months (95% CI 0.9-4.9).	--	--
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Citation ^a	Lower HIV prevalence or risk	Higher HIV prevalence or risk	No association
Brooks (2012)	Acceptance of PrEP inherently protective from HIV.	--	--
Folkman (1996)	Positive meaning of caregiving predictive of reduction in depressed mood ($p = .067$).	--	--
Gray (1999)	Acceptance negatively correlated with depressive symptoms* & psychological distress*	--	Positive reinterpretation was not associated with mental health symptoms ($p > .05$).
Kurtz (2012)	Coping self-efficacy predicted higher odds of serosorting ^g **	--	--
Leserman (1994)	Gay self-acceptance associated w/ lower levels depression**, anger**, tension ($p = .005$), & hopelessness**	--	--
Liu (2008)	67% were willing to use PrEP if proven safe and effective; inherently protective against HIV if participants used PrEP.	--	--
Mansergh (2010)	Greater self-efficacy for safer sex associated with fewer instances of substance use during last sexual encounter, receptive and insertive CAS with partners who were HIV+ or unknown status*	Intent to use condoms positively associated with more substance use during sex*	--

Citation ^a	Lower HIV prevalence or risk	Higher HIV prevalence or risk	No association
Rosengard (1997) ⁱ	Accepting responsibility was higher in high SI group ($M = 1.92, SD = 0.96$) than no SI group ($M = 1.16, SD = 0.91$)** Optimism higher in no SI group than any other ($M = 10.85$ vs. M range 6.42 – 8.71)**	--	--
Theodore (2002)	Men increased commitment to safe sex*, and less likely to attribute HIV prevention to luck**, after participating in psychotherapy. Concurrent increase in condom use during insertive anal sex*	--	--
Relationships			
Folkman (1996)	--	--	Greater dyadic adjustment not predictive of depressed mood.
Forney (2012)	Positive peer norms around condom use associated with lower prevalence of CAS**	--	--
Gray (1999)	Satisfaction with social support was negatively correlated with depressive symptoms* & psychological distress*	--	--
Kurtz (2012)	Social engagement predicted higher odds of serosorting. ^g *	--	--

Citation ^a	Lower HIV prevalence or risk	Higher HIV prevalence or risk	No association
Leserman (1994)	No data reported on gay socializing.	--	--
Lyons (2012)	--	--	Social support not associated with mental health treatment ($p = .30$).
Muriuki (2011)	People w/ committed primary relationships less likely to engage in CAS with secondary sex partner and casual sex than people without primary relationships.*	Highest level of civic participation (e.g., involvement in 3+ LGBTQ groups) was associated with greater likelihood of CAS with secondary sex partner**, CAS with HIV+/unknown status partner*, and casual sex**	--
Rosengard (1997) ^f	Higher in no SI group than any other group: Social support ($M = 78.78$ vs. M range = 59.92 - 74.04**); subjective social integration ($M = 17.66$ vs. M range = 11.58-16.01**)	--	--
Schneider (1991)	Higher current confidant support predicted lower loneliness**	--	No differences in confidant support between HIV+ and HIV+ men ($p > .05$).
Strathdee (2000)	--	Higher social support associated unwillingness to participate in HIV-vaccination trial*.	--

Note. * $p < .05$. ** $p < .01$.

Results revealed 27 instances in which resilience resources were significantly associated with fewer syndemic conditions or with the treatment for such conditions. One example was that choosing to learn the results of one's HIV test was associated with fewer AIDS-related worries (Conley et al., 1999). Another example was that greater self-efficacy for using condoms during sex was associated with fewer instances of substance use during last sexual encounter (Mansergh et al., 2010). None of the articles reported associations between resilience resources and either childhood sexual or partner abuse experiences.

Findings also revealed 27 associations between resilience resources and lower HIV risk. For example, positive peer norms about condom use were associated with lower prevalence of CAS (Forney et al., 2012). Another marker of lower HIV risk from one study was little or no casual sex (Muriuki et al., 2011). There were also three instances in which we identified resilience resources that were directly protective from HIV, specifically, condom use (Brooks et al., 2012) and seroconcordance with main sex partner (Forney et al., 2012).

I specifically evaluated relations between social support and HIV risk, since social support was identified in seven separate articles, thus, making it the most frequently reported resilience resource in this review. For social support, 33% of the findings were not associated with HIV risk (Folkman et al., 1996; Lyons et al., 2012). In 66% of the findings, social support was associated with lower HIV risk, including lower levels of loneliness (Schneider et al., 1991), depressive symptoms (Gray & Hedge, 1999), and suicidal ideation (Rosengard et al., 1997). Lastly, in a contradictory finding, social

support was found to be associated with unwillingness to participate in HIV vaccination trials (Strathdee et al., 2000).

Four findings indicated associations between resilience resources and higher HIV risk. For example, Muriuki and colleagues (2011) found that men involved in three or more sexual minority groups reported the highest prevalence of casual sex. One explanation put forth by the authors was that men with the most frequent interactions with other sexual minority men may be meeting potential sex partners at a higher rate than men who are involved in fewer groups; thus, they may have consequently greater opportunities for casual sex. In addition, Hays and colleagues (1990) found that sexual minority men who reported more help-seeking behavior about HIV/AIDS concerns also reported more AIDS-related worry, which could be due, in part, to lack of impactful antiretroviral medications to prevent HIV replication before 1996 (Chesney, Morin, & Sherr, 2000). Hays and colleagues (1990) hypothesized that, perhaps, the men who experienced the most worry would be more likely to seek help and, thus, help-seeking behavior could be considered a strength. However, the authors did not analyze the predictive association between worry and help-seeking behaviors, so I cannot know for sure. Taken together, it is possible some of the associations between resilience resources and higher HIV risk could be attributed to error, and could be clarified in future rigorous, longitudinal studies.

I also identified seven instances in which authors found no association between resilience resources and HIV risk. For example, Gray and Hedge (1999) found that positive reinterpretation of a difficult situation was not significantly associated with mental health symptoms. I was unable to determine associations between some resources

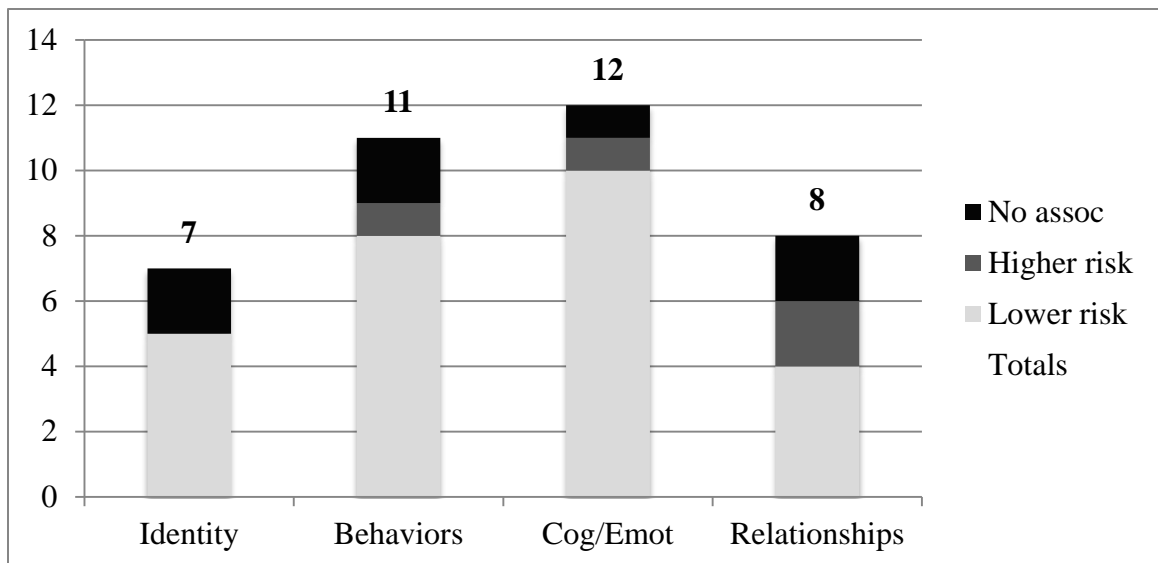
and HIV risk because data were unavailable, either because relevant variables were not assessed in the study or the associations were possible but not analyzed or presented in the manuscripts (e.g., Leserman et al., 1994).

Do associations between resilience and HIV risk differ by higher-order theme?

To understand the relations between resilience resources and HIV risk within the context of my higher-order themes, I present three different classes of data: (1) resources that were associated with lower HIV risk, (2) resources that were not associated with HIV risk, and (3) resources that were associated with higher HIV risk.

Figure 2

Associations Between Resilience Resources And HIV Risk By Theme



I can infer three important points from Figure 2. First, most research being conducted on resilience and HIV in samples of sexual minority men with syndemic exposure appears to assess and report on either behavioral, cognitive, or emotional resources. Second, resources within relationships (e.g., social support, primary partner) are the most variable in terms of their association with HIV risk. It appears that

relationship resources can either be helpful, harmful, or neutral to HIV prevention, suggesting that considerably more work is needed to elucidate these relations. Third, there have been no identity resources identified in published literature that are associated with higher HIV risk, which could be due to a possible lack of evaluation of identity resources in HIV research or lack of repeated evaluation of the same identity resources.

Discussion

I followed PRISMA guidelines, extracting data from 24 articles published in peer-reviewed journals, on HIV-negative sexual minority men who met criteria for one or more syndemics conditions that increase likelihood for HIV acquisition (e.g., Stall et al., 2003). I completed my first aim of this review by identifying 34 resilience resources in this population, and categorizing them into one of four higher-order themes—identity descriptors, behavioral coping strategies, cognitions or emotions, and relationships. Social support was the most frequently reported resilience resource ($n = 7$), followed by higher income ($n = 3$).

Resilience Resources and HIV Risk

My second aim was to assess, to the best of my ability given the published data, if each resilience resource was associated with HIV risk. Data extraction suggested mixed findings; however, overall, most resources were associated with lower HIV risk, as theorized and expected. In some cases, there were conflicting findings for the same resilience resource. Greater social support predicted lower HIV risk (e.g., Limin et al., 2009), higher HIV risk (Muriuki et al., 2011), and was not associated with HIV risk (e.g., Strathdee et al., 2000). This could be because the operational definitions of social support in each study varied, with some studies using vague assessments of the construct (e.g.,

Schneider et al., 1991; number of people who offer understanding and support) and others using validated measures (e.g., Gray & Hedge, 1999; Social Support Questionnaire). Next phases in this research must utilize bottom-up approaches to establish more specific operational definitions of resilience resources. Then, large epidemiological studies would be helpful to ascertain prevalence of resources, and assess how context may change a resource's effectiveness in HIV prevention (e.g., substance abuse vs. sexual abuse).

An interesting finding was that general behavioral strategies not directly related to HIV prevention (e.g., parental disclosure of sexual orientation) were associated with lower HIV risk. This is consistent with minority stress and HIV syndemic frameworks for sexual minority men, suggesting that psychosocial risk factors negatively impact physical health and HIV, even if they are not directly related (Meyer, 2005; Stall et al., 2003). A plausible hypothesis generated from this review is that psychosocial protective factors indirectly related to HIV transmission may positively impact physical health and HIV. Certainly, much more research is needed to investigate. One helpful study would be quantitative evaluation of mediation models of longitudinal relations between resilience resources and HIV risk behavior.

Themes of Resilience Resources

My third aim was to assess the relation between HIV risk and resilience themes we identified. I noticed three major findings. First, individual-level factors appear to be important in preventing HIV; most of the behavioral, cognitive, and emotional resources were associated with lower HIV risk. This is consistent with many HIV prevention programs that target behaviors (e.g., condom use) or cognitions (Koblin, Chesney, &

Coates, 2004). In fact, most studies assessed individual-level variables. This representation may be skewed by my methods; I did not search databases focused exclusively on system-level disciplines, such as economics or health policy. However, by searching across medicine, psychology, and public health, my results provide evidence to buttress critiques that HIV prevention has neglected multilevel factors (Coates et al., 2008).

My second finding was that resources within relationships (e.g., social support, primary partner) were highly variable in their association with HIV risk. Because results suggested that relationships can be helpful, harmful, or neutral to HIV prevention, more research is needed on types of social support, such as affectionate or tangible (Sherbourne & Stewart, 1991), frequency of social contacts, and HIV risk behavior. By attending to factors at the interpersonal level, we can more holistically address the risk and resources of men at highest risk for HIV (P. N. Halkitis et al. (2013).

My third finding was that no identity descriptor resources were associated with higher HIV risk. This finding could be due to bias in reporting only significant results for identity descriptors by the original articles. It is unlikely this finding is due to lack of evaluation of identity resources in research, given robust evidence suggesting certain identity descriptors are associated, across studies, with HIV risk (e.g., CDC, 2013). Results from each of my aims offer preliminary ideas about how primary HIV prevention efforts may incorporate psychological, behavioral, cognitive, and environmental strengths, and clarify areas for future research.

Limitations

Although my review extracted and synthesized important foundational information on resilience in HIV prevention, my results are limited by certain factors. I excluded articles not published in English, which limits my ability to generalize results to non-English speaking populations, some of which have very high HIV prevalence, such as sub-Saharan Africa (Ortblad, Lozano, & Murray, 2013). Also, my findings represent a preliminary step in this complex investigation. I cannot speak to the temporal relations between psychosocial risk, resources, and HIV risk. Because I am unable to control for the methodological rigor of each study we reviewed, I attempted to collect higher quality science by using more stringent inclusion criteria for what constituted a resilience resource.

All articles assessed mental health problems or substance abuse. Thus, results from this review are most applicable to sexual minority men who are struggling with mental health issues, such as depression, anxiety, or substance abuse problems. I have little data from samples of men who were asked about abuse experiences in childhood or adulthood ($n = 3$, Berg et al., 2008; Kurtz et al., 2012; Theodore & Koegel, 2002). It is possible that many of the other samples that met criteria for mental health or substance abuse problems would report elevated abuse experiences, especially since those syndemic conditions tend to be highly comorbid (Mustanski et al., 2007). Many researchers did not assess or report on abuse experiences, likely because these are past events, rather than current behaviors (e.g., substance abuse) or internal states (e.g., anxiety). Thus, analyses would not accurately capture the true temporal relations between past events and current functioning. More data are needed on abuse, resilience, and HIV in this population.

Future Research

My systematic review of the literature offers preliminary evidence about specific resources that may be helpful in reducing HIV risk among high-risk sexual minority men. A notable point is that out of 1,388 potentially relevant articles, only 24 articles reported on risks and resilience related to HIV in sexual minority men. This lack of attention to resilience for HIV prevention among sexual minority men may be for several reasons. Across disease groups, funding has historically been provided for analyzing and alleviating pathology. Also, my training as a behavioral scientist is to assess, treat, and eliminate pathology by minimizing risk directly, rather than attending to resources that may achieve the same goal, indirectly. Thus, this review is important to provide foundational data in the paradigm shift toward including resilience in HIV prevention. It is possible a review of this kind may be needed for other disease groups to determine if there are ubiquitous resilience resources across identity subgroups/disease risk groups or whether they are group- and disease-specific.

This review provided crucial identification of the typologies of resilience resources for high-risk, HIV-negative sexual minority men. These typologies can be used as references for further scholarly inquiries on this topic, including, but not limited to: qualitative studies to determine better operational definitions of resilience resources, psychometric studies to establish a measure of resilience and HIV prevention, and quantitative evaluations of relations between resilience resources and HIV risk. Incorporating resilience into HIV prevention may be vital to increasing interest, retention, and effectiveness of HIV prevention programs. HIV prevention is very important to

sexual minority men, along with mental health and substance abuse issues (Gro, Ventuneac, Rendina, Jimenez, & Parsons, 2013). Because these conditions create a syndemic effect, every effort should be made to improve HIV prevention programs to best address the complex lives of men at highest risk for HIV.

CHAPTER 3

Qualitative Study

Methods

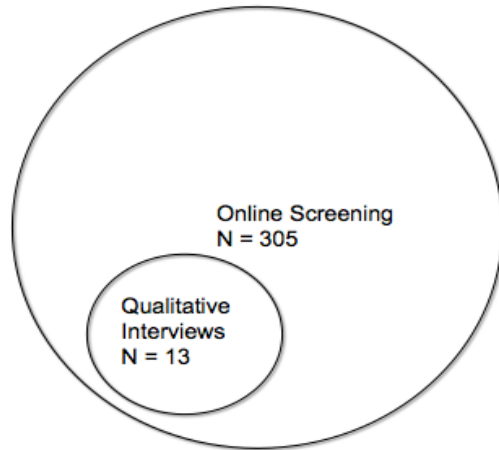
Procedures

Design. The qualitative project consisted an online screening and individual qualitative interviews. I utilized an overall nested sampling design—data collected from participants in the screening process were used to purposively choose participants for qualitative interviews (see Figure 3; Collins, Onquegbuzie, & Jiao, 2007). Specifically, I purposively sampled interview participants based on predetermined criteria for inclusion:

- sexual minority men, broadly defined as either self-identifying with a sexual minority label (e.g., gay, homosexual, queer), having engaged in sexual behaviors with other men (e.g., men who have sex with men [MSM]), or both;
- 18 years or older;
- self-reported HIV-negative serostatus based on last test result;
- one or more syndemic conditions (i.e., poor mental health, substance abuse, childhood sexual abuse, or partner abuse).

Figure 3

Visual Representation of Participant Pool



Participants for both studies were recruited by sending study materials to online sources such as listservs and websites that were targeted toward sexual minority populations, or supports for individuals with any of the four syndemic conditions (e.g., abuse survivors forum). Sexual minority individuals are a difficult-to-sample population, and previous research suggests that these underrepresented samples can be successfully recruited online (Mustanski, 2001) and that results can be as valid as face-to-face study procedures (Eeden-Moorefield, Proulx, & Pasley, 2006). Based on previous research, this investigator established relationships with 65 national sexual minority groups in the U.S., and utilized these relationships to recruit a sample with well-distributed variability regarding syndemic conditions and geographic locations.

I utilized four strategies for recruiting participants online: general online circulation, social media, targeted reciprocal exchange with community groups in-person,

and flyer posting in Boston, MA. First, I posted study advertisements on blogs or online forums. I also emailed approximately 475 moderators of listservs and online groups, and asked them to circulate my advertisement to their membership.

Second, I posted advertisements on my professional blog, letstalkpsych.tumblr.com, which is geared toward audience members interested in health psychology and human sexuality. One research assistant also created a Facebook group and invited people to participate via Facebook posts to individuals and groups interested in sexual minority culture or HIV prevention.

Third, I used online venues to make in-person contacts when possible, based on geographic location, and recruited some participants through reciprocal exchange of research and community-oriented activities. Reciprocal exchange is one component of community-based participatory research, posited as a way to equalize hierarchical relationships between researcher and participant, and also to contribute to research participants (Maiter, Simich, Jacobson, & Wise, 2008). As one example, I conducted a workshop on mindfulness meditation for an Asian American health organization in Boston, MA, in exchange for their willingness to circulate my advertisement to their membership.

My fourth recruitment strategy was to post approximately 250 flyers in Boston, MA, and surrounding suburbs during November 2014. Targeted sites included public transportation stops (buses, subways), coffee shops, and community boards at other local businesses. Prospective participants were able to tear off study information to take with them and review later.

Overall, approximately 38 groups stated affirmatively that they circulated the advertisements to their membership, and participants cited various online group referrals to my research throughout the recruitment period. Participation in the study increased after using the following strategies: social media (112 participants), reciprocal exchange with two groups (45 participants), and flyer posting (25 participants). The final screening sample consisted of 301 participants. Prospective participants who saw study advertisements were directed to the study website at SurveyMonkey.com, to learn more about the study, participate if they chose, and then, were offered the opportunity to sign up to be contacted about an interview. Data collected online was encrypted to ensure confidentiality and increase respondent honesty. I retained IP addresses of participants to minimize duplicate enrollment.

Screening. Voluntary informed consent was obtained from participants at all sampling stages. Participants for screening were recruited as the first level, or stage, of a multistage purposive sampling scheme. First, potential participants for screening viewed an advertisement with study recruitment information. Then, participants that followed up responded to several screening questionnaires online about syndemic conditions (Screening; Appendix A). I am continuing to recruit for this phase. Participants were offered the opportunity to enter a raffle for one of four \$25 Amazon gift cards after completion of the screening.

Qualitative Interviews. Participants for interviews were purposively selected from the larger screened participant pool as the second level, or stage, of sampling (see Figure 4; Collins et al., 2007), based on inclusion sampling criteria. Thirteen participants were sampled based on empirical recommendations that saturation of the data can occur

after 12 interviews (Guest, Bunce, & Johnson, 2006); I had adequate data for preliminary analyses.

After 100 participants completed the screener, I selected a subsample of participants who met criteria for at least one syndemic condition and agreed to be contacted for an interview. I purposively sampled interview participants by attending first to greater number of syndemic conditions (contacting those with more conditions first), and then to greater variability in syndemic conditions compared to enrolled participants (contacting those with conditions that were underrepresented in the sample, e.g., partner abuse). The rationale for this strategy was to interview men who are at highest risk for HIV, and to learn about as many resilience resources as possible associated within a breadth of syndemic conditions.

Interviews were conducted using the Skype-to-Skype audio call feature of Skype software or via standard telephone call, depending on participant preference, to ensure broad geographic recruitment, low cost interviews, and visual anonymity of participants. I conducted all interviews. During the Skype interviews, participants were able to see my face, although I was not able to see participants' faces. Interviews lasted between 60-90 minutes using a semi-structured interview guide, the HIV Risk and Resilience Interview, consisting of a rapport building section followed by questions about strategies for coping with risks to physical and sexual health (Interview; Appendix C). Based on clinical experiences with clients, the process of recalling internal and external coping strategies can often be difficult for many individuals, so I utilized clinical skills to structure the interview to facilitate insightful reflection of these processes. Participants were reimbursed with a \$25 Amazon gift card and given resources for sexual minority health.

Follow-up interviews. At the end of each interview, participants were asked if they were willing to participate in a 30-minute follow-up interview approximately six months after this investigator has analyzed data from the original interview, to check the results for accuracy. All 13 participants opted in for the follow-up interview. The purpose of the follow-up interviews is to confirm, disconfirm, deepen, or broaden results from the original interviews to ensure accurate depiction of the experiences of participants (Auerbach & Silverstein, 2003). Responses from this study will be analyzed to produce final results.

Measures

Demographic questions. Participants responded to demographic questions during the screening process about their gender identity, HIV testing history (with results), age, self-identified sexual orientation, and zip code. Answers to these questions functioned as screeners to evaluate further participation in interviews (Appendix B).

Syndemic conditions. Measures with valid and reliable psychometric properties were used whenever possible. The following measures were administered online to screen all initial participants for inclusion in interviews (Appendix B). Some of the syndemic conditions (i.e., poor mental health, substance abuse) were assessed using several measures; if participants scored above the established cutoff for any measure of a condition, they were considered to have “met criteria” for that syndemic (e.g., if reported problematic drinking but no drug abuse, they still met criteria for substance abuse condition).

Childhood sexual abuse. Childhood Maltreatment Interview Schedule-Short Form (Briere, 1992) assessed sexual abuse by someone of any age who used force or

coercion when the participant was (a) under 14 years of age and (b) between 14 and 18 years of age (3 items each). The measure has demonstrated adequate internal consistency in another study of sexual minority individuals ($\alpha = .93$, Balsam, Rothblum, & Beauchaine, 2005). Participants met this syndemic criterion if they reported any sexual contact before age 18 with a family member or someone 5 years older.

Partner abuse. Revised Conflict Tactics Scales (CTS-2; Straus et al., 1996) assessed psychological, physical, and sexual conflicts with any romantic partner. The standard CTS-2 consists of 78 items assessing abusive acts that occurred in a relationship—acts perpetrated by the respondent, and acts the respondent’s partner perpetrated to him. To minimize participant burden, I asked participants only the 27 items that assessed their victimization experiences (e.g., acts perpetrated by their partner toward them) from the following three subscales: Physical Assault (12 items), Sexual Coercion (7 items), and Psychological Aggression (8 items). I chose to use this sample of victimization items from the standard CTS-2, rather than using the short form, because evidence indicates the short form has significantly lower sensitivity to abuse experiences than the long form (Straus et al., 1996). Items were categorized as either minor or severe in intensity by the original authors. An example of a minor item was, “My partner insulted or swore at me,” and an example of a severe item was, “My partner used a knife or gun on me.” Response options were 1 (*never*) to 5 (*20 times or more*) during the past year.

This measure has demonstrated good internal consistency in another sample of sexual minority individuals (subscales ranged from $\alpha = .77$ to $.91$; Craft, Serovich, McKenry, & Lim, 2008). Participants met this syndemic criterion if they reported at least

one instance of partner abuse, of either minor or severe intensity, based on guidelines recommended by the measure's authors (Straus et al., 1996). My intention was to detect any experiences of partner abuse toward the participant.

Substance abuse. Participants met criteria for substance abuse in the last 12 months if they scored above the cutoffs for any of the following measures: alcohol abuse, drug abuse, or polysubstance use.

Alcohol abuse. From the Alcohol Use Disorders Identification Test (AUDIT; Saunders, Aasland, Babor, de la Fuente, & Grant, 1993), I used screening questions about the topography and consequences of their past year alcohol use. Responses to each question were scored from 0 (*never*) to 4 (*daily/almost daily*), yielding a maximum possible score of 40. I followed cutoff criterion suggested by current research, greater than 10 on the AUDIT, because this cutoff allows strong sensitivity in identifying people with alcohol dependence diagnoses (Carey, Carey, & Chandra, 2003).

Non-alcohol drug abuse. Investigator-created questions were utilized to assess prevalence of non-alcohol drug abuse. Specifically, I asked participants about the presence of non-alcohol drug use in the past year, to identify drugs used, and to indicate the frequency with which they used them in the past year (see Appendix B). I then asked them about problematic use of non-alcohol drugs using the 10-item Drug Abuse Screening Test (DAST-10; Skinner, 1982). A sample item was, "Have you ever had blackouts or flashbacks as a result of drug use?" to which participants responded yes/no. All affirmative responses were coded 1, and sums were calculated as total scores. Although Skinner (1982) recommended a cutoff above three on the DAST-10, drug abuse occurs so frequently among sexual minority men (i.e., 51% of our 305 screened

participants reported using non-alcoholic drugs in the past year) that I doubled the cutoff on the DAST (> 6) to meet for the drug use syndemic to reduce the chances of false positives (Halkitis, Green, & Carragher, 2006).

Polysubstance use. I assessed polysubstance use by asking, “Have you ever used alcohol and one of these [non-alcohol] drugs at the same time?” Response options were yes/no. To meet criteria for the substance abuse syndemic condition criterion, participants had to endorse polysubstance use in past year. This is consistent with original research on syndemic indicators by Stall and colleagues (2003).

Mental health. The following measures assessed different constructs of mental health, and if participants scored above the cutoff on any measure, they met criteria for a mental health condition in this study.

Depressive, anxiety, and stress symptoms. I used the Depression Anxiety Stress Scale (DASS; Lovibond & Lovibond, 1995), which was developed to provide full coverage of core symptoms of anxiety and depression, and to discriminate between these two highly comorbid states. This measure has demonstrated good construct validity (Wei, Shaffer, Young, & Zakalik, 2005) and internal consistency in other samples (e.g., gay men, $\alpha = .94$, Zakalik & Wei, 2006). I used the shorter version, the DASS-21, which consisted of 21 items assessing current (“over the past week”) negative emotional symptoms and was divided into three 7-item subscales (Depression, Anxiety, & Stress). Response choices were on a 0-3 scale and range from 0 (*did not apply to me at all*) to 3 (*applied to me very much, or most of the time*). All items were summed to form a total score for each subscale. According to measure’s authors, I utilized the following cutoffs for the DASS-21: greater than six on the depression and anxiety subscales; greater than

nine on the stress subscale (all indicate moderate levels of symptoms).

Posttraumatic stress symptoms. The PTSD Checklist (PCL-C) for civilians assessed symptoms of posttraumatic stress disorder (PTSD). The PCL-C has been determined to be a valid screening measure of PTSD symptoms, such that it has demonstrated the ability to predict a diagnosis of PTSD for many traumatic events, including motor vehicle accidents (Blanchard, Jones-Alexander, Buckley, & Forneris, 1996) and cancer diagnosis (Andrykowski, Cordova, Studts, & Miller, 1998). Participants were prompted with 17 items about their experiences of a traumatic event (if they endorsed experiencing a traumatic event or being the victim of a crime), and were asked to rate how much each symptom has been bothersome over the past month. Responses ranged from 1 (*not at all*) to 5 (*extremely*). Total scores were calculated as the sum of all items. This measure has been shown to have high internal consistency in another sample of sexual minority individuals ($\alpha = .95$, Simpson et al., 2013). Participants met the cutoff criterion if they scored above 44 on the PCL-C, because this cutoff was found to be suggestive of a PTSD diagnosis in a civilian population (Blanchard, Jones-Alexander, Buckley, & Forneris, 1996)

Suicidal ideation. This 4-item Depressive Symptom Index Suicidality Subscale (DSI-SS; Joiner, Pfaff, & Acres 2002) assessed participants' current thoughts about attempting suicide. There were four questions, each assessing a separate element of suicidal ideation: thoughts, impulses, plans, and perceived control over suicidal thoughts, with response options ranging from 0 (*symptom never present*) to 3 (*symptom always present*). Total scores were sums. This measure demonstrated good construct validity (Metalsky & Joiner, 1997) and internal consistency ($\alpha = .90$, Joiner et al., 2002) in other

samples. Participants met the mental health criterion if they scored greater than zero, indicating any level of suicidal ideation, planning, attempt, or self-harm behavior.

HIV risk and resilience interview. My team created an interview guide, based on my rigorous systematic review identifying resilience for sexual minority men in currently published literature. The interview also followed design suggestions by Auerbach and Silverstein (2003). The goals of this semi-structured interview were to identify resilience resources in several ecosystem levels that high risk, HIV-negative sexual minority men possess to help them remain HIV-negative, and to specify operational definitions of such resources. Although each interview varied depending on participant experiences and time limitations, the following were standards in every interview: (a) an alliance building question about the participant's neighborhood and connections between their sexual behavior and neighborhood, (b) risk and protective factors related to sexual health, and (c) resilience related to one of their syndemic conditions.

The interview consisted of both closed-and open-ended questions to identify risk and protective factor for sexual health from a sexual minority man's perspective. The interviewer confirmed that each participant read the informed consent materials, and answered any questions before the interview (Interviews; Appendix C).

Analyses

Qualitative analysis was used to identify foundational data on resilience related to HIV prevention for sexual minority men. Descriptive statistics were calculated to describe demographic variables. Interviews were transcribed verbatim by My research team and triple checked for accuracy by three separate transcribers. The data were coded using Dedoose online coding software that is both user-friendly and allows interviews to

code from different locations. Interview data were analyzed using a grounded theory approach to create a narrative interweaving themes of risks to sexual health and resources at the individual or environmental levels that offset these risks and help to prevent HIV acquisition. Grounded theory (GT) is an inductive qualitative analytic procedure in which investigators generate hypotheses through theoretical coding and often refer back to the data to confirm or disconfirm themes (Auerbach & Silverstein, 2003). This coding approach does not presuppose any themes generated *a priori* by the researcher. Instead, GT aims to capture themes in qualitative interviews based entirely on participants' responses and experiences.

The analytic process was conducted in accordance with suggestions by Auerbach and Silverstein (2003; see Table 4).

Table 4

Order of Steps of Analysis in Grounded Theory

Order	Step	Description
1	Identify relevant text.	Review all raw interview responses to identify text relevant to the research concern.
2	Organize into repeating ideas.	Group relevant text into common ideas that are repeated throughout the raw data.
3	Group repeating ideas into themes.	Organize repeating ideas into higher-order general themes.
4	Categorize themes into theoretical constructs.	Using previously established theories, organize themes into

		theoretical constructs to create new theory for this study.
5	Create narrative/theory.	Organize theoretical constructs in an order that tells a narrative of participants' experience (generate a possible theory).

The coding team consisted of four coders and two consultants, one expert in research on sexual minority men and the other an expert in developmental psychology. The coding team was comprised of this investigator (the lead coder), a postdoctoral fellow in clinical psychology who studies sexual minority health, and a psychology master's student and an advanced undergraduate student, both with significant experience working with marginalized populations in community centers.

The development of ideas, themes, and theoretical constructs was consistent with grounded theory, in which final results are derived through several coding iterations. First, the lead coder coded any relevant text from three interviews, and worked with the coding team to group these ideas into *repeating ideas* (i.e., mentioned by at least 2 participants). This process is known as axial coding by other researchers (Strauss & Corbin, 1990). This list of repeating ideas was grouped into higher-order *themes*, such that a theme encapsulated several repeating ideas. This hierarchical grouping formed the first draft of my codebook, and was revised after consultation with two experts and an additional workshop in qualitative coding at Brown University. Two coders analyzed each interview--the lead coder analyzed all interviews, and those codes were compared with analysis of one other coding team member per interview. Disagreements were resolved by consensus between the two coders, and if not, by consulting with the entire

coding team. Throughout the coding process, we merged codes or added codes as we analyzed new interviews and compared them to previously coded interviews. We kept an audit trail of questions, changes, and memos, to enhance transparency of the inquiry process.

I took several steps to achieve triangulation, a process by which multiple parties—researchers and participants—agree on the phenomenon studied (Ryan & Bernard, 2003). All coders met after coding each interview, and agreed on changes to the codebook, which can increase the validity of the topic, also taking into account researcher bias and perspective. In addition to collaborating with researchers who have expertise in HIV prevention, sexual minority populations, and qualitative methodology, I consulted with other researchers who study the core constructs under inquiry (HIV; R. Stall, personal correspondence, October 23, 2012) and methods used (L. Silverstein, personal correspondence, November 3, 2014).

After data analysis of repeating ideas and themes was complete, I grouped themes into more abstract categories called *theoretical constructs*, based on theoretical frameworks for this study (i.e., bioecological model, Bronfenbrenner, 1995; minority stress model, Meyer, 1995; resiliency models, Masten & Wright, 2006). The principal investigator interwove theoretical constructs into a narrative, identifying risk and resilience related to sexual health for sexual minority men in the sample, and conceptualized relations between resilience resources and HIV prevention (e.g., how did using a certain strength help a man remain HIV-negative?). All final analytic decisions were checked with the coding team and consultants to ensure communicability (i.e., face validity) of the responses.

Results

Participants

The final analytic sample consisted of 13 men who identified with a sexual minority label (62% identified as gay), although one participant was unsure which he identified with most. Men were recruited nationally within the U.S. and are represented geographically by zip code in Figure 4.

Figure 4

Geographic Location of National Sample of 13 Sexual Minority Men



Most men identified as White (62%), reported personal annual incomes less than \$39,999/year (69%), and met criteria for three or more syndemic conditions (54%). The most commonly reported syndemic indicator was substance abuse ($n = 11$), followed by

childhood sexual abuse ($n = 8$), mental health problems ($n = 6$), and partner abuse ($n = 6$).

See Table 5 for full descriptive statistics of the sample.

Table 5

Descriptive Statistics of 13 Sexual Minority Men

Characteristic	<i>N</i> (%)
<i>M</i> age	29
Sexual Identity Label	
Gay	8 (62)
Bisexual	4 (31)
Don't Know	1 (8)
Method of Interview	
Skype	5 (38)
Phone	8 (62)
Most Recent HIV Test	
Within 1 year of interview	5 (38)
2-4 years	8 (62)
Personal Annual Income	
\$<39,999	9 (69)
\$>40,000	4 (31)
Racial Group	
Asian	2 (15)
White or Caucasian	8 (62)
Biracial	2 (15)
Hispanic/Latino	1 (8)
# of Syndemic Conditions	
4	2 (15)
3	5 (38)
2	2 (15)
1	4 (31)
Childhood Sexual Abuse	8 (67)
Partner Abuse	8 (67)
Substance Abuse	
Alcohol abuse (AUDIT)	$M = 8.58, SD = 4.66$
Non-alcohol drug abuse (DAST)	$M = 1.75, SD = 2.26$
Polysubstance use	5 (42)
Mental Health Problems	
Depressive Symptoms (DASS)	$M = 5.08, SD = 6.29$
Anxiety Symptoms (DASS)	$M = 3.16, SD = 3.56$
Stress Symptoms (DASS)	$M = 5.25, SD = 3.98$
PTSD Symptoms (PCL-C)	$M = 19.75, SD = 21.18$
Suicidal Ideation (DSI-SS)	4 (33)

Own Risk Perception

When the participants discussed their perceived susceptibility to HIV during the interview, I asked them to rate the likelihood they would acquire HIV in the future on a scale of zero to ten. Zero represented “not likely at all” and ten represented they were “certain” that they would become infected with HIV. On average, participants ($n = 7$) reported a perceived likelihood of 2.14 ($Range = 0 - 4$), indicating that the sample generally did not anticipate acquiring HIV in the future. What follows is a description of the resilience resources identified by two or more participants (repeating ideas) that are related, either directly or indirectly, to using condoms during sex or decreasing the number of sex partners (see Table 6).

Table 6

Resilience and Risk in HIV Prevention for Sexual Minority Men: Repeating Ideas, Themes, and Theoretical Constructs

- I. Paradoxical protective factors can emerge from HIV risk**
 - A. Minority stress provides reasons for protective behavior
 - i. To be an exemplar
 - ii. Internalized homophobia increases condom use
 - iii. Perceived stigma regulates sex behavior
 - B. Syndemic conditions trigger development of resilience resources
 - i. Anxiety as tool to achieve goals related and unrelated to HIV status
 - ii. Unwanted sex as a catalyst for good communication skills
 - C. People living with HIV are motivators
 - i. HIV Stigma
 - ii. Impact of HIV diagnosis
- II. Resilience resources exist at multiple ecosystem levels**
 - A. Traits
 - i. Physical size

- ii. Age, as it relates to historical place in HIV epidemic
 - iii. Assertive
 - iv. Curious + Intelligent
- B. Mindset
 - i. HIV prevention is a routine part of life
 - ii. Internal locus of control
 - iii. Healthy paranoia
- C. Personal goals
 - i. Longevity
 - ii. Meaningful life
- D. Experiences indirectly related to sex
 - i. Employment
 - ii. Education (formal & informal)
 - iii. Healthcare providers
 - iv. Direct social influences (family & friends)
 - v. General life stressors
- E. Experiences directly related to sex
 - i. Sexual creativity
 - ii. Slip ups: Past HIV risk encounters
 - iii. Romantic partners
- F. Structural influences
 - i. Access to sexual health services
 - ii. Media & other public health campaigns

Theoretical Construct I: Paradoxical protective factors can emerge from HIV risk

I asked participants about at least one syndemic condition, and every participant identified a perceived positive outcome from that condition. For example, many participants talked about benefits of substance abuse, as reasons why they had so many friends (from parties), and also as a stress reliever. I found that most protective factors directly related to HIV prevention were identified in relation to either (a) anxiety or (b) sexual abuse in childhood or adulthood. Without prompting, several participants also mentioned the negative and positive impact of minority stressors on HIV prevention in their lives. Minority stressors are specific to sexual minority people, including concealment of sexual orientation, internalized homophobia, enacted stigma, and

perceived stigma (Meyer, 2003). This finding was a seeming paradox, because much previous research indicates that syndemic conditions and minority stress have a strong relation with HIV risk behavior and HIV seroconversion (e.g., Meyer, 2005; Mimiaga et al., 2015). One hypothesis I generated is that psychosocial risk factors for HIV may also trigger stress-related growth (Vaughan & Rodriguez, 2014) for a certain subset of sexual minority men, leading to development of factors that decrease their HIV risk.

Minority stress. No participants mentioned enacted stigma—instances of actual discrimination—however, they cited perceived stigma, concealment of their sexual orientation, and internalized homophobia as reasons why they used condoms for anal sex. One participant eloquently stated something that several participants touched on—that because of perceived stigma against sexual minority people, he felt the need to be even more exemplary, and preventing HIV was part of that mission:

Obviously just [getting HIV] is an inherently bad thing. But, also, I feel as someone who is kinda breaking the mold of society, at this point, and will be treated differently and judged potentially by my own family and society at large... the need to be a more exemplary person. This year, I started thinking about it more positively. I know I've been this way for a long time, and I can kind contribute to the movement. People went through the same kind of childhood I did, or felt the same way I do, who, you know, will have someone and they'll feel less alone. And if I have [HIV], it just makes it harder. Not that I can't do that, but, it's just like--you know, every little thing that could potentially mar my image hurts my sense of self-worth and goals in life.

In a similar yet distinct vein, participants also mentioned how perceived stigma regulated their sexual behavior, outside of the desire to be a model citizen. One participant said, of his neighborhood:

I think if I lived in kind-of the more gay-friendly neighborhood in Minneapolis, I might be more likely to fool around more... In the neighborhood I live, it's not necessarily safe to, like, walk down the street holding hands with somebody. There would be a very real concern that you might get picked up, and the motives

of the other person are not necessarily sex, and more likely, “I want to bash queers.” Unfortunately, I’ve become comfortable with it given it’s where I grew up at.

Another paradoxical finding related to minority stress was that some participants cited internalized homophobia as a reason they used condoms during sex with other men.

It kind of sounds funny, not funny in a laughing way, but I think that—just because I was so despised—to act, to a certain degree, that I just wouldn’t allow [condomless sex] to happen. Even as a kid, I truly despised my activities, truly despised being sexually active with men. The last thing I wanted to do was to come up HIV positive and have to explain it. And see the disappointment on my grandparents’ face, or my parents’ faces, or my sister’s face, or my so-called friends’ faces, and have them whisper behind my back like they do with my buddy that died.

Syndemic conditions trigger development of resilience resources. Although participants identified a positive outcome from each of their experiences with a syndemic condition, the only positive outcomes closely related to HIV prevention were identified in relation to anxiety and sexual abuse in childhood and adulthood. No participants discussed protective factors from other mental health conditions (e.g., depression), substance abuse, or partner abuse. Specifically, my results indicated that anxiety may have functioned as tool to maintain the men’s HIV-negative serostatus. For example, one participant stated:

I was just very conscious of... safer sex practices. That’s something that I would always be worried about or conscious of. That anxiety got me sort of the motivation for having safe sex always.

Another participant echoed how anxiety motivated him to regularly buy and use condoms:

To preface, I'm naturally a little bit of an anxious person, kind of a little paranoid. It doesn't necessarily interfere with my daily functioning all too much, but I've been raised to really fear and prepare for the worst, but hope for the best.

In addition, many participants who experienced sexual abuse in childhood also mentioned additional unwanted sexual experiences in adulthood. They reported that, because of these experiences, they became considerably more vigilant about vetting partners and having conversations about consent and condoms and, through experience, learned to assert their sexual health needs to prevent HIV and further abuse. One participant noted:

It made me much more cautious in selecting partners. I joke that I'm very traditional 'cause I don't put out on the first date. But, part of the reason for that is because it lets me meet someone and, kind of, size up where they're at. And, of course, even though the [sexual abuse encounter] I had was not with a stranger... I see it always in the back of my mind, in that I go into situations with as clear boundaries as I think I can set. And I think that helps me, especially in the realms of, like, sexual health.

People living with HIV are motivators. Several participants mentioned that being exposed to people living with HIV motivated them to adopt a more stringent condom use policy. This finding is consistent with my paradoxical findings about risk. Although people in the world continue to experience risk in the form of new HIV diagnoses, men report learning from the situations of others, both because of stigma enacted against those living with HIV and also due to impact of an HIV diagnosis. One participant attributed his strong stance on condom use and serosorting to several stigmas, including a stigma about HIV:

I mean, for me, one thing is that I want, eventually I would like a partner that I'm a hundred percent certain is HIV negative and preferably other STDs negative as well—so we can forego the condom. And it's, just, if I'm especially stringent about

[condoms]... it's just a health thing, I don't want... the stigma of it. I don't want that for my friends. I already have a bunch of other social stigmas to deal with. I identify as a bi bottom, I'm not, like, a "manly-man", just all these other things—I don't need to pile anything on top of it.

One other reason participants wanted to remain HIV negative was because of their perceived impact of an HIV diagnosis, outside the context of stigma. One participant described this:

Even though it's very narcissistic I just think, like, I could never run for office and have HIV. I don't think that it would be possible. I just think that there's a lot of things you can't do [if you have HIV], which is fucked up. It's important to know that it's fucked up, and pave a way to make it not fucked up. It's also a reality. There's a lot of things that you can't do if you're positive beyond, like, you know, having sex with people. I think with that it would change radically more than one's sexual life.

Theoretical Construct II: Resilience resources exist at multiple ecosystem levels

I identified several resilience resources for preventing HIV in men who, by virtue of their syndemic exposure, were at elevated risk of acquiring the virus. Unsurprisingly, participants described resilience resources at multiple levels including the individual, environmental, and others.

Traits. An interesting finding was that when asked, “Do you think there are any biological or genetic traits you have that may help you stay sexually healthy?,” participants resoundingly denied this. However, participants identified age and physical size to be relevant to HIV prevention when they described other prevention strategies. One man mentioned that he is aware of his physical size when seeking out sex partners, to prevent unwanted sexual encounters:

[It's] a little bit difficult for me to trust other people, specifically men in general, specifically men who are physically larger than me—which is most people, as I'm

fairly skinny. When I get to know someone, it's fine. It's just, I find myself being more leery of them if they're complete strangers. I tend to gravitate toward... men who appear to be about my size.

In a similar vein, another participant mentioned that he did not have to utilize this strategy because he appeared larger than most other men and, thus, he felt safer around potential sex partners. Participants regularly cited their age, especially in relation to the HIV/AIDS epidemic. Most of the participants were under 30 years old. They identified a peer norm that HIV appeared less concerning to their generation yet did not identify with this norm. In addition, most men cited aging as a protective factor against HIV because they “matured” out of risky sex behavior.

It was just this general kind of, like, safe sex fatigue among people I met. And I have really good friends who fell into that kind of idea, and then later on developed HIV, and, you know, some of them are still alive—they ended up doing well but, you know, I had a lot of them who, you know—they kind of got this fatalistic attitude of, “well, now I have it so my life's already over” and then they went downhill really quickly.

Men cited two personality traits they believed help them prevent HIV infection—assertiveness and a sense of curiosity and/or intelligence, which they believed helped them seek out sexual knowledge and discuss it with others. One participant described the resource:

I'm assertive. I'm like, okay, let's get a condom. I don't take shit from people. I remember one time, it was like, you know, ‘can I fuck you?’ and I'm like, ‘do you have a condom?’ —and he was like, “no”, and I'm like, ‘no.’ I tell people what I want to do, and what I don't want to do. I think that's my main trait keeping me sexually healthy.

Mindset. I identified three distinct cognitive styles or beliefs, coined “mindsets” by participants, which assisted in HIV prevention. The three mindsets were: (1) HIV

prevention is a routine part of life, (2) internal locus of control about HIV, and (3) healthy paranoia. Mindsets were not mutually exclusive—some participants voiced more than one. One example of HIV prevention being routine was from a man who reported he put condoms on his grocery list and that, every time he had blood drawn for a medical procedure, he requested an STI/HIV test as well. Another helpful mindset was that participants reported an internal locus of control about HIV prevention. Consistent with Rotter's (1965) definition of "internals" (p. 598), participants believed they were able to prevent HIV, rather than HIV status being determined by luck or others.

*I was watching *Queer as Folk* and there is an individual on there that pretty much says, like, [HIV] is inevitable. So I thought to myself, "the statistics are so high, Jesus, at some point in my life I'm going to get it". I think it happened over a year and, after talking to one of my other gay friends—and kind of processing it through—it slowly but surely started to chip away that I was like, "well, you know, I don't know if I believe it anymore I think that I can prevent this", you know, and I think that eventually I just decided, "I don't know if I believe it anymore." If I had this mindset, then I'm not going to get it, and I'm going to do things to prevent it; I'm in control. It's not an inevitability.*

Participants also reported that it was helpful to have a "healthy paranoia" about acquiring HIV. This mindset was defined as being vigilant about condom use during sex—always being the one to assert condom usage, every time—and also being moderately doubtful or cynical about sex partners' self-report of STI/HIV status. The following is an example of participant's doubtful mindset in context of serosorting (only having sex with other HIV-negative partners).

When you ask somebody straightforward about their HIV status, they get kind of offended and defensive about it... There is this kind of shame attached to the diagnosis. So, sometimes, I don't always believe people, like, when they say, "Oh, no, I don't have it." And I'm like, "When did you get tested last?", "Oh, I'd say about a year," and I'm like, "Hmm. Okay..." I think I'm more cautious here. How many bullets do you want in the gun when you're playing Russian roulette? You

want to decrease the risks that you have. I have a lot of friends that are like, “That’s a really shallow way to look at it that you wouldn’t have sex with someone who was HIV-positive,” and I’m like, “I probably wouldn’t.” Even safe sex, it’s just—it’s a risk I’m not willing to take for myself.

Personal goals. Participants mentioned two types of goals that were involved in HIV prevention: their own longevity and living a meaningful life, as defined by them. They reported these goals were something they remembered when fast-forwarding their thinking, imagining they acquired HIV, and thinking about how those goals would be impacted. When recalling reasons why he used condoms regularly in the past, one man said, “I just, I didn’t wanna die.” Several participants cited personal life goals or values (e.g., career), which varied by person, that motivated them to use a condom every time during sex.

In college, I didn’t have a relationship... I really wanted, you know, that typical high school sweetheart, but it’s harder for us gay men to find someone like that. I wanted to take [a] boyfriend to prom, but that never happened. I didn’t want to do something unless it was with someone I trust. Really, to this day, [most of the time], no anal until I trust someone, until they’re my first boyfriend. Cause I want it to be special.

Experiences indirectly related to sex. I asked participants, “What has been the number one thing that has prevented HIV for you?,” and participants reported several experiences unrelated to sex. These experiences included: employment, informal and formal education (e.g., health education), healthcare providers (mostly for HIV testing and answering questions about HIV transmission), direct social influences (family and friends), and general life stressors. For example, one participant shared that, at his job as resident assistant supervising housing in college dorms, they were required to receive

training on sexual health. It was not something he sought out, “it just kind of happened during the training.”

Regarding direct social influences, participants mentioned that their friendships directly related to their HIV prevention efforts. The men reported discussing sex and thus, condoms, with friends. One participant said of his friends, “They’ll say, ‘Okay, make sure you’re bringing condoms,’ It’s almost expected.” Participants cited family as being indirect reasons for HIV prevention. One example using values taught my family during sex:

There is something to be said for a slight obsession about not getting [an STI]. The quality that has me bringing my own condoms just in case, or my own particular brand of lube, or whatever. That does kind of spill over into the rest of my life, outside of the bedroom... My father was military and he engrained that sense of, “you need to have a plan B and usually a plan C and D, just in case.” Now, he would not have thrown those out there to sex, but I do think that that has actually helped me.

Participants also mentioned other stressors as reasons for using condoms during sex, including financial burdens, general stress, and other health conditions. When one man was asked why he used a condom during every sexual encounter, he said,

I don’t want to get any more sick than I am now so—I have just some unrelated diseases, things like that—so I don’t want to add anything to it. If I had an HIV diagnosis, I would have to deal with it emotionally and financially. I’m already in a bit of a pickle as far as finances go, and I don’t want to exacerbate that. I don’t want to have to add any stress that could be avoided... because if I’m stressed out then I can’t perform as well in my studies and in my internship, and I’m not as happy, and I enjoy being happy.

Experiences directly related to sex. Participants also reported that experiences directly related to sex were catalysts for HIV prevention, either by changing their mind about condoms or teaching them skills. Participants were motivated to increase condom usage after condomless sex that resulted in possible HIV exposure, i.e., “slip ups.” Some

men who were in romantic relationships cited monogamy and commitment to uphold monogamy as protective for them from HIV. A third protective sexual experience was sexual creativity. This finding is consistent with hypotheses by Herrick and colleagues (2011) about strengths sexual minority men utilize to prevent HIV. For example, two participants were members of bondage/discipline/sadism/masochism (BDSM) sexual communities. One man spoke about the importance of HIV prevention in his BDSM community, and described that members of that community taught him how to “vet people for safety, and stay safe during a sexual encounter, especially with strangers:”

Prevention of STDs in general, especially HIV, is a pretty prevalent theme in that community, you know, safety and all. Everything in a scene will be negotiated well beforehand. I mean, everyone knows what's going on, everything that's okay and not okay, and all that good stuff, well beforehand—which I really like.

Structural influences. Although men reported several risks for HIV related to structural influences (Halkitis et al., 2013), they also identified several protective factors at the structural level. These included social influences that were more passive, or related to shifts or actions in society at large, which they may or may not have seen in their direct social interactions. Three specific structural influences protective against HIV were: access to sexual health services to learn about sex, and access condoms and HIV/STI tests, media, and other public health campaigns (e.g., signs on buses about condom use), which they cited as helpful reminders of HIV prevention.

I feel very comfortable with [asserting condom use with a sex partner] because I get that question from them all the time, because, when you go to a night club, especially in a gay club, there's always that little bowl of condoms on the bar...seeing them there makes it easier to use them because they're right in front of you, you can just grab them.

Discussion

Through detailed interviews with syndemically exposed, HIV-negative sexual minority men, I identified profiles of resilience resources that the men described as helpful to their efforts to avoid HIV infection. Specifically, I believe I was able to gain a unique perspective from a subset of men at the highest risk for HIV acquisition, yet who remained HIV-negative. The sample represented a diverse group of men recruited across the U.S who identified with several labels along the sexual orientation spectrum.

Defining characteristics of the sample were White race, younger than 30 years old, and incomes less than \$40,000/year. From this foundational qualitative research, I generated two hypotheses about resilience and HIV prevention for sexual minority men. First, paradoxically, the risk factors found in the literature to be predictive of engagement in HIV risk behaviors and HIV acquisition also function as protective factors for some men. Second, resources occur at multiple levels and are associated with HIV preventive behaviors through both direct and indirect pathways. I discuss both hypotheses and incorporate them into a proposed model of resilience related to HIV prevention for sexual minority men.

A central component of this inquiry was to examine how sexual minority men at high risk for HIV prevented HIV. I defined risk as the presence of HIV-related syndemic conditions. I also acknowledge the heightened mental and physical health risks posed by minority stressors to all the participants (e.g., Meyer, 2003), even though I did not assess minority stress in a standardized fashion. Both syndemics and minority stressors are adverse experiences known to predict HIV risk behavior (Dyer et al., 2012;

Hatzenbuehler, Nolen-Hoeksema, & Erickson, 2008). Minority stress has been acknowledged as a possible catalyst for positive development by Meyer (2014).

My analysis revealed an interesting finding—participants reported the development of protective factors from adverse occurrences, including ones specific to HIV prevention. For example, several participants who reported sexual abuse stated that unwanted sexual experiences triggered a mindset of caution in selecting sex partners and also in terms of communicating with sex partners. These mindsets seemed to precipitate behavioral changes related to HIV prevention. One behavior was vetting sex partners who may be more likely to ignore the sexual safety preferences of participants. Another behavior that appeared to result from such mindsets was asserting needs for condom use, in addition to needs for consensual sex. This finding suggests one way in which resilience may occur—a paradox in which adversity is partially responsible for development of resources.

My second hypothesis generated from this research was that resilience resources exist at multiple ecosystems levels. Prior researchers have stated HIV prevention intervention must occur on multiple levels to be comprehensive and more effective than existing interventions (Earnshaw et al., 2013). Existing interventions have been critiqued as focusing too narrowly on individuals, rather than dyads or larger systemic organizations (Coates et al., 2008). My preliminary results suggest that resources, like risk factors, indeed, occupy several ecological levels.

This is the first study of its kind and thus, I have limited research with which to compare my results. The research most similar to that presented here is that on *LGBT strengths* (Vaughan & Rodriguez, 2014), which has identified positive factors in sexual

minority samples (e.g., integrity). Research on LGBT strengths is not specific to sexual minority men or directly related to HIV prevention. Neither does the research follow a traditional resilience paradigm—authors assess positive adaptations or variables, but not risk/adversity. Therefore, LGBT strengths are overly broad as to whom they apply, what health outcomes they impact, and if they occur in response to adversity. Some research has been done on LGBT strengths related to mental health, an HIV-related syndemic condition. Recent work has shown that both optimism about enacted stigma and feeling connected to an LGBT community were associated with fewer depressive symptoms (Clyman & Pachankis, 2014; McLaren Gibbs, & Watts, 2013). Participants in my study did not explicitly discuss these concepts. However, it is possible that participants would endorse these concepts.

Risk as Paradoxical Protection From HIV

The concept that exposure to risk can be beneficial is consistent with prior literature on resilience in other populations (Fergus & Zimmerman, 2005). A benefit of this kind has been coined stress-related growth (Park, Cohen, & Murch, 1996) and posttraumatic growth (Tedeschi & Calhoun, 1996). Posttraumatic growth occurs after traumatic events. Because my participants reported growth after several experiences, not just discrete traumatic events, my paradoxical finding would best fit under the rubric of stress-related growth.

Stress-related growth from my results is best explained, conceptually, within the *challenge* model of resilience (Garmezy et al., 1984). This model posits that a manageable level of risk can actually facilitate a decrease in negative outcomes by exposing individuals to situations in which they develop strengths to cope with such risk.

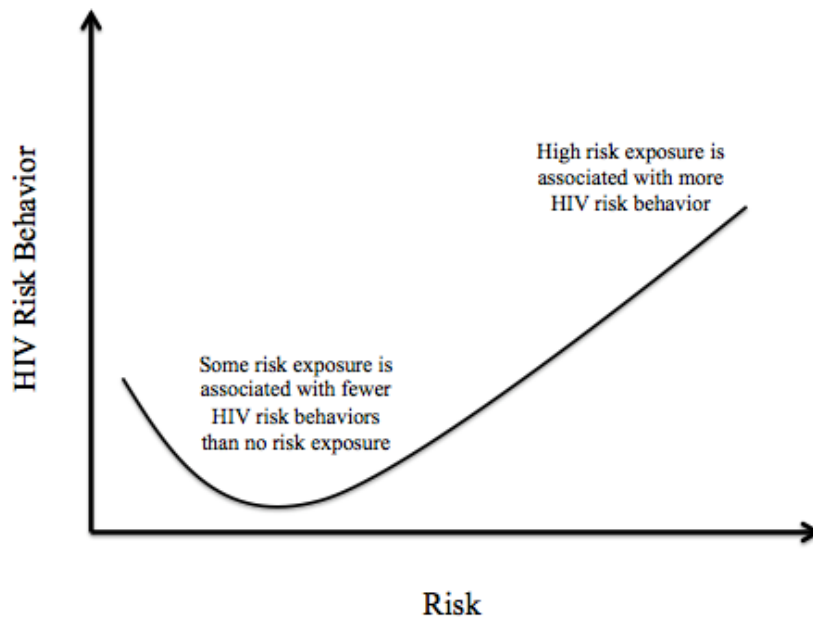
Prior qualitative work has found other evidence of stress-related growth in sexual minority populations (Meyer, Ouellette, Haile, & McFarlane, 2011). Meyer and colleagues (2011) interviewed an ethnically diverse sample of 57 sexual minority women and men and found that homophobic stigma was related to the adoption of a positive and collective orientation toward participants' stigmatized identities. Although this research is not related to HIV, it provides more support that my paradoxical finding that minority stressors may also function as protective factors.

One example related to minority stress and HIV prevention from my data was that internalized homophobia and perceived stigma functioned as catalysts for men to pursue personal goals. Pachankis and Hatzenbuehler (2013) refer to the pursuit of personal goals as achievement-related success, and found that sexual minority men tend to pursue such success more than heterosexual peers. Their research also suggests that minority stressors predicted whether men sought self-worth through achievement-related success.

Consistent with their findings, my results suggested that seeking achievement-related success might emanate from minority stress. Pachankis and Hatzenbuehler (2013) hypothesized that seeking achievement-related success would predict emotional distress, but did not find strong associations to support this point. Participants in my sample cited achievement-related goals as a mindset protecting them from HIV, such that their success would be thwarted by the expense, stress, or stigma of living with HIV. Thus, in the context of HIV prevention, minority stress may trigger protective factors, such as achievement-related goals, which then, activates behavioral strategies to prevent HIV (e.g., consistent condom use). See Figure 5 for how I theorize HIV risk and resilience may fit within parameters of the challenge model of resilience.

Figure 5.

Challenge Model of Resilience as it May Apply to HIV-Related Syndemics Among Sexual Minority Men



Future research. Although my results are preliminary, they represent novel research findings that add to the innovative paradigm shift including resilience in HIV prevention. A variety of scholarly inquiries would be helpful next steps in this line of research. A helpful research reference would be a review and recommendations on linguistic typologies of resilience across groups, given that so many terms exist describing very similar constructs. Measurement studies are also important to develop a psychometrically reliable and valid way to assess core resources in HIV prevention for sexual minority men.

I hypothesize that, among sexual minority men, some—or any—syndemic conditions elicit protective factors that minimize their HIV risk behaviors and acquisition potential. Quantitative inquiries are needed to test this stress-related growth hypothesis. If this hypothesis were confirmed, a subset of men with syndemic conditions might have an equal or lower likelihood of acquiring HIV than men without such exposure. These subsets of men would possess profiles of resilience, enabling them to decrease their HIV risk. What does such a profile of resilience entail? One of the few quantitative investigations mentioning resilience in HIV prevention for sexual minority men found that resolution of internalized homophobia was associated with fewer psychosocial health problems—e.g., no/low stimulant use, distress, or sexual compulsivity (Herrick et al., 2013). The authors hypothesized that other resilience resources, such as self-acceptance and community connectedness, are likely mediating relations between resolution of internalized homophobia and health outcomes. This is certainly possible, and resources identified in my study are potential mediators of this relation. One author (Goldberg & Meyer, 2013) suggested that ability to thrive in the context of minority stress was dependent on socioeconomic status (SES), such that people with higher SES would be more likely to demonstrate resilience over time (McGarrity, 2014). Therefore, I expect resources identified in this study, and other variables, to moderate the relations between HIV risk and health outcomes.

Multilevel Resilience Resources

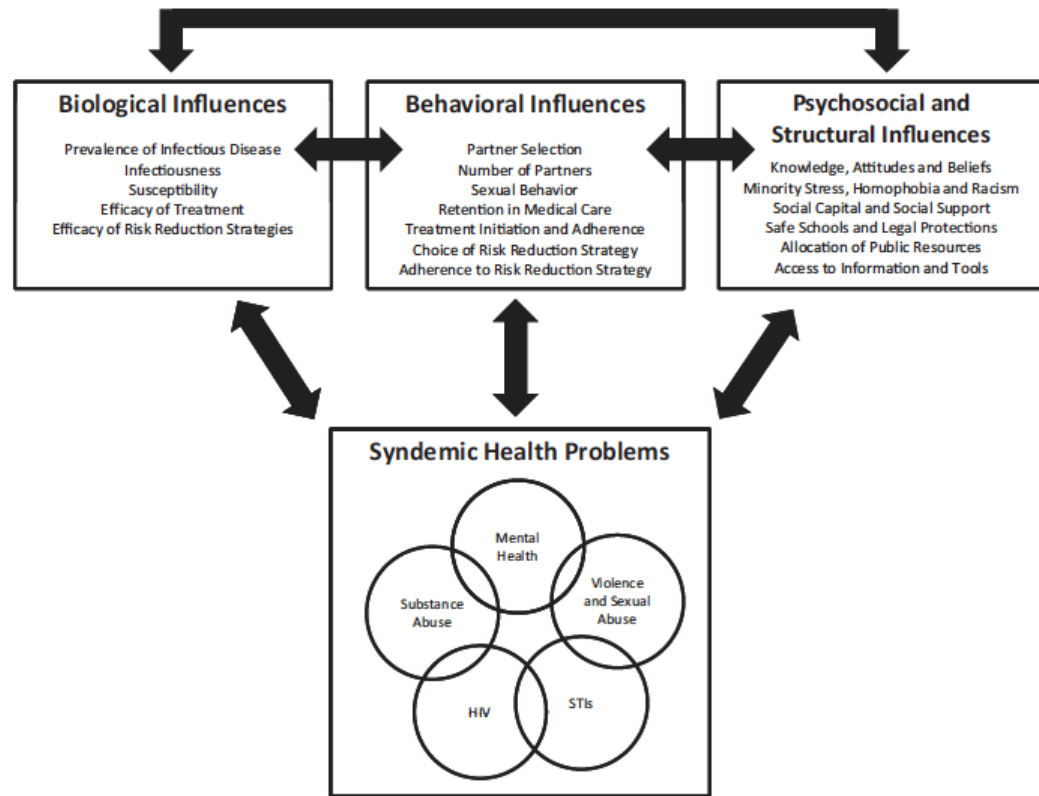
Importance of an ecosystems perspective. Ecological models can be helpful at estimating the impact of environment on behavior (Bronfenbrenner, 1977) and, thus, deserve special consideration when explaining development of minority individuals who

experience “unique ecological circumstances” (e.g., García Coll et al., 1996). Research on HIV among sexual minority men is more comprehensive when it draws on foundational ecosystems paradigms because it can make specific explanations about sexual minority men’s health in a way that accounts for their unique experiences as marginalized members of society, rather than overlooking them.

Ecosystem frameworks related to HIV prevention. Recent work has categorized risk and protective factors for HIV using ecosystem models (Earnshaw et al., 2013), including the biopsychosocial model (Halkitis, Wolitski, & Millett, 2013). This model characterizes developmental factors as one of three types: biological, psychological, or social (Evans & Stoddard, 1990). This framework contributes by highlighting needs for HIV prevention at multiple levels; however, it is also limited by its lack of specificity for intervention due using overly broad ecological levels. Theoretical work by Halkitis and colleagues (2013) collapsed psychosocial and structural influences together (e.g., beliefs about HIV & having social capital to prevent HIV). These are important influences to consider in HIV prevention, although to improve on either one would require different levels of interventions. To change beliefs would require individual interventions; to increase financial access would likely require policy-level interventions. However, this model offers much utility in considering multilevel HIV risk (see Figure 6 for an overview). My results add a novel component to this model by also accounting for the process of resilience. Bronfenbrenner’s (1995) foundational bioecological model of development can be overlaid to add more specificity to the HIV biopsychosocial model. I compare Bronfenbrenner’s (1995) ecosystem levels to themes from this study.

Figure 6.

Biopsychosocial Drivers of HIV Infection Among Sexual Minority Men



Note. Halkitis, Wolitski, & Millett (2013).

The bioecological model proposes developmental factors within the individual and context (Bronfenbrenner, 1995). Developmental factors within the individual level are biological or personality factors, such as skin color, age, intelligence, or core beliefs. The first three themes of resources identified in this study fit within the individual level—traits, mindset, and personal goals. Environmental factors are categorized into four different systems: micro-, meso-, exo-, and macrosystems (Bronfenbrenner, 1977). The microsystem is a setting in which developmental factors contain the individual directly,

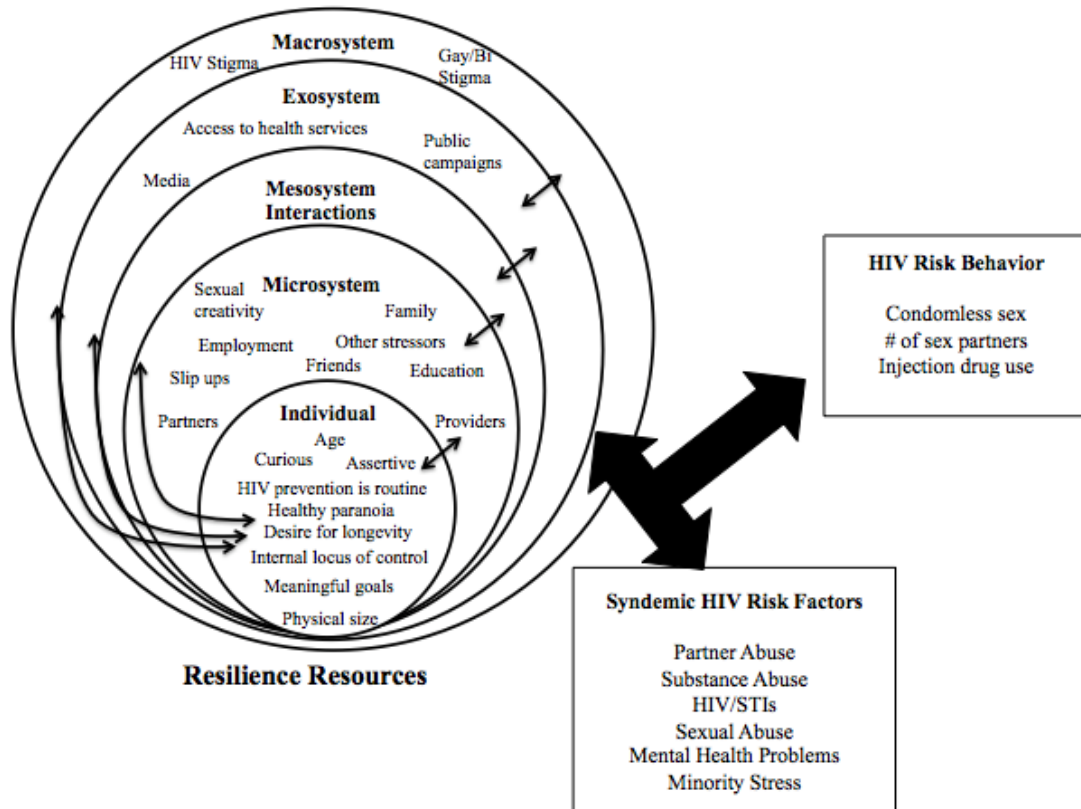
like his college campus, peer group, or healthcare provider. Experiences related directly and indirectly to sex are microsystem level factors in my study. A mesosystem represents the interaction between certain microsystems, e.g., home and workplace. In my study, some participants mentioned that their families instilled in them a certain mindset, one about being prepared, which impacted them in other microsystems, such as buying condoms and lubricant for sex. The exosystem comprises of any setting that does not contain the person directly and, yet, still impacts that individual (e.g., media campaigns about condom use). The final system of the bioecological model is the macrosystem, which consists of more abstract cultural or structural norms. My study suggests HIV stigma is a macrosystem-level factor that may impact the development of HIV protective factors that would manifest in specific micro-, meso-, or exosystems. The bioecological model is helpful in categorizing resources. In addition, the HIV biopsychosocial model (Halkitis et al., 2013) informed my conceptualization of interactions between risk and resilience.

Model of Risk and Resilience in HIV Prevention Among Sexual Minority Men

In Figure 7, I present an updated model of my formulation of HIV infection among sexual minority men, incorporating resources and risk factors to capture the process of resilience in HIV prevention. Based on my data, I propose interactions between risk factors and resilience resources at every ecosystems level, which predict HIV risk behavior. My model of resilience, unique to sexual minority men, contains pathways driving HIV infection presented from the HIV biopsychosocial model (Halkitis et al., 2013) and organizes resources by Bronfenbrenner's (1995) ecosystem levels.

Figure 7.

Proposed Model of Multilevel Risk and Resilience Influences on HIV Infection Among Sexual Minority Men



Evaluating this model of resilience. Herrick and colleagues (2011) recently called for a model of resilience among sexual minority men related to HIV prevention and offered by which this model should be evaluated. My model provides a comprehensive way of assessing HIV protective factors and evaluating their impact on HIV risk behavior.

I believe my model meets several criteria of an ideal model of resilience. First, I identified the presence of resources, rather than merely the inverse of risk factors (e.g., no substance abuse). This operationalization was embedded in my study design and, therefore, participants provided data on resources that helped them prevent HIV despite higher risk. However, avoidance of negative outcomes is also an important outcome indicative of resilience (e.g., (Gwadz et al., 2006). Second, resources identified in this study are conducive to multiple levels of interventions—individual, dyadic-level (e.g., couples or families), public health campaigns, and policy changes to help increase access to important services or systemically change cultural norms. Third, this model incorporates targets of traditional risk reduction interventions and does not oppose such targets. To be maximally effective, interventions need to address both risk and resilience (Coates et al., 2008), based on empirical evidence in this study that risk may be inherently tied to resource development. Any good model would capture new variance of HIV risk behavior and prevalence. I cannot evaluate my model upon this criterion without quantitative inquiry; more research is needed to confirm the statistical utility of this model as a framework for HIV prevention among sexual minority men.

Finally, as clinical scientists, I believe interventions developed to target resources identified in this study would be significantly more appealing than current HIV interventions focused only on risk reduction. Again, treatment development and efficacy trials are necessary to evaluate such claims, especially longitudinally, as the impact of resilience on HIV prevention may change over one's lifespan (Masten & Wright, 2009).

Intervention implications. It seems premature to suggest implications for interventions from a systematic review and a qualitative study; however, given the

information gleaned from these endeavors, I can envision ways in which HIV prevention programs may change to account for resilience. Interventions would be individualized and incorporate strengths explicitly as motivators for action (e.g., personal goals). For example, one possible therapeutic technique could be identifying protective resources “outside the bedroom,” as one participant said, and helping participants utilize such resources (e.g., assertiveness) during the course of sexual encounters. One target of treatment may be developing and utilizing a strong social support network with whom men could discuss and troubleshoot their typical HIV prevention practices. Participants mentioned social networks congregated around sexual creativity (e.g., BDSM community), work, and school that were helpful in preventing HIV.

Limitations. My results are limited by several factors. Qualitative analysis fits with the aims of this research, and cannot generalize my findings to all sexual minority men. Quantitative studies sampling sexual minority men with HIV-related syndemics are needed to confirm and generalize my findings. I also needed to use measures in addition to self-assessment to adequately assess resilience (Fergus & Zimmerman, 2005), such as corroborative reports from close friends, family, or partners. Another limitation of my sample was that I do not have much representation of participants who had experiences partner abuse, and no participants discussed HIV prevention resources related to partner abuse experiences. One reason for this could be that my measure of partner abuse perhaps is not very sensitive to sexual minority men’s relationships. There is a new partner abuse measure for sexual minority men (Stephenson & Finneran, 2013) that would benefit future research because it includes domains about intentionally transmitting HIV in serodiscordant relationships and perpetrating homophobic stigma toward a partner.

Future research plans. I will conduct a second wave of interviews after refining the interview using results from the data presented here. Oversampling for wave 2 will ensure interview completion (Creswell, 2002), and increase validity of the data. The second wave will consist of 15 additional interviews from a distinct sample of men.

Between waves 1 and 2, I plan to use results from this study, in addition to consultation with experts in qualitative analysis (L. Silverstein, personal correspondence, November 3, 2014) and HIV prevention, to refine the interview script. This strategy of adapting my methods based on data and triangulation throughout the recruitment process is derived from the grounded theory approach to analysis (Auerbach & Silverstein, 2003). As the next step, I plan to interview participants from this study to follow up and assess accuracy of my results. Their feedback will be used to alter the interview for wave 2, as needed. See Appendix A for follow up interview script.

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Appendix A

Screening Measures

DEMOGRAPHICS

Please create a 4-digit code for yourself, consisting of a 2 alphabetical letters and 2 numbers (e.g., ER23) and enter it here:

*Write this code down because you will need it again.

1. Are you . . .

1. Male
2. Transgender MTF
3. Transgender FTM
4. Other (please specify)

2. How old are you, in years? _____

3. Have you ever been tested for HIV?

1. No
2. Yes
- 3a. (if yes), what was the test result?
 1. HIV-negative
 2. HIV-positive

4. Do you identify as being a sexual minority man, in some way (gay, bisexual, bicurious, pansexual, queer, homosexual, same-gender loving, etc)?

1. Yes
2. No

5. Please enter your 5-digit zip code here (this is used only for general geographic purposes).

<if pt. does not meet inclusion criteria or has not been tested for HIV, the website will exit the survey and thank the participant for his time>

<if the pt. does meet inclusion criteria, the website will take him to the next set of questions>

MENTAL HEALTH MEASURES
Depressive Symptoms, Anxious Symptoms, and Stress
Depression, Anxiety, and Stress Scales (DASS-21; Lovibond & Lovibond, 1995)

Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you over the *past two weeks*. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

- 0 *Did not apply to me at all*
- 1 *Applied to me to some degree, or some of the time*
- 2 *Applied to me to a considerable degree, or a good part of time*
- 3 *Applied to me very much, or most of the time*

- 1. I found it hard to wind down
- 2. I was aware of dryness of my mouth
- 3. I couldn't seem to experience any positive feeling at all
- 4. I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion)
- 5. I found it difficult to work up the initiative to do things
- 6. I tended to over-react to situations
- 7. I experienced trembling (e.g., in the hands)
- 8. I felt that I was using a lot of nervous energy
- 9. I was worried about situations in which I might panic and make a fool of myself
- 10. I felt that I had nothing to look forward to
- 11. I found myself getting agitated
- 12. I found it difficult to relax
- 13. I felt down-hearted and blue
- 14. I was intolerant of anything that kept me from getting on with what I was doing
- 15. I felt I was close to panic
- 16. I was unable to become enthusiastic about anything
- 17. I felt I wasn't worth much as a person
- 18. I felt that I was rather touchy
- 19. I was aware of the action of my heart in the absence of physical exertion (eg, sense of heart rate increase, heart missing a beat)
- 20. I felt scared without any good reason
- 21. I felt that life was meaningless

Posttraumatic Stress Symptoms
**PTSD Checklist—Civilian Checklist (PCL-C; Blanchard, Jones-Alexander,
 Buckley, & Forneris, 1996)**

Below is a list of problems and complaints that people sometimes have in response to stressful life experiences. Please read each one carefully, and indicate how much you have been bothered by that problem in the last month (last 30 days).

Question	Not at all (1)	A little bit (2)	Moderately (3)	Quite a bit (4)	Extremely (5)
1. Repeated, disturbing <i>memories, thoughts, or images</i> of a stressful experience from the past?					
2. Repeated, disturbing <i>dreams</i> of a stressful experience from the past?					
3. Suddenly <i>acting or feeling</i> as if a stressful experience were happening again (as if you were reliving it)?					
4. Feeling <i>very upset</i> when <i>something reminded</i> you of a stressful experience from the past?					
5. Having <i>physical reactions</i> (e.g., heart pounding, trouble breathing, sweating) when <i>something reminded</i> you of a stressful experience from the past?					
6. Avoid <i>thinking about or talking about</i> a stressful experience from the past or <i>avoid having feelings</i> related to it?					
7. Avoid <i>activities or situations</i> because <i>they remind you</i> of a stressful experience from the past?					

-
8. Trouble *remembering important parts* of a stressful experience from the past?
 9. Loss of interesting in things you used to enjoy?
 10. Feeling *distant* or *cut off* from other people?
 11. Feeling *emotionally numb* or being unable to have loving feelings for those close to you?
 12. Feeling as if your *future* will somehow be *cut short*?
 13. Trouble falling or staying asleep?
 14. Feeling irritable or having angry outburst?
 15. Having difficulty concentrating?
 16. Being “*super alert*” or watchful or “*on guard*”?
 17. Feeling *jumpy* or easily startled?
-

Suicidality

Depressive Symptom Index – Suicidality Subscale (Joiner, Pfaff, & Acres 2002) to assess suicidal thoughts

Please choose a statement for each of the following options for yourself for the past 30 days.

- | | | |
|---------------|---|---|
| [dsi1] | 0 | I do not have thoughts of killing myself. |
| | 1 | Sometimes I have thoughts of killing myself. |
| | 2 | Most of the time I have thoughts of killing myself. |
| | 3 | I always have thoughts of killing myself. |
| [dsi2] | 0 | I am not having thoughts about suicide. |
| | 1 | I am having thoughts about suicide but have not formulated any plans. |

- 2 I am having thoughts about suicide and am considering possible ways of doing it.
- 3 I am having thoughts about suicide and have formulated a definite plan.
- [dsi3]** 0 I am not having thoughts about suicide.
- 1 I am having thoughts about suicide but have these thoughts completely under my control.
- 2 I am having thoughts about suicide but have these thoughts somewhat under my control.
- 3 I am having thoughts about suicide but have little or no control over these thoughts.
- [dsi4]** 0 I am not having impulses to kill myself.
- 1 In some situations I have impulses to kill myself.
- 2 In most situations I have impulses to kill myself.
- 3 In all situations I have impulses to kill myself.

Suicide Attempts And Self-Harm Behaviors Investigator-Created Questions

In the past year, did you ever purposely engage in self-harming behaviors such as cutting, burning, or hitting yourself without the intention of killing yourself?

0. No
1. Yes

In the past year, did you attempt to kill yourself (take measures to end your life on purpose)?

0. No
1. Yes

PARTNER ABUSE MEASURE

The Revised Conflict Tactics Scale (CTS2; Straus et al., 1996) (Select items to assess victimization of participant)

Please check this box if you have not had any romantic partnerships.

No matter how well a romantic couple gets along, there are times when they disagree, get annoyed with the other person, want different things from each other, or just have spats or fights because they are in a bad mood, are tired, or for some other reason. Couples also have many different ways of trying to settle their differences. This is a list of things that might happen when you have differences. Please circle how many times a romantic partner did each of these things to you ever.

How often did this happen?

Once in the past year	2-10 times in the past year	11-20 times in the past year	More than 20 times in the past year	Has never happened in the past year
1	2	3	4	5

Item	Response Option	Subtype of Abuse
1. My partner insulted or swore at me.	1 2 3 4 5	Psychological Aggression
2. My partner threw something at me that could hurt.	1 2 3 4 5	Physical Assault
3. My partner twisted my arm or hair.	1 2 3 4 5	Physical Assault
4. My partner made me have sex without a condom.	1 2 3 4 5	Sexual Coercion
5. My partner pushed or shoved me.	1 2 3 4 5	Physical Assault
6. My partner used force (like hitting, holding down, or using a weapon) to make me have oral or anal sex.	1 2 3 4 5	Sexual Coercion
7. My partner used a knife or gun on me.	1 2 3 4 5	Physical Assault
8. My partner called me fat or ugly.	1 2 3 4 5	Psychological Aggression
9. My partner punched or hit me with something that could hurt.	1 2 3 4 5	Physical Assault
10. My partner destroyed something belonging to me.	1 2 3 4 5	Psychological Aggression
11. My partner choked me.	1 2 3 4 5	Physical Assault
12. My partner shouted or yelled at me.	1 2 3 4 5	Psychological Aggression
13. My partner slammed me against a wall.	1 2 3 4 5	Physical Assault
14. My partner beat me up.	1 2 3 4 5	Physical Assault
15. My partner grabbed me.	1 2 3 4 5	Physical Assault
16. My partner used force (like hitting, holding down, or using a weapon) to make me have sex.	1 2 3 4 5	Sexual Coercion

17. My partner stomped out of the room or house or yard during a disagreement.	1 2 3 4 5	Psychological Aggression
18. My partner insisted on sex when I did not want to (but did not use physical force).	1 2 3 4 5	Sexual Coercion
19. My partner slapped me.	1 2 3 4 5	Physical Assault
20. My partner used threats to make me have oral or anal sex.	1 2 3 4 5	Sexual Coercion
21. My partner burned or scalded me on purpose.	1 2 3 4 5	Physical Assault
22. My partner insisted I have oral or anal sex (but did not use physical force).	1 2 3 4 5	Sexual Coercion
23. My partner accused me of being a lousy lover.	1 2 3 4 5	Psychological Aggression
24. My partner did something to spite me.	1 2 3 4 5	Psychological Aggression
25. My partner threatened to hit or throw something at me.	1 2 3 4 5	Psychological Aggression
26. My partner kicked me.	1 2 3 4 5	Physical Assault
27. My partner used threats to make me have sex.	1 2 3 4 5	Sexual Coercion

CHILDHOOD SEXUAL ABUSE MEASURE

Childhood Maltreatment Interview Schedule-Short Form (CMIS; Briere, 1992)

Before Age 14...

Before you were age 14, did anyone ever kiss you in a sexual way, or touch your body in a sexual way, or make you touch their sexual parts?

Yes__ No__

Did this ever happen with a family member?

Yes__ No__ If yes, with who? _____

At what ages? _____

Did this ever happen with someone 5 or more years older than you were?

Yes__ No__

If yes, with who (check all that apply):

___ A friend (at what ages? _____)

___ A stranger (at what ages? _____)

___ A family member (who? _____)

(At what ages? _____)

___ A teacher, doctor, or other professional (who? _____)

(At what ages? _____)

___ A babysitter or nanny (At what ages? _____)

___ Someone else not mentioned above (who? _____)

(at what ages? _____)

Did anyone ever use physical force on any of these occasions?

Yes__ No__ If yes, who? _____

Overall, about how many times were you kissed or touched in a sexual way or made to touch someone else's sexual parts by someone five or more years older before age 14?

___ times

Overall, how many people (five or more years older than you) did this?

___ people

Before you were age 14, did anyone ever have oral, anal, or vaginal intercourse with you, or insert a finger or object in your anus or vagina?

Yes__ No__

Did this ever happen with a family member?

Yes__ No__ If yes, with who? _____

At what ages? _____)

Did this ever happen with someone 5 or more years older than you were?

Yes__ No__

If yes, with who (check all that apply):

___ A friend (at what ages? _____)

___ A stranger (at what ages? _____)

___ A family member (who? _____)

(At what ages? _____)

___ A teacher, doctor, or other professional (who? _____)

(At what ages? _____)

___ A babysitter or nanny (At what ages? _____)

___ Someone else not mentioned above
(who? _____)

(at what ages? _____)

Did anyone ever use physical force on any of these occasions?

Yes__ No__ If yes, who? _____

About how many times did anyone five or more years older have oral, anal, or vaginal intercourse with you before age 14, or insert a finger or object in your anus or vagina?

___ times

Overall, how many people (five or more years older than you) did this?

___ people

To the best of your knowledge, before age 14, were you ever

Sexually abused? Yes__ No__

Physically abused? Yes__ No__

Between Ages 14-18...

Between ages 14-18, did anyone ever kiss you in a sexual way, or touch your body in a sexual way, or make you touch their sexual parts?

Yes__ No__

Did this ever happen with a family member?

Yes__ No__ If yes, with who? _____

At what ages? _____

Did this ever happen with someone 5 or more years older than you were?

Yes__ No__

If yes, with who (check all that apply):

___ A friend (at what ages? _____)

___ A stranger (at what ages? _____)

___ A family member (who? _____)

(At what ages? _____)

___ A teacher, doctor, or other professional

(who? _____)

(At what ages? _____)

___ A babysitter or nanny (At what ages? _____)

___ Someone else not mentioned above

(who? _____)

(at what ages? _____)

Did anyone ever use physical force on any of these occasions?

Yes__ No__ If yes, who? _____

Overall, about how many times were you kissed or touched in a sexual way or made to touch someone else's sexual parts by someone five or more years older between ages 14-18?

___ times

Overall, how many people (five or more years older than you) did this?

___ people

Between ages 14-18, did anyone ever have oral, anal, or vaginal intercourse with you, or insert a finger or object in your anus or vagina?

Yes__ No__

Did this ever happen with a family member?

Yes__ No__ If yes, with who? _____

At what ages? _____)

Did this ever happen with someone 5 or more years older than you were?

Yes__ No__

If yes, with who (check all that apply):

___ A friend (at what ages? _____)

___ A stranger (at what ages? _____)

___ A family member (who? _____)

(At what ages? _____)

___ A teacher, doctor, or other professional (who? _____)

(At what ages? _____)

___ A babysitter or nanny (At what ages? _____)

___ Someone else not mentioned above

(who? _____)

(at what ages? _____)

Did anyone ever use physical force on any of these occasions?

Yes__ No__ If yes, who? _____

About how many times did anyone five or more years older have oral, anal, or vaginal intercourse with you before age 14, or insert a finger or object in your anus or vagina?

___ times

Overall, how many people (five or more years older than you) did this?

___ people

To the best of your knowledge, between ages 14-18, were you ever

Sexually abused? Yes__ No__

Physically abused? Yes__ No__

SUBSTANCE USE MEASURES

Alcohol Use Disorders Identification Test (AUDIT)

Saunders et al. (1993)

[audit1] How often do you have a drink containing alcohol? Please indicate the answer that is correct for you during the past year.

- a. never (0)
- b. monthly or less (1)
- c. 2-4 times a month (2)
- d. 2-3 times a week (3)
- e. 4 or more times a week (4)

[audit2] How many drinks containing alcohol do you have on a typical day when you are drinking? Please answer based on your experiences in the past year. ____ (#)

Please indicate the answer that is correct for you during the past year for the following questions.

<i>Never</i>	<i>Less than monthly</i>	<i>Monthly</i>	<i>Weekly</i>	<i>Daily/almost daily</i>
0	1	2	3	4

[audit3] How often do you have six or more drinks on one occasion?

[audit4] How often during the last year have you found that you were not able to stop drinking once you had started?

[audit5] How often during the last year have you failed to do what was normally expected from you because of drinking?

[audit6] How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?

[audit7] How often during the last year have you had a feeling of guilt or remorse after drinking?

[audit8] How often during the last year have you been unable to remember what happened the night before because you had been drinking?

[audit9] Have you or someone else been injured as a result of your drinking?

[audit10] Has a relative or friend, or a doctor or other health worker been concerned about your drinking or suggested you cut down?

**Drug Abuse Screening Test—DAST-10
Skinner (1982)**

These Questions Refer to the Past 12 Months...

- 1 Have you used drugs other than those required for medical reasons? Yes No
- 2 Do you abuse more than one drug at a time? Yes No
- 3 Are you unable to stop using drugs when you want to? Yes No
- 4 Have you ever had blackouts or flashbacks as a result of drug use? Yes No
- 5 Do you ever feel bad or guilty about your drug use? Yes No
- 6 Does your spouse (or parents) ever complain about your involvement with drugs?
Yes No
- 7 Have you neglected your family because of your use of drugs? Yes No
- 8 Have you engaged in illegal activities in order to obtain drugs? Yes No
- 9 Have you ever experienced withdrawal symptoms (felt sick) when you stopped taking drugs? Yes No
- 10 Have you had medical problems as a result of your drug use (eg, memory loss, hepatitis, convulsions, bleeding)? Yes No

**Drinking Motives Questionnaire—Revised Short Form (DMQ-R-SF)
Kuntsche & Kuntsche (2009)**

Response Options

Never	Sometimes	Almost always
1	2	3

In the last 12 months, how often did you drink...

1. because you like the feeling?

2. to get high?
3. because it's fun?
4. because it helps you enjoy a party?
5. because it makes social gatherings more fun?
6. because it improves parties and celebrations?
7. to fit in with a group you like?
8. to be liked?
9. so you won't feel left out?
10. because it helps you when you feel depressed or nervous?
11. to cheer up when you're in a bad mood?
12. to forget about your problems?

Non-alcohol Drug Use Questions
Investigator-created

1. Have you used any recreational, street, or illegal drugs in the past 12 months? Yes/No
2. Please check any of the drugs you have used in the last 12 months to get high, change your mood, or get buzzed:
 - a. Stimulants ("uppers", Adderall, speed, crystal meth, Ritalin, prescription diet pills, etc.)
 - b. Sedatives ("downers", barbituates, Valium, Ambien, Klonopin, roofies, etc.)
 - c. Cannabis (marijuana, pot, THC, hashish)
 - d. Opioids (heroin, smack, methadone, oxycodone, OxyContin, Vicodin, etc.)
 - e. Cocaine (snorting, IV, crack, etc.)
 - f. Hallucinogens (LSD, acid, mushrooms, MDMA Molly, etc.)
 - g. Dissociative Anesthetics (PCP, angel dust, Special K, etc.)
 - h. Steroids
 - i. Over-the-counter (sleep pills, diet pills, cough syrup)
 - j. Inhalants (glue, paint thinner, Dust Off, poppers)
3. How often have you used any of these drugs in the last 12 months?
 - a. never (0)
 - b. monthly or less (1)
 - c. 2-4 times a month (2)
 - d. 2-3 times a week (3)
 - e. 4 or more times a week (4)
4. In the last 12 months, have you ever used alcohol and one of these drugs at the same time? Yes/No

Appendix B

Interview

HIV RISK AND RESILIENCE INTERVIEW

Warm-up & Orientation

<after reviewing informed consent>I am really grateful that you're willing to speak to me today. I'm going to turn the tape recorder on now. <turn on audio recorder>

I'd like to start off by sharing the goals of this interview with you. I work on a gay-affirmative research team and am interested in promoting the health of sexual minority men—that is, gay and bisexual men, or men who identify their sexuality as something other than straight. Because HIV is a concern to many sexual minority men, I am specifically interested in how men protect themselves against HIV. There are many HIV prevention programs that have been created to help men protect themselves; however, one criticism of those programs is that they aren't focused strongly enough on how sexual minority men can use their *existing strengths* to help themselves. It seems like many of them are based on the idea that what men really need is to learn something new, versus focusing on what they're already doing that's helpful. So, I am here to learn from you about what coping skills, behaviors, or psychological strengths, you already have that have helped you to cope with adversity and stay sexually healthy. My goal is to convey that information to the public health community, to help them to improve existing HIV interventions or to create new ones that better capitalize on men's existing skills and strengths.

Remember, you can stop me at any time—just for a break, or if you'd like me to clarify a question, or if you want to skip a question. It's really important to me that you feel comfortable during the whole time we're talking.

Before we go any further, do you have any questions for me?

I'm going to ask you about some things that seem personal and some things that may not seem so personal. Specifically, I'll be asking you about your sexual health, and tough things you have experienced. For you, it seems that you reported in our online survey that _____. I'll ask questions and take notes on my computer.

Do you have any concerns or questions at this point?

Main questions and probes

I. Background (~10 minutes)

First, I wanted to ask you: What attracted you to this study?

In the survey you completed online, you identified as being (*insert sexual minority identifier*). How would you identify your sexual orientation, if I wasn't asking you on an online survey—like if a new friend or dating partner asked you about it?

Demographic background

I looked at the results from the survey you filled out online before this interview, and it appears that you are living in [insert state].

1. Would you mind telling me a little bit about the neighborhood community or the location you live in? By neighborhood community I mean where you live and who you live with or near. What's it like in your neighborhood community?

Probes:

- Would you say that your community is more urban or more rural?
- How long have you lived there?
- Who do you live with?
- How comfortable do you feel in your living situation/neighborhood?
 - What helps you to feel comfortable there?
 - What are the features of the neighborhood that make you less comfortable?

Great. Thanks for sharing that information with me; it really helps for me to understand where you are coming from, and can be helpful during our interview. I have a question about connections between your neighborhood community and your sexual health.

A lot of people find it difficult to talk about sex, because of what society has taught us. However, I want to assure you that I won't be shocked by anything you say. I have lots of experience talking about sex with gay men, and feel comfortable hearing lots of things.

2. How do you think your neighborhood community affects your choices about sex partners and sexual behavior?

Probes:

- In your neighborhood, how much do you think preventing HIV is a priority? What makes you say that? Are you comfortable with that or do you wish it was different in some way?

- Do you find that you typically have to look outside of your neighborhood to find a sex partner, or look online?
- How well do you feel like your neighborhood's values about HIV impact your own decisions about sex? Do you feel like there are norms about using condoms (or not) that you think about in sexual encounters?
- More directly: would you say that how your neighborhood thinks about sex impacts whether or not you use a condom during sex? How so, if so? If not, why not?
- Do you have to rely on the internet or apps—Grindr, Scruff, etc.—to find many of your sex partners? How does that effect your ability or interest in having protected sex?

II. Health, in general (~15 minutes)

Now, I am going to ask you about your health, in general.

A. Risks

First, I am going to ask you about risks to your health. For this study, I have two definitions. First, a *risk* is defined as anything—any situation, or any person—that makes it difficult to keep yourself healthy. Second, let's define *healthy* as feeling well AND not having any medical problems that interfere with your functioning.

1. Some people say that risks to their health are behaviors they engage in (i.e., smoking, drinking too much) or genetic risk factors (i.e., a family history of any health problem), or a risk from the environment (i.e., second-hand smoke, processed foods). What do you think are the main risks to your health? They could be behaviors, genetics, your environment, or something else.

<pt agrees> Probes:

- How do you think _____ increases your risk? [could be for each risk factor]
- Okay, what are some examples of the biggest risks to your health?
- What are some reasons for these risks?

<pt disagrees> Probes:

- What makes you say that?
- Have you ever thought that your health might be at risk?

[If participant mentions risks related to HIV, then transition to asking about risks related to HIV, specifically (Part III, section A), and come back to discussion about strengths related to health, in general.]

B. Strengths/Protective Factors/Resilience

2. Some people say that, to take care of their health, they engage in healthy behaviors (eating well, exercising) or get screened for diseases by a medical provider (getting regular prostate exams or anal pap smears), or avoid environmental risks (second-hand smoke). Do you do things to take care of your health? (yes): Tell me about those things.

Probes:

- What are the ways that you take care of your physical health?
- What are the ways that you take care of your mental health?
- Name three things that you do to take care of yourself and your health. They may be daily or weekly activities.
- How do you manage to do that?
- What do you do during the week that makes you feel really good, or helps you to keep functioning well?

[If participant mentions ways he prevents HIV, then transition to asking about Strengths/Protective Factors/Resilience related to HIV, specifically (Part III, section B).]

III. Health, specific to HIV (~40 minutes)

Thank you for sharing all this information with me. I am going to ask some questions more specific to your risk for HIV—we'll call that your "sexual health." We just talked about risks to your health from your genetics, behavior, or environment.

A lot of people find it difficult to talk about sex, because of what society has taught us. However, I want to assure you that I won't be shocked by anything you say. I have lots of experience talking about sex with gay men, and feel comfortable hearing lots of things.

A. Risks

1. In a similar vein, what do you think are the risks to your sexual health?

<if pt says yes> Probes:

- What are some examples? *[Distinguish between sexually transmitted infections (STIs; including HIV), reproductive functioning, and sexual performance, if participant brings up multiple issues. Ask specifically about HIV. If participant only brings up non-HIV STIs, ask about those, and then ask about HIV.]*

- What about (insert HIV-related sexual health concern) concerns you, specifically? Why? *[ask this about each concern participant reported.]*

Concern #1: _____

Concern #2: _____

<if pt says no> Probes:

- Has there ever been a time in your life when you thought there was a risk to your sexual health? *[if yes, ask what was going on then]*
- By this, I mean, have you taken any risks sexually—like by having anal sex without a condom, whether or not there was ejaculation inside? How often does this happen for you? Tell me about that.
- Some sexual risks for HIV are having sex without a condom, not getting tested for HIV, not asking partners about their HIV status, or having sex while under the influence of drugs or alcohol.
- Are there any risk factors that you know of, in your environment, that are a potential threat to your sexual health, like not having easy access to condom, or not having transportation back to your home after meeting a guy?

2. How do you view HIV? Do you view it as a serious illness? Why? Why not?

3. Regarding HIV, how likely do you think it is that you will contract HIV in the future, on a scale of 0 to 10—with 0 being not likely at all, and 10 indicating that you feel certain that it will happen? _____

[Probe if pt. is struggling to answer:]

- Let me ask it another way: Do you think you have a low, moderate, or high chance of acquiring HIV in the future?

<if risk perception is 5 or above> Probes:

- So, you think it's more likely than not that you'll become HIV-positive at some point. What makes you think that?
- How concerned are you about acquiring HIV?

- Why didn't you rate yourself lower, like a 2, for example?

<if risk perception is 4 or below> Probes:

- That's less than a 50% chance you think you'll acquire HIV in the future. Why did you state that you are at a (insert participant's rating number: 0, 1, 2, 3, or 4) and not a 7, for example?

[If person did not answer strengths questions about health, in general, in Section II part B, go back to that now]

B. Strengths/Protective Factors/Resilience

Thanks for sharing those risks with me. I can imagine that is difficult to discuss. So I know you (*insert strength related to health, in general, that participant mentioned in Part II, Section B*) to take care of your health, overall.

1. What are three things you do to take care of your sexual health? You might think of them like "strategies" for staying HIV-negative. I am specifically interested in what you do to protect yourself from contracting any sexually transmitted infections or HIV. (*yes*): How do you find that helpful?

- 1) _____
 _____ 2) _____
 _____ 3) _____

Probes:

- Some men talk about being comfortable not using condoms for partners who they know really well. Other men have talked about having anal sex without a condom but pulling out before ejaculation. Do you have any habits or strategies like those?
- Men from other studies have mentioned some things they do to stay sexually healthy. One thing is to screen potential sex partners to see if they can trust them, like talking on the phone or asking friends about that person.
- Do you ask about a partner's HIV status before you have sex? Or ask about when that person last got tested? How did you decide to do that? How much do you trust what they say?
- How do you (*insert strength participant discussed*)?
- Do you talk to people about your sexual health or HIV? If so, who do you talk to? What do you talk about? How does talking to someone about that help you stay sexually healthy?

- Do you use condoms during anal sex? If so, tell me more about that. What exactly does that entail?

2. What has been the one most helpful thing for you to remain HIV-negative?

Probes:

- Great! How do you do keep that up?
- In what ways does that help you stay negative?
- Why does that work for you?
- Tell me more about that.

i. Assessing Strengths in Multiple Domains

Sometimes it's hard for the people I interview to think about and analyze all their behaviors. Psychologists often think about people as having different sources of motivation for their behavior: one part is within a person—your internal experiences like your thoughts and emotions, or the things that you do—and another part that exists outside of you, like your environment, or things that happen around you. Next, I am going to ask you about things that help you stay sexually healthy in both parts of your life. I will be asking you tough questions that you may have never thought of.

Individual-level (psychological, biological, intrapersonal):

1. Some people have said that they have good genes or longevity in their families. I'm wondering if you think there are any biological or genetic traits that you have that may help you stay sexually healthy?

Probes:

- How did you become aware of these traits?
- Is there any evidence, such as a genetic or blood test, that help you to be sure?
- What makes you say that?

2. How do aspects of your personality help you stay sexually healthy?

Probe:

- For example, some people say they are very responsible and like to plan ahead (like a Boy Scout—always prepared), so they always buy and use condoms for anal sex. Can you think of any qualities about you, as a person, that help you stay sexually health? How do you think they help you?
- Are there any others?
- How does that help you stay sexually healthy?
- What about being a top or a bottom—in what ways does that impact safe sex for you?

3a. What are some things your friends or family comment on—things that they admire about you? _____

- How do you think could be something that helps you stay sexually healthy?
Probe:
- How does that work? How does that quality help you stay sexually healthy?

4. Would you say you have mentally committed to protecting yourself from HIV?

Probe:

- How did you decide to make that commitment to protect yourself from HIV?
- What does it require of you to protect yourself from HIV?
- What does it take to live up to that commitment every time you have sex?
- What do you do, or what do you tell yourself, when you feel that commitment might be weakening?

5. Earlier, you told me that you think there is a (*insert HIV risk perception value, e.g., 60%*) chance that you will acquire HIV sometime in your life. How does believing there is a ___% chance you'll acquire HIV effect your sex life?

Probes:

- How does you being a (*insert HIV risk perception value*) about your chances of acquiring HIV impact your sexual practices?
- Do you believe that the things you do to stay sexually healthy are related to why you're a (*insert HIV risk perception value*)? Why?

Environmental-level (social, cultural, interpersonal, systemic): Thank you for sharing. You just shared a lot with me about your internal strengths. Do you have any concerns or questions at this point? How are you doing?

Now, I am going to ask you about strengths in the second part of yourself I mentioned earlier—your environment.

1. Which people in your life help you stay sexually healthy?

Probe:

- How do they help you in this way?
- Do they help you by offering tangible resources, like rides or money?
- Do they help you by offering you support, like being a good listener or cheering you up when you're feeling down?
- How do your gay friends help you maintain good sexual health? Your straight friends?
- What, if anything, does your family do that helps you maintain good sexual health?

2. What things or events in your environment help you stay sexually healthy?

Probes:

- Have there been any circumstances in your life that made it easier for you to stay sexually healthy?
- How have they helped you?
- Are there any circumstances going on in your life currently that make it easier for you to stay sexually healthy?
- What makes these things work for you?
- In what ways does X help you?

3. How do your medical providers—doctors, nurses, counselors, therapists—help keep you sexually healthy, as a (*insert sexual minority identifier*) man?

Probe:

- What would you need from a healthcare professional to help keep you sexually healthy?
- Some men say that, because their therapist helps them to address issues not directly related to sex, that this actually helps men protect themselves sexually in the future. How have any counselors or therapists helped you in this way before?
- Some men say that their medical providers actively ask them about needs specific to them, like anal sex and lubrication or HIV testing. How have any of your providers helped you in this way before?
- How does your (*insert provider*) attend to your health and specific needs? [*Assess this for each provider*]
- What else do you feel you need from your medical providers to help you stay sexually healthy?

4. How does living in (insert U.S. state) affect your sexual health?

Probes:

- How do you think that the political climate of your state impacts your sexual health?
- Do (STATE)'s laws impact insurance or health care for you in ways that affect your sexual health?

[*If skipped Part III, Section A, go back to that now*]

Great, thanks for answering all those questions. We're going to move on to the next section now.

IV. Discussion about Syndemic Indicators and Health (~20 minutes)

When you responded to the survey online before this phone call, you indicated that you (*note syndemic indicator(s) that person endorsed*):

- Have experienced maltreatment or abuse as a child
- Have experienced maltreatment or abuse from a partner in your past
- Have been feeling depressed or anxious
- Have used drugs such as (_____)

I'd like to ask you some questions about how that experience/those experiences affects your sexual health today. If you need a break anytime during My conversation, just let me know. I know we've been talking for a while already.

[*Assess each syndemic indicator participant reported*].

1. In the big picture of your life, how has (*insert syndemic indicator*) affected you psychologically or emotionally?

Probes:

- Have you noticed that you've had a quicker temper since (*insert syndemic indicator*) happened?
- What about being less interested in things you used to enjoy since (*syndemic indicator*) happened?
- In what ways?

2. In the big picture of your life, how has (*insert syndemic indicator*) affected your physical health?

Probes:

- Have you noticed that you have worse physical health since (*insert syndemic indicator*) happened, like more headaches, stomachaches, or lower sex drive?
- In what ways?
- Tell me more about that.

Now I am going to ask you about some more specific effects of experiencing (*insert syndemic indicator*)—both positive and negative ones. Let's start with negative effects.

3. How has (*insert syndemic indicator*) affected your behaviors related to your sexual health in a *negative* way?

Probes:

- Some examples are going to the doctor to get tested, talking to potential sex partners, or memory problems.
- Have any bad things happened sexually, that may have, in some way, been caused by (*insert syndemic indicator*)?
- How did these affect you?

4. Now, let's talk about any positive things that may have come out of experiencing (*insert syndemic indicator*). How has this challenge strengthened you or affected you *positively*, if at all?

<if pt describes strengths> Probes:

- substance use and sex, what are views?
- How do your strength and (*insert syndemic indicator*) relate to each other?
- How did it help you?
- Tell me more about that.
- What are some ways in which those strengths help you have safe sex, if at all?

<if pt replies that the syndemic indicator has only been problematic> Probes:

- Sometimes people use that expression, "What doesn't kill you makes you stronger." Has there been anything about this that has made you stronger?
- Are there any good things, even ones that were unexpected, that happened as a result of the challenging experience you've had. Some people say that having experienced hardships teaches them who their real friends are, for example. Can you think of anything like that that you learned?
- It sounds like there were a lot of negative things that came from this experience, and I can imagine how awful that has been for you. What have you learned from it that has made you a better person?

A. Intervention Suggestions (if there is time)

Next, I'd just like to ask your opinion on the goal of this project. There are many HIV prevention programs for other gay/bisexual/sexual minority men who've struggled with things like you have to help them stay sexually healthy. Have you ever participated in any programs like this before?

Probes:

<if yes>

- What was the experience like for you?
- What made it positive?
- What could have made it better?

<if no>

- That's common. These days, men do not utilize these programs. What has gotten in the way of you participating in a program like that?
- In trying to stay as healthy as possible—is there anything you hear from health care providers about HIV and gay men that you don't like?

We talked a lot about strengths to stay sexually healthy today. Do you have any ideas about how men could benefit from helpful things other men do to stay healthy?

Probes:

- How would that work?
- How would you want someone to convey that to you?

Closing

OK, those are all of my questions for you. Is there anything else that you'd like to add? Was there anything else that I should have asked?

Do you have any questions for me? *<if yes, answer as appropriate>* *<if no>* OK, then I'm going to turn off the audio recorder. *<turn off audio recorder>*

I'd like to thank you for talking with me today, and tell you again how much I appreciate your willingness to participate in this research. Thank you for sharing so much personal information with me. Your contributions will really help the project.

I would also like to check in with you to see how you're doing. We talked about a lot of different topics. How are you feeling? *<Discuss briefly, and normalize any reactions>*

I have a resource list for you today that I will copy and paste into your text chat screen now. *<give resource list and debriefing handout>* If, once you leave today, you continue to experience any distress related to this study, I encourage you to talk to someone on this list of resources related to health. They are knowledgeable about many of the issues we've discussed today.

Because we want to thank you for your time, we have a small token for you, of \$25 in Amazon gift cards, that we are sending out via email. Can I email it to the address on file *<confirm email address>*?

Rigorous research using interview methods involves a two-part process: (1) interviewing participants, like the interview we just did here, and (2) checking back in with them after we have analyzed the results. In 5-8 months, after I've interviewed other men and have combined the main themes you all spoke about, I would like to get back in touch with you to have a 30-minute interview, in which you would be compensated a \$10 Amazon gift card for your time, to see if you think the results are accurate. How comfortable are you with me checking back in? Would it be okay if I contacted you using the same email you provided early to schedule another 30-minute interview like this one?

Appendix C

Follow Up to Interviews

Warm-up & Orientation

<after explaining consent process again> Thanks for agreeing to participate in this second interview. I'm going to turn the tape recorder on now. *<turn on audio recorder>* If you recall, the first interview you participated in was geared toward learning about how you keep yourself sexually healthy, particularly related to preventing HIV acquisition. The goals of this second interview are a bit different. After I interviewed XX men during the past few months about what strengths they had, or positive things they benefitted from—that helped them stay sexually healthy—I analyzed all their responses and came up with a list of common themes from the group. My goal today is to further refine the results from my interviews by checking back in with you to see if the common themes I came up with seem accurate to you. My ultimate goal is to convey that information to the scientific community to create more effective HIV interventions. I may ask you some general questions and more specific ones to understand your story better. Are there any questions before we get started?

Main questions and probes

First, I will begin by presenting the main strengths the men in the previous interviews mentioned, and ask you what you think about them. We will go one by one.

I. Presentation of Results

<For each theme or strength I present>

1. Do you ever notice you or your friends doing this?

Probes:

- In what way?
- Tell me more about that.
- Could you imagine other men like you using this strategy, even if it's not true for you?
- Can you be more specific?

2. How does this factor in, or not factor in, to your life as way to stay sexually healthy?

Probes:

- Why does this play a role (or not) in your sexual health?
- How does it relate, specifically, to protecting yourself from HIV?

- If you agree with this as a strength or benefit, can you share one example with me of how it plays out in your life? How specifically does it help you remain HIV-negative?
3. In trying to stay sexually healthy, is there something you find helpful that is almost like this, but not quite?
- Probes:
- What is an example?
 - Tell me more about that.
 - Is there anything similar to this that you think is helpful in staying sexually healthy?

Closing

OK, those are all of my questions for you. Is there anything else that you'd like to add? Was there anything else that I should have asked?

Do you have any questions for me? *<if yes, answer as appropriate>* *<if no>* OK, then I'm going to turn off the audio recorder. *<turn off audio recorder>*

You have been so integral to this research by talking so much I appreciate your willingness to participate in this research. Thank you for sharing so much personal information with me. Your contributions will really help the project.

I would also like to check in with you to see how you're doing. We talked about a lot of different topics. How are you feeling? *<Discuss briefly, and normalize any reactions>*

I have a resource list for you today that I will copy and paste into your text chat screen now. *<give resource list and debriefing handout>* If, once you leave today, you continue to experience any distress related to this study, I encourage you to talk to someone on this list of resources related to health. They are knowledgeable about many of the issues we've discussed today.

Because we want to thank you for your time, we have a small reimbursement for you of \$10 that we are sending out via email. Can I email it to the address on file *<confirm email address>*? Thanks again and take care.

Appendix D

Table 2

Table 2

Resilience Resource of HIV-Negative Sexual Minority Men who Meet Criteria for 1+ Syndemic Condition

Citation	Resource	Operational Definition	Authors' Label	Theme
Antoni (1991)	Progressive muscle relaxation	# of times /week practiced relaxation	Coping strategies, buffering effects	BX, in general
Berg (2008)	Engaging in mental health treatment (17% inpatient, 72% outpatient)	Clinical interview self-report	--	BX, in general
Buchbinder (1996)	Willingness to participate in an HIV vaccine trials: 37% "definitely", 57% "might be" or "probably"	4-point Likert scale ranging from "definitely" to "not at all" willing to participate in future HIV vaccine trials	--	COG
Conley (1999)	Choosing to learn one's HIV status	Choosing to learn results of an HIV serostatus test	--	BX, about HIV
Folkman (1996)	1. Positive meaning of caregiving (Range 0 -24, M = 20, SD = 2.38, so 75 th %ile)	1. Investigator-created Likert scale items (e.g., "caregiving shows love for my partner). 2. Dyadic Adjustment Scale	Psychosocial resources	1. COG 2. REL

Table 2, continued

Citation	Resource	Operational Definition	Authors' Label	Theme
	2. Greater dyadic adjustment between partners (Range 0-110, M = 85.40, SD = 9.40, so 75 th %ile)			
Forney (2012)	1. Identifying as Black or Latino 2. Seroconcordant with main partner (82.2%) 3. Positive peer norms about condom use	1. Demographics question 2. HIV status of main partner during last sex encounter 3. 4 investigator-created questions about friends' condom use	Protective factors	1. ID, innate 2. BX, about HIV, sex 3. REL
Gray (1999)	1. Satisfaction with social support (M = 29, SD = 6.5, possible range = 6-36, so in 75 th ile because cutoff = 28.5) 2. Acceptance of situation (94%) 3. Positive reinterpretation (79%)	1. Social Support Questionnaire & 4 investigator-created questions about social support for caregiving 2. COPE Scale	Coping strategies (Lazarus & Folkman)	1. REL 2. COG 3. COG
Halkitis (2006)	Seroconcordant with main partner (87.6%)	1. Main sex partner is also HIV-negative, as measured by the Sexual Activity Primary Partner Scale	--	BX, about HIV, sex

Table 2, continued

Citation	Resource	Operational Definition	Authors' Label	Theme
Hays (1990)	Sought help for HIV/AIDS concerns (77%)	Investigator-created questions about if, whom, and how helpful help sources were.	Buffer or help source	BX, about HIV
Kurtz (2012)	1. Coping self-efficacy (31% fall in the 75 th %ile, greater than HIV+) 2. Social engagement (30% fall in the 75 th %ile, also greater than HIV+)	1. Coping Self-Efficacy Scale 2. Social Engagement Scale (# of social events last 90 days)	Resilience	1. COG 2. REL
Leserman (1994)	1. Gay self-acceptance 2. Self-disclosure to parents 3. Gay socializing, above 75 th %ile: (Range 1-5, M = 3.82, SD =1.08)	1. Coping and Change subscale 2. Dichotomous variable representing whether parents know participant's sexual orientation 3. Index ranging 0 (no/almost no socializing with gay men) to 1 (all/almost all socializing with gay men)	--	1. COG 2. BX, in general 3. REL
Liu (2008)	1. Health care coverage (72%-89%, depending on sample) 2. Doctor visit in last 12 mos. (over 80%) 3. Earning >\$100,000/yr 2x more likely to heard of PEP, not PrEP	Investigator-created demographic questions	--	1. ID, environmental 2. BX, general 3. ID, environmental 4. COG

Table 2, continued

Citation	Resource	Operational Definition	Authors' Label	Theme
	4. Willingness to use PrEP if proven safe & effective (67%)			
Lyons (2012)	1. Some or a lot of social support (81%) 2. Part- or full-time job (89%) 3. Approx. \$50,000+ US income (64%)	Investigator-created demographic questions	--	1. REL 2 & 3. ID, environmental
Mansergh (2010)	Compared to HIV+ men: 1. Be 18-29 yrs old 2. Identify as White or "other" race 3. College degree or greater 4. Greater intent to use condoms consistently (<i>Range</i> 1-5, <i>Mdn</i> = 4, significant in 75 th %ile) 5. Greater self-efficacy for safer sex (<i>Range</i> 1-5, <i>Mdn</i> = 3.43, not	1, 2, 3. Demographics questions; 4. One item, investigator-created, assessing intent to always use a condom during sex in the next 3 months; 5. Six items, investigator created, assessing confidence in ability to use condoms	--	1 & 2. ID, innate 3. ID, environmental 4 & 5. COG

Table 2, continued

Citation	Resource	Operational Definition	Authors' Label	Theme
	significant in 75 th %ile)			
Muriuki (2011)	1. 59.7% participated in 1+ civic group 2. Committed primary relationship (53.2%) 3. 30+ years old (65%) 4. College degree (74%) 5. >\$80,000 annually (28%)	1. # of civic groups involved in 2. Relationship with "a man you are currently in love with or feel a special commitment to" 3, 4, 5. Demographics question	Protective factors	1 & 2. REL 3. ID, innate 4 & 5. ID, environmental
Pakenham (1994)	Compared to HIV+ men, more close friends in their network, 7.2 friends out of 10 possible, approximating 75 th %ile ($p < .001$).	Social Support Resources Scale (SSRS; Vaux & Harrison, 1985); listed up to 10 persons who provided ongoing support for coping with AIDS epidemic	--	REL
Philip (2010)	48% serosorted	1. Higher frequency of condom use during anal intercourse with HIV+ / unknown status partners than with HIV- partners 2.	Protective effect	BXs, about HIV, sex
Rosengard (1997)	1. Subjective social integration above 75 th %ile for no SI group ($M = 17.66$, $SD = 3.37$), lifetime	1. 4 items from Social Support Questionnaire (O'Brien et al., 1993) about perceived integration and connectedness to others 2. Life Orientation Test (Scheier & Carver, 1985) 3. 23 items Social Support Questionnaire (O'Brien et al., 1993) assessing several subtypes of support	Protective factors	1. REL 2. COG 3. REL 4. BX, general 5. COG

Table 2, continued

Citation	Resource	Operational Definition	Authors' Label	Theme
	SI group ($M = 16.01$, $SD = 2.87$), and low SI group ($M = 16$, $SD = 3.62$). 2. Optimism 3. Social support 4. Confrontive coping 5. Accepting responsibility	4 & 5. Ways of Coping Questionnaire (Folkman et al., 1994)		
Schneider (1991)	Confidant support ($M = 2.8$, $SD = 0.5$).	# of current and past people that can be counted on for "understanding or support"	Resistance factor	REL
Shoptaw (2002)	More likely to have post-high school education (80.8%) compared to HIV-peers (61%)	Demographics question	--	ID, environmental
Strathdee (2000)	1. 63% willing to participate in HIV vaccine trials 2. 91% discussed HIV w/ anyone ever 3. Social support ($Mdn = 48$, $Range = 26-130$, higher scores indicate lower support; significant for	1 & 2. Dichotomous (yes/no) 3. Instrumental-Expressive Scale	--	1. COG 2. BX, about HIV 3. REL

Table 2, continued

Citation	Resource	Operational Definition	Authors' Label	Theme
	bottom 25 th %ile because < cutoff 52)			
Theodore (2002)	1. Internal locus of control about preventing HIV 2. Commitment to safer sex	1. Attributing HIV prevention to luck 2. Not reported	--	COG
Viney (1991)	Scored higher than HIV+ men on: 1. Competence ($M = 2.8, SD = 0.73$) 2. Good feelings ($M = 1.36, SD = 0.56$)	1. Origin Scale (assesses personal intention in life) 2. Positive Affect Scale	Strengths	COG

Note. ID = identity descriptor; BX = behavior; COG = cognition or emotion; REL = relationship. %ile = percentile.