

It's About Time: A Temporal Analysis of Minority Strengths/Stress Effects on Drinking
Behavior Among Sexual Minorities

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A dissertation submitted in partial fulfillment of the requirements for the Degree of Doctor of
Philosophy in the Brown University Graduate School and Brown University School of Public
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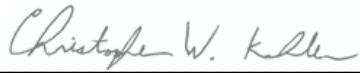
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Surace, A., Kahler, C. W., & Wray T. B. (in press) Associations between daily discrimination experiences and drinking behavior among men who have sex with men: Results from an Ecological Momentary Assessment study. *Psychology of Sexual Orientation and Gender Diversity*.

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Guy, A.A., Zelaya, D.G., **Surace**, A., Mastroleo, N.R., Pantalone, D.W., Monti, P.M., Mayer, K.H., Kahler, C.W. (in press). Discrimination and alcohol problems among heavy drinking HIV-positive men who have sex with men: the buffering effect of a brief Motivational Intervention to reduce alcohol use. *Drug and Alcohol Dependence*.

Restar A, **Surace** A, Adia A, Ogunbajo A, Cu-Uvin S, Operario D. (in press) Characterizing problematic drug use among transgender women and cisgender men during the emerging HIV crisis in the Philippines: Implications for policy research. *AIDS Education and Prevention*.

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Winter, T., Riordan, B., **Surace, A.**, Scarf, D., & Jose, P. (2020, November 2). A tutorial on the use of informative Bayesian priors for minority research. <https://doi.org/10.31234/osf.io/pk8j9>

Kahler, C.W., **Surace, A.**, Durst, A., Pantalone, D.W., Mastroleo, N.R., Miguez, M.J., Bueno, D., Liu, T., Monti, P.M., & Mayer, K.H. (2019). Telehealth interventions to reduce alcohol use in men with HIV who have sex with men: Protocol for a factorial randomized controlled trial. *Contemporary Clinical Trials Communications*, 16, 100475.

Restar, A., Jin, H., Breslow, A. S., **Surace, A.**, Antebi-Gruszka, N., Kuhns, L., Reisner, S. L., Garofalo, R., Mimiaga, M. J. (2019) Developmental Milestones in Young Transgender Women in Two American Cities: Results from a Racially and Ethnically Diverse Sample. *Transgender Health*, 4(1), 162-167.

Restar, A. J., **Surace, A.**, Ogunbajo, A., Edeza, A., & Kahler, C. (2019). The HIV-Related Risk Factors of the Cisgender Male Sexual Partners of Transgender Women (MSTW) in the United States: A Systematic Review of the Literature. *AIDS Education and Prevention*, 31(5), 463-478.

Surace, A., Riordan, B. C., & Winter, T. (2019). Do New Zealand sexual minorities engage in more hazardous drinking than non-sexual minorities? *Drug and alcohol review*.

Winter, T., Riordan, B. C., **Surace, A., & Scarf, D. (2019).** Association between experience of racial discrimination and hazardous alcohol use among Māori in Aotearoa New Zealand. *Addiction*.

Surace, A., & Riordan, B. C. (2019). It could get better: A response to reports of Sexual Minorities' life satisfaction in New Zealand. *Australian & New Zealand Journal of Psychiatry*, 0004867419887801.

Lelutiu-Weinberger, C., Manu, M., Ionescu, F., Dogaru, B., Kovacs, T., Dorobăntescu, C., Predescu, M., **Surace, A., & Pachankis, J. E. (2018).** An mHealth Intervention to Improve Young Gay and Bisexual Men's Sexual, Behavioral, and Mental Health in a Structurally Stigmatizing National Context. *JMIR mHealth and uHealth*, 6(11), e183.

Kahler, C.W., **Surace, A.,** Gordon, R.E.F., Cioe, P.A., Spillane, N.S., Parks, A., Bock, B.C., & Brown, R.A (2018) Positive psychotherapy for smoking cessation enhanced with text messaging: Protocol for a randomized controlled trial. *Contemporary Clinical Trials*

Golub, S. A., Lelutiu-Weinberger, C., & **Surace, A. (2018).** Experimental Investigation of Implicit HIV and Preexposure Prophylaxis Stigma: Evidence for Ancillary Benefits of Preexposure Prophylaxis Use. *J AIDS Journal of Acquired Immune Deficiency Syndromes*, 77(3), 264-271.

Golub, S. A., Gamarel, K. E., & **Surace, A. (2015).** Demographic Differences in PrEP-Related Stereotypes: Implications for Implementation. *AIDS and Behavior* [epub 2015 July 05].

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Golub, S. A., Gamarel, K. E., Rendina, H. J., **Surace, A. & Lelutiu-Weinberger, C.L. (2013)** From efficacy to effectiveness: Facilitators and barriers to PrEP acceptability and motivations for adherence among MSM and transgender women in New York City. *AIDS Patient Care & STDS* (27)4, 248 - 254.

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Golub, S.A., Gamarel, K.E., **Surace, A.**, & *Lelutiu-Weinberger, C. (2013, June). *Impact of PrEP messaging factors on comprehension, adherence motivation, and risk compensation intentions*. Paper presented at the 8th International Conference on HIV Treatment Adherence, Miami, FL.

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Kowalczyk, W., **Surace, A.**, Tomassilli, J., Parsons, J.T., & Golub, S.A. (2011, May). *The impact of executive function on the day level association of methamphetamine and missed medication*. Paper presented at the 6th International Conference on HIV Treatment Adherence, Miami, FL.

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Key Terms and Abbreviations

Black Indigenous people of Color (BIPOC) – An umbrella term used to refer to various communities of color (i.e., non-White people).

Discrimination – The mistreatment of different groups of people based on perceived differences in characteristics/attributes (e.g., race/ethnicity).

Gender minority (GM) – A term used to describe an individual whose gender identity does not align with those held by the majority of the surrounding society (e.g., those with a transgender/non-binary identity).

Latine – A gender neutral term used to refer to someone of Latin American (Hispanic) descent.

Men who sex with men (MSM) – A term used to describe male identified individuals who engage in sexual behavior with other male identified individuals. This includes individuals who may or may not also identify as a sexual minority. For example, a man who identifies as heterosexual and engages in sexual behavior with other men would be classified as an MSM.

Sexual Minority (SM) – A term used to describe an individual whose sexual identity, orientation, and/or practices differ from the surrounding society (e.g., those who identify as gay, lesbian, or queer)

Social Marginalization – The practice/occurrence whereby certain groups of people are excluded from aspects of society. This is resultant of differences in power relationships between social groups (e.g., the practice of “redlining” whereby Black Americans were denied housing in specific US neighborhoods).

Socioeconomic status (SES) – A term used to describe a person’s access to resources and social position. This encompasses factors such as a person’s educational attainment, income, and employment status.

Stigma (aka Social Stigma)- The negative perception of a person or groups of persons based on perceived characteristics and/or attributes (e.g., race/ethnicity). As posited by Hatzenbuehler et al (2013) stigma is the “co-occurrence of labeling, stereotyping, separation, status loss, and discrimination in a context in which power is exercised.”

Chapter 1: Introduction

Sexual Minority Health

Alcohol use is one of the leading contributors of death in the world [1] and excessive drinking results in numerous well-documented physical/mental health problems and social issues [2, 3]. Alcohol use impacts neurocognitive functioning (including disruptions in problem solving and decision making) and brain structure [4-8]. Heavier drinking has also been associated with increased engagement in condomless sexual behaviors [9-12], which can lead to sexually transmitted infections including HIV.

Sexual minority (i.e., those whose sexual identity, orientation, or practices differ from most of the surrounding society, [SM]) populations fare worse compared to non-SM populations regarding alcohol use and alcohol-related harms. Although SMs only make up a small proportion of the U.S. population [13], this group is disproportionately burdened by health issues both precipitated and exacerbated by alcohol. SMs display higher rates of substance use (including alcohol) and more substance use related problems than the general population [14, 15]. In addition SMs show increased rates of depression [16, 17], poor coping skills [18], and heightened anxiety [19], which have been associated with problematic substance use behavior [20-22]. Furthermore, there is evidence that SMs experience childhood sexual assault more often than non-SM populations, which has also been associated with problematic alcohol use [23].

Attempts to account for the high rates of alcohol-related health issues in SMs have highlighted that these outcomes may reflect unique stressors and social contexts that place SMs at risk due to their sexual identity [19, 24]. Although efforts to reduce heavy drinking among SM group members continue, these intervention efforts have shown limited efficacy when not tailored to specific social contexts of SMs [25-27]. Such failures may be due to a lack of

consideration of the societal context within which SMs live.

Minority Stress

SM individuals have been socially marginalized throughout North American history. Historically United States (U.S.) laws (at both the local and state level) were written to explicitly criminalize any sexual behavior considered “deviant” or “immoral” [28]. Concurrently the pathologizing of non-heteronormative behavior by behavioral scientists gave objective merit to the perceived “otherness” of SM individuals [29]. Although this cultural hegemony has shifted with the gay rights movement in the U.S. and policy changes protecting LGBT individuals currently exist [30], discrimination continues to impact the lives of SMs today. Research has shown that SM group members continue reporting experiences of discrimination including harassment [31], hostility, and feeling “invisible” [32]. Such experiences are not isolated incidents but make up a steady undercurrent of discrimination, which impacts the daily lives of all SM group members [33].

The degree to which SM group members experience discrimination varies by geographic region within the U.S. Regional/local norms across the U.S. are heterogeneous. Although some regions of the U.S. show tolerance of SM populations, other areas are less receptive to deviation from traditional gender/sexual roles [34]. Although de jure discrimination (i.e., anti-sodomy laws) is prohibited, de facto discrimination of SMs exist in several states via HIV non-disclosure laws. In essence, these laws emulate past sodomy laws by penalizing sexual acts between individuals most impacted by HIV including men who have sex with men (MSM). Such statutes ostensibly put in place to reduce HIV transmission, have failed to account for behaviors which mitigate HIV transmission risk [e.g. viral suppression or condom use; 35]. Conversely, other regions of the U.S. have made concerted efforts to protect LGBT individuals from discrimination. For instance, the state of Rhode Island is widely considered one of the most

accepting states towards LGBT group members; state statutes offer protections against discrimination based on sexual orientation in public accommodation [36], employment [37], housing, and credit [38]. Despite such protections and the impression that RI is a safe place for SMs to live and thrive, discrimination based on sexual orientation does occur [39].

The way the laws differentially impact SMs constitute stigma, a construct defined as “the co-occurrence of labeling, stereotyping, separation, status loss, and discrimination in a context in which power is exercised” [40]. Stigma (in the form of discrimination) has consistently been linked to negative health outcomes [40-44] including potentially hazardous alcohol use [45-48]. Given that SMs appear to be more susceptible to heavy drinking and alcohol-linked mental health problems (e.g., depression, anxiety) than non-SM populations, it is plausible that stigma associated with SM group member status contributes to alcohol use behavior. One theoretical framework that has gained traction for explaining how discrimination lead to poor health and mental health among SMs is the Minority Stress framework [40].

According to the Minority Stress framework, members of a minority group experience higher levels of overall stress due to experiences of discrimination that arise due to their minority group membership [49, 50]. Furthermore, this framework posits that minority stress is additive; membership in multiple minority groups (e.g., being labeled as both Black and a lesbian) confers additional stress to individuals than carrying only a single minority group membership. Research has in fact supported this claim [40, 50-53]. Based on the evidence it seems likely that minority stress is a real, pernicious force in the lives of SMs. Effective intervention on discrimination/minority stress and its associated impact on alcohol use requires considering the possible mechanisms by which minority stress influences the behavior of SMs.

Evidence supports the theory that minority stress influences drinking behavior in SMs [19, 54-56]. Unfortunately, the nature of much of this research precludes a nuanced understanding of the ways in which minority stress impacts behavior.

Much of the minority stress research has utilized large national datasets to demonstrate that minority status is predictive of elevated drinking rates; for example, the Stockholm Public Health Cohort [57], the Australian Longitudinal Study on Women's Health Survey [58], and the New Zealand Health Survey [59]. These surveys are excellent for displaying broad population trends and are critical tools in designing health policies. However, such large-scale surveys offer a limited view of discrimination's influence on behavior. One major limitation of such research has been overreliance on broad proxy measures of discrimination which do not capture the lived experiences of SM communities. For example, when national surveys lack specific measures of discrimination, authors often measure health disparities between SM and non-SM groups and attribute these discrepancies to SM status [55, 60, 61]. The implication of such research being that holding a stigmatized identity (i.e., SM) will result in discrimination experiences, which contributes to health disparities.

Large-scale studies that have directly measured discrimination's influence on health often have not taken regional differences in stigma into account [62, 63]. Stigma is highly endemic—the ways in which stigma manifests (i.e., discrimination experiences) varies across geography and culture [64], and different forms of discrimination have been associated with different health disparities [65, 66]. Oftentimes large-scale surveys will only measure specific overt forms of discrimination such as victimization [67] or assault [65]. Such studies do not capture the more common daily experiences of many SMs such as common “microaggressions” [e.g. subtle forms of discrimination towards minority groups; 68] that do influence SMs' health and alcohol use

[69]. In addition, such research does not capture societal-level conditions, cultural norms, and institutional practices that constrain the opportunities, resources, and wellbeing for stigmatized populations ["structural stigma"; 70, 71]. Some researchers have attempted to measure regional variations in stigma by analyzing health disparities across areas with or without statutes protecting SMs [44, 60, 63]. Although this research sheds light on variations in discrimination, nevertheless such research is relying on proxy measures of discrimination and cannot tell us mechanistically how discrimination influences behavior.

Beyond large-scale surveys, several studies have used multi-item scales to assess with more granularity how SMs are impacted by discrimination. One measure used in such research is the Gay-related stressful life events scale [GRS; 72]. This 12-item survey of stressful events specifically related to SM status records recent (i.e., past 3 months) experiences. Participants indicate whether they had experienced ("yes" or "no") any of the listed discrimination events (e.g., being ridiculed because of one's sexual orientation). Another validated measure of discrimination is the multiple discrimination scale [MDS; 73]. This measure also captures perceived discrimination by asking respondents to report if they experienced any ("yes" and "no") of 10 different discrimination events in the past year. Items cover violence (e.g., physical assault); institutional discrimination (e.g., employment denial), and interpersonal discrimination (e.g., being ignored, excluded, or avoided). The MDS uses parallel items (10 items each) to capture discrimination due to race/ethnicity, HIV-serostatus, and sexual orientation. Another measure of discrimination is the Gay-Related Rejection Sensitivity Scale [GRRSS; 74]. This 14-item self-report scale assesses respondents' anticipated likelihood of experiencing rejection by heterosexuals in ambiguous situations (e.g., "You've been dating someone for a few years now and you receive a wedding invitation to a straight friend's wedding. The invite was addressed

only to you, not you and a guest”). For each situation, participants indicated the degree to which they would expect rejection because of their sexual orientation on a 6-point scale with the endpoints “*very unlikely*” and “*very likely*”.

Each of the described measures have illuminated the ways in which discrimination is associated with individuals’ health risk behaviors. For example, the GRS and MDS are valid measures of past experiences of discrimination whilst the GRS measures internalized feelings of rejection due to sexual orientation. By design these measures quantify previous experiences of discrimination and internalized stigma. As such these measures cannot capture the day-to-day fluctuations in daily experiences of discrimination. The research is unequivocal- it is known that discrimination impacts health and contributes to health disparities. The next step in minority stress research is to determine how daily experiences of discrimination influence behavior. Previous measures (though validated) were designed to measure more stable constructs of stigma and are therefore not appropriate to this task. There is a need to expand upon this research through development of in-situ measures of discrimination which can measure this phenomenon more accurately. Such measures will elucidate how to potentially reduce health disparities between SMs and non-SMs.

The current state of the minority stress literature does not clearly demonstrate *how* experiences of discrimination impacts behavior. To date most studies that have used longitudinal approaches to examine the association between discrimination and SM health have focused on mental health issues. For example, research suggests that exposure to SM-related stress is associated with long term changes in anxiety [75] suicidality [76] and overall distress [67]. One notable exception to this trend, however, is a study done by Newcomb and colleagues [77]. This research found that sexual orientation-based victimization was associated with increased alcohol

use across time for female sexual minority youth. This research suggests there is some sort of causal relationship between discrimination and health behaviors (including alcohol use). However, none of this research addresses the mechanisms through which discrimination influences behavior.

Another limitation of the previously mentioned research is its operationalization of stigma in terms of identity salience (i.e., being aware of one's identity as a minority). Although there is validity in assuming that reminding one of their marginalized identity may be distressing [78] this ignores the resiliency many SM community members derive from such identification. The theory of LGBT strengths [79] posits that acknowledgement and acceptance of such identities can actually be a source of resilience and strength. There is a dearth of LGBT strengths research compared to the minority stress framework, but evidence does exist in support of this theory. For example, research suggests that successfully navigating SM identity development and stigmatizing experiences may increase coping skills [80]. In addition, an intervention designed to tap into such resilience among SMs showed efficacy in reducing mental disorder symptoms and alcohol use [81]. Despite such promising results, there is a lack of longitudinal evidence on how such SM strengths influence alcohol use behavior.

There is a need to address these gaps in the literature and expand upon the research examining minority stress, LGBT strengths, and alcohol use. A nuanced understanding of how fluctuations in discrimination proximally influence behavior is necessary to address the evident alcohol use disparities between SM and non-SM populations. Although endemic forces like structural stigma are unlikely to vary much daily, more acute discrimination experiences may occur at any time. In addition, research that has examined how experiences of discrimination relate to health are generally retrospective [31, 47, 82, 83] and therefore limited by the

inaccuracies and biases that will be outlined below. Utilization of longitudinal data collected in real time, such as ecological momentary assessment (EMA), is one way in which to elucidate this phenomenon.

Ecological Momentary Assessment

Ecological Momentary Assessment (EMA) is an umbrella term for any kind of data collection consisting of repeated assessments of participants' behaviors, which occur near real-time [84]. EMA methods can take many forms; for example, a study in which participants are asked to record their mood at various times during the day would be considered an EMA study. Another example of EMA research would be a study in which a wearable automated device records participants' blood pressure at set times throughout the day. Still another example of EMA research would be a study in which participants are asked to fill out a survey every evening chronicling their behaviors throughout the preceding day. Although each of these examples differ in content and specific data collection techniques, they all share key features of EMA: 1) all represent real-time data collection (i.e. the data are being collected at the moment of or close to when the behavior of interest occurs); 2) all collect data in situ (i.e. in the environment where the behavior actually occurs) and; 3) they all consist of multiple repeated assessments over time.

Due to the unique nature of EMA methods, data collected via EMA are not subject to the limitations of retrospective self-report measures. For example, research suggests that people often inaccurately report past experiences [85-87] but are much more accurate at describing their current state/behaviors [88-90]. EMA data collection therefore allows researchers to gain a more accurate measurement of actual outcomes of interest by bypassing the need for participants to reconstruct past experiences from memory.

EMA data collection is also distinct in that it avoids potential biases associated with recalling events [91]. A notable limitation of traditional retrospective data collection techniques

is that these measures are generally “event” focused. Retrospective techniques capture rich data on a behavior of interest and potential antecedents, but do not capture measures of potential antecedents prior to the behavior occurring and therefore have limited prognostic value. For example, research on the association between affect and drinking using retrospective assessments may involve asking participants how they felt immediately before/after drinking. Analyses may find that certain emotions were predictive of drinking events, but since affect was measured retrospectively and in the context of drinking it is not clear that affect influenced behavior. That is, there is a lack of data on affect outside of the context of drinking, which precludes analysis of how fluctuations in the predictor variable (affect) influences behavior (drinking). It is possible participants may have engaged in drinking behavior regardless of their affective state. EMA data collection allows for random prompting and assessment to serve as a control- allowing for a within-person comparison of how fluctuations in a targeted factor influences a behavior of interest.

EMA data collection techniques are further distinct from traditional retrospective data collection in that they do not rely on human memory, which is reconstructive. People often do not recall events as whole examples, but rather must reconstruct memories based on heuristic associations [85], especially in regards to behaviors which occur somewhat regularly [91]. For example, utilizing a Timeline Followback [an often used retrospective measure which utilizes a calendar to record behavior [TLFB]; 92, 93, 94] for alcohol use may result in participants reconstructing drinking events based on temporal cues. For example, a respondent may report they drank on a Friday because they often go out after work with colleagues on Fridays. In this case the participant is reporting a presumed behavior which may or may not be accurate. Such reconstruction of past events may also lead participants to inaccurately attribute moods/emotions

to past events [95].

Another way EMA data collection is different from retrospective assessments is it allows for the examination of how context influences behavior. With retrospective assessments, between-subject comparisons of most common surveys of people's motivations are predicated on the assumption that individuals generally engage in behavior (e.g., drinking) for the same reasons across contexts. This assumption, however, has been shown to be false; research has shown for example that individuals' motivations to engage in coping behavior vary daily [96, 97]. Previous research on motivations to drink has likewise been shown to vary substantially within-person [98]. EMA can demonstrate how the environmental context in which behavior occurs can influence such within person variations. Thus, EMA can be a powerful tool in developing highly specific and accurate behavioral prediction models.

In addition, evidence suggests that the accuracy of retrospective self-report measures is impacted by participants' current emotional state [99]. Individuals often assume their behaviors/moods are more stable than they are, resulting in reports of previous behaviors that more closely align with their current behaviors. For example, retrospective estimates of substance use have been found to be more representative of participants' current use at the time of assessment rather than of the time in question [100, 101]. People even underreport on the TLFB which is among the best retrospective measures available [102]. EMA data eschews such issues by collecting behavioral data in real time. Despite the benefits of EMA methods their adoption has been slow due to the cost and complexity involved in their implementation.

EMA data collection methods have been utilized for decades [103-105]. For example, sociologists have long relied on direct observations of research participants in their natural environments to generate data [106]. Prior to advances in mobile technology, however,

numerous logistical barriers prevented EMA techniques from widespread implementation. For example, direct observation of drinking behavior is not feasible due to the intense number of resources required to observe participants for a length of time. Alternative EMA methods such as hand-written daily diaries have been used in the past, but there have been problems with participant compliance [107-109] including participants completing entries long after the behavior occurred [110] or entering inaccurate data [111, 112]. With limited ability to monitor participants' use of data collection tools, the accuracy of said data was questionable and therefore not worth the expense of engaging in EMA methods. However, with the advent of readily available mobile technologies these previous issues with EMA data collection are now mostly moot. Mobile technology allows for immediate data collection, which can be tracked by researchers. The proliferation of smart phones with easy internet access has made EMA implementation more feasible than ever and has reduced the burden on participants to comply with such protocols.

EMA data collection techniques avoid potential biases and offer much more accurate measures of behavior compared to traditional retrospective research designs. However, the value in EMA research goes beyond its accuracy: what EMA research does that other data collection techniques cannot is allow researchers to model individuals' behavior using multiple strata of factors, which vary over time. That is, through collecting data as it occurs, we can detect how subtle variations in individuals' behavior, and social context influence future behavior. Subsequently we are better able to predict future behavior and can intervene in precisely the right manner/time to avert negative health outcomes.

The Present Work

The present research adds to the literature on SM alcohol related health disparities in several ways. First, this research will utilize formative research to create validated measures of SM

discrimination/strengths that can be used to enhance EMA research on SM populations. As previously stated, there is a lack of specificity in the minority stress literature regarding measures of discrimination—measures of discrimination often fail to consider regional/cultural context. By utilizing community members' lived experiences of discrimination, I developed an ecologically validated measure of discrimination which more accurately quantifies this construct. Second, this research expands upon the literature by also measuring SM strengths. Past literature has treated minority identity as inherently negative. However, the lived experiences of minoritized individuals has been that identity may in some contexts serve as a source of resilience and strength [113]. My research demonstrates how both negative and positive experiences due to minority identity (e.g., discrimination due to SM identity and social support and solidarity among those who share an SM identity) may be associated with alcohol use behavior. Finally, my research adds to the literature by utilizing EMA methodologies to offer a highly nuanced and descriptive image of these phenomena. The secondary data analysis of study one (chapter two) expands upon previous work by examining the impact of stigmatization on alcohol use across a longer temporal span. In addition, utilizing EMA in study three (chapter four) demonstrates how experiences of discrimination/minority strengths impact behavior at the day-level.

Structure

This dissertation is organized into three parts. Part one focuses on study one: a replication of previous research which utilized EMA methodologies to examine the impact of discrimination on substance use behavior among SMs. Part two then describes the two studies (study two and three, chapters three and four respectively) which were directly informed by study one (chapter two). Study two (chapter three) utilized qualitative interviewing techniques to determine endemic forms of LGBT stigma and strengths in the New England region. The resultant qualitative analyses informed the creation of measures for study three (chapter four). Study three (chapter

four) details an original EMA study conducted by the author- the goal of which was to determine how experiencing discrimination and strengths due to identity was associated with day-level alcohol use. The final section of this dissertation discusses all study findings and implications for future research.

Aims

Part 1 has one study: study one. Study one consists of secondary data analyses of an EMA research study [48] (N=100) on the influence of perceived discrimination on drinking among SM men. Study 1 was funded by P01AA019072.

Study one was meant to expand upon the research conducted by Livingston et. al. [114]. The goal of this research was to investigate the role of perceived sexual orientation discrimination on daily and weekly drinking among MSM using EMA data. To date, several studies have found an association between discrimination and health risk behaviors (e.g., stimulant use) among MSM [115]. However, such studies are uncommon, therefore it is necessary to replicate and expand upon this work to confirm their results. To this end, Study one expanded the temporal framework to determine potential delayed effects of minority stress exposure on drinking. Research suggests that experiencing discrimination can impact drinking days after the experience [116-118].

Part 2 contains studies two and three. Study two utilized qualitative research methods to inform the creation of measures for study three. Previous research that has linked experiences of stigma to individual instances of alcohol use [119, 120] have not accounted for endemic variations in discrimination; even validated measures of discrimination may not be reflective of the specific cultural context in which SMs live. That is, although SMs encounter similar experiences of discrimination across cultural/geographical contexts, there are some ways in which stigma uniquely manifests in different regions. For example in progressive areas where legal protections for LGBT individuals exist overt discrimination (e.g. hate crimes) is less

prevalent compared to places where such statutes are absent [121]. Nevertheless, stigma in such areas persists as evidenced by health disparities between SM and non-SM populations in such progressive regions [122].

Concurrently, evidence suggests that SMs often display qualities which help them adaptively cope with life stressors (e.g., SM strengths). Such SM strengths may moderate discrimination experience's influence on alcohol use. For example, research suggests that interventions designed to tap into SM strengths in the face of discrimination can reduce alcohol use among SMs [81]. Despite such promising results, there is a lack of evidence on how such minority strengths influence alcohol use behavior. Therefore, study two was designed to investigate the ways in which New England-based SMs experience SM strength and utilize them to overcome adversity. The data gleaned from this research will be used to develop measures for study three.

In addition, study two also examined the ways in which gender and sexual identity intersect to confer strength. Qualitative research suggests women may be more efficient at deriving resilience and do so from different sources (e.g. spirituality) than men [123, 124]. In addition, work within the LGBT strengths field has shown that SM identity can be a source of resilience and strength [125]. To date, however, there has been less work done on the confluence of gender and LGBT strengths. There is a need to investigate the unique ways gender moderates the relationship between discrimination/strengths and health behaviors. To address these issues, study two of this research will utilize qualitative interviews with local SMs' to inform the measures of SM stigma/strengths among participants. The data collected in study two will serve also to develop the EMA measures for study three.

Study three represents the culmination of my dissertation research. The goal of study

three was to replicate and expand upon the work of Livingston et al [114] and the secondary data analyses conducted in study one. In this study, measures of discrimination and strengths developed from the results of study two. These measures were pilot tested and refined before being implemented in the full EMA study. During the full study, participants engaged in the EMA study procedures for a maximum of 31 days. The goal of this work was to determine how experiences of discrimination and strengths were associated with alcohol use at the day-level.

Part 1

Chapter 2: Study 1: The association between sexual orientation discrimination and drinking among men who have sex with men: Results from an ecological momentary assessment study.

Research has shown that experiencing discrimination increases substance use, including alcohol, among men who have sex with men (MSM). The goal of the present research is to replicate and expand upon this work to test whether perceptions of sexual orientation discrimination predict drinking among MSM on the same day as well as later in the same week. Data from this study came from an ecological momentary assessment study examining MSM sexual decision making ($N = 100$). Participants were adult sexually active HIV negative cisgender MSM who engaged in recent alcohol use. Recruitment took place in the northeastern U.S. from January 2016 to October 2018. Mixed effects models indicated that perceived sexual orientation discrimination was not significantly associated with the number of standard drinks consumed nor with the odds of heavy drinking at either the day or week level. In addition, we found a significant negative interaction between race/ethnicity and perceived discrimination: Black, Indigenous, and people of color (BIPOC) participants who perceived being discriminated against due to their sexual orientation drank less than on days they did not perceive such discrimination. Our results suggest that the effect of discrimination on drinking in MSM is moderated by race, but these data cannot explain why. One possibility is that BIPOC MSM experience sexual orientation discrimination in different contexts or respond to discrimination differently than White MSM. Future research should expand upon how the intersection of identities, for example gender and BIPOC identities, further moderates the relationship between discrimination and drinking.

Introduction

Compared to heterosexual populations, sexual minority (i.e., those whose sexual identity, orientation, and/or practices differ from the surrounding society) populations show higher rates of hazardous drinking [61, 126, 127] and alcohol use disorders [128-130]. Concurrently men who have sex with men (MSM) display higher rates of health issues [16-19] associated with problematic alcohol use [20-22]. Heavy drinking is also associated with increased engagement in condomless sex in MSM [12] which can lead to sexually transmitted infections including HIV. Taken together these findings underscore the importance of understanding how being an MSM may lead to exposure to factors which can increase drinking. That is, sexual behavior and/or identity likely does not influence drinking, but rather social forces associated with one's behavior and/or identities may.

Research suggests that experiencing stigma ["the co-occurrence of labeling, stereotyping, separation, status loss, and discrimination in a context in which power is exercised"; 40] is associated with higher rates of alcohol-related health issues in MSM [45-48]. According to the Minority Stress framework [49, 50] this relationship is due to minority group members experiencing higher levels of stress because they experience stigma (e.g., discrimination) due to their minority identity [49, 50]. Furthermore, this framework posits that minority stress is additive; membership in multiple minority groups (e.g., being both Black and an MSM) leads to more stress [40, 50-53]. Evidence supports the hypothesis that minority stress influences drinking behavior among MSM [19, 54, 56]. However, the limitations of such research makes it difficult to detect how discrimination influences drinking.

To date, much of the research on minority stress and drinking has employed cross-sectional designs [31, 65, 131]. Such data collection methodologies may introduce biases. For example, cross-sectional research has limited use for describing the temporal relationship between

discrimination and alcohol use: it is unclear if experiencing discrimination increases the odds of drinking as a response to such minority stress. To address this knowledge gap, it is necessary to collect data in near real time, such as with ecological momentary assessment (EMA) techniques.

Ecological Momentary Assessment refers to data collection that occurs in real-time [84]. The key features of EMA are that data are collected: 1) at the moment that, or close to when, the behavior of interest occurs; 2) in the environment where the behavior naturally occurs; and 3) repeatedly over time. Thus, data collected via EMA are not subject to the same limitations of retrospective cross-sectional measures. Utilizing EMA data collection allows researchers to model individuals' behavior using multiple factors that vary over time. Through sampling experiences as they occur researchers can detect how variations in individuals' behavior and social context influence future behavior. Therefore, EMA can be a valuable tool in investigating the mechanisms underlying the impact of stigma (such as in the form of discrimination) on drinking among MSM.

To date, several studies have utilized EMA procedures when investigating the role of discrimination in the lives of MSM [115, 132, 133]. A notable example is the work of Livingston and colleagues [114]. Utilizing EMA procedures, these researchers found that experiencing discrimination increased the odds of drinking later the same day among a sample of gender and sexual minorities- suggesting that alcohol use may be used to cope with experiences of discrimination. Given the novelty of such research there is a need to replicate and expand upon this work to confirm these results. For example, it would be useful to expand the temporal framework to determine potential delayed effects of minority stress exposure on drinking. Research suggests that experiencing discrimination can impact drinking days after the experience [116-118]. Therefore, it would be beneficial to examine the potential lagged effects of

discrimination beyond the day-level. For example, how experiencing discrimination earlier in the week may influence weekend drinking.

Present Study

To this end, the present study aims to replicate and expand upon the research conducted by Livingston et. al. [114]. Our research goals are to investigate the role of perceived sexual orientation discrimination on daily and weekly drinking among MSM using EMA data. We hypothesized that participants would consume more standard drinks and display an increased odds of heavy drinking (i.e., drinking 5+ standard drinks in one sitting) on days they perceived sexual orientation discrimination. We further hypothesized that perceived sexual orientation discrimination experienced earlier in the week would result in more standard drinks consumed and an increased odds of heavy drinking later the same week.

Methods

Participants

Data for this study came from an EMA study investigating sexual decision-making among MSM (N = 100; Wray & Monti, 2019). Eligible participants were: (1) 18 + years old, (2) self-identified as cisgender men, (3) currently self-identified male gender, (4) HIV-negative or unknown status, (5) able to read and speak English fluently, and (6) not currently prescribed or taking PrEP. They also reported (7) having had condomless anal sex with a non-exclusive partner at least once in the past 30 days, and (8) having consumed five or more drinks on a single occasion at least once in the past 30 days.

Study Procedures

We recruited participants through advertisements on gay-oriented smartphone dating apps (e.g., Grindr), and social networking sites (e.g., Facebook) and in-situ techniques (e.g., flyers). Recruitment took place in the northeastern U.S. from January 2016 to October 2018. Potential participants completed an online screener survey before being contacted by staff to schedule an

appointment to confirm eligibility. During the initial study visit, staff reviewed the study's procedures, obtained written informed consent, and walked participants through downloading the data collection software, MetricWire, to their personal smartphones. Participants were provided training on the study's EMA procedures; each type of survey was demonstrated to participants by study staff. The importance of 100% response rates for the daily diary assessments was heavily emphasized: participants were sent weekly email feedback reports about their response rates throughout their 30-day study participation. If participants fell below 100% completion of morning prompts, staff would call participants to reiterate the importance of completing the surveys and discuss ways of improving their response rates (e.g., setting alarms for morning surveys).

For the current analyses, we used two of the five different EMA surveys: daily diary and experience sampling. Participants were asked to complete a daily diary assessment once per day at 9:00 AM. Experience sampling assessments were sent to participants daily between 8:00 AM - 12:00 AM. Participants received six experience sampling surveys per day (minimum of three hours apart). All study procedures were approved by the Brown Institutional Review Board. For more details on study procedures see Wray et. al., 2019 [134].

Measures

Baseline Surveys

At the initial study visit, participants completed a baseline survey. This survey included basic demographic information (e.g., age, ethnicity, etc.), and the Alcohol Use Disorders Identification Test [AUDIT; 135, 136]. The AUDIT is a 10-item scale used for screening people for potential alcohol use disorders. AUDIT scores of 8 or higher are considered evidence of possible drinking problems [137]. This measure has been used extensively in both clinical and research settings and is well validated and reliable across varied populations [138-140]. However, for our sample, the AUDIT only achieved adequate reliability ($\alpha=.68$).

Alcohol Use

Alcohol use was measured via the daily diary assessments. Participants were asked how many standard alcoholic drinks (i.e., 16 oz. beer, 5 oz. wine, 1-1.5 oz. liquor) they consumed over the previous 24 hours.

Discrimination

Perceived discrimination was measured in each of the experience sampling assessments. Perceived discrimination was measured using a Likert type scale asking how much participants currently felt they were being “discriminated against or treated unfairly due to their sexual orientation” currently. This scale ranged from “Not at all” (0) to “Extremely” (4).

Data Analysis Plan

Data Preparation

All data preparation and analyses were run in STATA version 16.

Exploratory analyses revealed substantial skew in the discrimination variable. Almost a third of the participants did not report any perceived discrimination during the study. In addition, most participants were below 30 years of age, and identified as non-Hispanic White. To account for this skew, these covariates were binary coded: perceived discrimination (any vs. none) each day, age (at or below median age vs. older), and race (identified exclusively as non-Hispanic White vs. Black, Indigenous, or person of color [BIPOC]). Dichotomized variables were effect coded as .5 and -.5 (reference group), to remove the correlation between the main and interaction terms, allowing you to interpret each independent of the other. For example, BIPOC participants were coded as .5 and White participants were coded at -.5 meaning partial coefficients can be interpreted ignoring race/ethnicity-, which has no meaningful 0.

Model Construction

We utilized mixed effects negative binomial regression models when testing covariate associations with the numbers of drinks participants consumed. We choose this type of model because it displayed better fit to our data relative to other regression models (e.g., Poisson). Specifically, results of fit statistics including likelihood ratio tests and AIC/BIC analysis indicated the data fit a mixed effects negative binomial regression model better than other models tested. Models included participant identification number as the random effect to account for clustering of data within participant. We also utilized mixed effects logistic regression models to test the odds of heavy drinking at both the day and week level.

We created four models. The first regression model tested the association between perceived discrimination and the number of drinks consumed that same day. The second model tested the association between perceived discrimination and the odds of drinking heavily (i.e., consuming 5+ standard drinks) the same day. For day-level models, daily diary alcohol reports were lagged onto the previous days' data (i.e., drinking reports were retrospective). Next, we created models examining the association between perceived discrimination during the week (i.e., from Monday-Thursday) and the number of drinks consumed during the weekend, and the odds of heavy drinking occurring during the weekend (i.e., from Friday – Sunday). For week-level analyses, we restricted the data to weeks during which participants had the opportunity to respond on all seven days. For example, if a participant began participation on a Wednesday, we did not include their first week of data since they did not have the opportunity to enter data for the first half of the week.

Results

Participant demographics are reported in Table 1.1. Overall participants were highly adherent to study procedures: participants completed 97% of all daily diary surveys and 77% of all random

prompt surveys. On average, participants reported 29 days' worth of data ($SD=1.8$, Range=18-30) and engaged in the EMA study for an average of 4.97 calendar weeks ($SD=.26$ Range=3-6). On average participants completed daily diary assessments on 12.5 weekend days out of a possible 14 ($SD=1$, Range=8-14).

Alcohol Use

Out of 2,677 total study days, participants reported a total of 1,206 drinking days. On average, participants drank on 12.06 days while in the study ($SD=6.60$, Range=2-28). Participants drank an average of 4.76 standard drinks ($SD=2.14$ Range=1-11.6) on days in which they drank. Of all the days that the participants drank, 534 (44.28%) were heavy drinking days. On average, participants drank heavily on 5.34 days while in the study ($SD=4.42$, Range=0-20). Participants drank an average of 2.43 days per week ($SD=1.91$, Range=0-7). Participants drank 11.32 standard drinks per week on average ($SD=10.95$, Range=0-65). In addition, participants drank an average of 7.69 standard drinks on the weekends ($SD=7.85$, Range=0-44). The average AUDIT score was 10.95 ($SD=4.50$ Range=4—27), with most subjects ($n=67$. 67%) scoring 8 or higher indicating hazardous drinking and 16 (16%) scoring 16 or higher, indicating potential alcohol use disorder.

Perceived Discrimination

Most participants reported at least some perceived discrimination during the study ($n=68$). On average participants reported experiencing discrimination on 7.57 days of their participation ($SD=7.76$, Median= 3.39, Range=1-29). On average participants scored these experiences as not very severe ($M=1.51$, $SD=.74$, Range=.5-4).

Model results

Day-Level

In day-level models, we found a significant interaction indicating a significantly more negative association between perceived discrimination and drinking for BIPOC participants, when

compared to White participants (See Table 1.2). Follow-up analyses conducted with the same main effects and interactions but separated by race/ethnicity indicated that, for White participants, perceived discrimination was not significantly associated with increased drinking the same day ($IRR=1.11$, 95% confidence interval [CI][.83-1.48], $p=.48$). By contrast, BIPOC participants reported significantly less drinking on days they perceived being discriminated against compared to days they did not ($IRR=.56$, 95% CI [.37-.84], $p=.01$). In mixed-effects logistic models testing the association between perceived discrimination on the odds of heavy drinking on the same day, no main effects or interactions were significant (See Table 1.3).

Week-Level

In week-level models, perceived discrimination earlier in the week was not significantly associated on weekend drinking (See Table 1.4). Mixed-effect logistic models to determine the association between perceived discrimination on odds of weekend heavy drinking had no significant main effects or interactions (See Table 1.5).

Discussion

The goal of current research was to replicate and expand upon the findings of Livingston et al [114], which found that experiencing discrimination was associated with an increased odds of drinking later that same day among a sample of sexual and gender minorities. Specifically, we sought to determine if MSM who perceived they were being discriminated against due to their sexual orientation drank more on the same day they experienced said discrimination. We also aimed to determine if discrimination experienced earlier in the week influenced drinking later the same week (i.e., during the weekend). We utilized data from an EMA study examining sexual decision making among a sample of MSM for these analyses. Our findings were inconsistent with previous research findings- MSM did not drink more the same day on which they perceived being discriminated against because of their sexual orientation. In addition, we did not find an

association between perceived discrimination earlier in the week and drinking later the same week.

Several possibilities might explain why our results contrast with past research on the association between discrimination and drinking in the overall sample. One possible explanation may be that the elevated alcohol use of the sample impacted our ability to detect differences in drinking due to discrimination. This sample had high rates of alcohol use and AUDIT scores. In contrast, the sample of Livingston et al. did not require participants to have any prior substance use to participate. People who drink more heavily may drink more often to relieve negative affect and other symptoms of withdrawal. Therefore, although they may be affected by discrimination similarly to lighter drinkers, this impact may be harder to detect in their drinking behavior. Therefore, an association between discrimination and same day drinking may be more apparent in a sample of MSM with a larger range of drinking behaviors and fewer alcohol use disorder symptoms.

Another finding of note from our analyses was that BIPOC participants drank less on days they felt they were being discriminated because of their sexual orientation than on days they did not. This was surprising since, aside from race/ethnicity, BIPOC MSM did not differ from White MSM on other characteristics (see Table 1.1). This suggests that the association between discrimination and drinking among MSM may be moderated by the interplay of their identities. For example, BIPOC MSM may experience sexual orientation discrimination in different forms or contexts compared to White MSM. Alternatively, it is possible that the lived experience BIPOC MSM have of holding multiple minoritized identities (i.e., they are both a sexual and racial/ethnic minority) may have sensitized them to possible discrimination. In contrast, the racial identity of White MSM may act as a buffer against the impact of discrimination (i.e.,

White MSM retain racial privilege). This may explain why White MSMs' drinking was not associated with perceptions of sexual orientation based discrimination. These results support the intersectionality framework, which posits that the identities held by individuals result in unique experiences due to the societal forces impacting each of their identities: stigma associated with each identity result in intersecting experiences of discrimination and privilege [141]. For example, the systems impacting the opportunities and barriers of a Black gay men are shaped by societal forces acting upon both sexual and racial/ethnic minorities and men. Unlike the minority stress model, the intersectionality framework posits that the relationship between stigma and health is not additive- rather that the social forces interact upon each other to result in unique conditions which shape behavior. Our results support this claim; if the relationship between discrimination and health were additive, we would expect BIPOC MSM to drink more in response to stigma than White MSM. That is, the effects of minority stress from being both a racial/ethnic minority and a sexual minority would theoretically result in more drinking to cope with the stress of holding multiple marginalized identities. However, we found that BIPOC MSM drank less when they felt discriminated against. Our results align more closely with intersectional research demonstrating the confluence of BIPOC identity, LGBTQ+ identity, and socioeconomic status influence health disparities in the U.S. [142]. Due to measurement limitations, however, we cannot say more on this topic. We do not have data on how differing social positionality between BIPOC and White MSM may result in different contexts of sexual orientation discrimination and experiences.

Unfortunately, due to the focus of the original study, it impossible to determine how other marginalized identities may similarly impact the association between discrimination and drinking. The data used for these analyses were collected exclusively from cisgender men. As

such, an important difference between our sample and that of Livingston et. al. was that the present sample did not include cisgender women and non-cisgender (e.g., transgender) individuals. This is important given that the social forces impacting members of the LGBTQ+ community varies greatly between genders. For example, the literature suggests that heavy drinking and associated problems tend to be higher among LGBTQ+ women and non-cisgender individuals relative to cisgender men [61, 122]. Given that Livingston and colleagues did not include sex or gender as a moderator in their analyses, it is possible that their results may have been driven by LGBTQ+ women and non-cisgender participants (who comprised most of their sample). Unfortunately, we cannot examine the influence of sex or gender in the present study. As far as the authors are aware research on how gender, racial/ethnic, and sexual identities may interact to influence the relationship between perceived discrimination and drinking has yet to be conducted.

Another limitation of this research is the omission of other substance use from our behavioral models. Research suggests that alcohol use may be impacted by drug use. For example, research suggests that drinking may impact concurrent use of other drugs or vice versa [143, 144]. Future research would do well to further explore how other substance use may impact the relationship between sexual orientation discrimination and drinking.

Another limitation of this research of note is the uncertain precision and validity of our sexual orientation discrimination measure. This measure was meant to capture in the moment perceptions of sexual orientation discrimination, with participants receiving six prompts per day asking them how discriminated they felt at that moment. Although this single-item discrimination measure has face validity, we are not able to assess other psychometric properties.

Another limitation of this research is that the nature of our data limited our ability to draw directional inferences. Our initial goal was to utilize these data to examine the temporal relationship between perceived discrimination and alcohol use. However, since most participants reported very few instances of discrimination, we lacked sufficient power to detect such a relationship. As such, we elected to dichotomize perceived discrimination at the day-level. In addition, although the parent study did have a survey component where participants were asked to log their alcohol use as it occurred, fewer participants completed these surveys than the daily diary assessment. Due to this lack of data we elected to use daily diary reports of past day drinking for our primary outcome measure (i.e., the daily diary captured more drinking events than did experience sampling assessments). This unfortunately means our primary outcome data were retrospective, which is not as ideal as real-time assessments. This combination of collapsing discrimination events to the day level and utilizing retrospective reports of drinks over the say 24-hour period limits our ability to infer how discrimination is associated with drinking.

Conclusion

The present study did not find an association between perceived sexual orientation discrimination and alcohol use among a sample of MSM. However, when we separated our sample by race/ethnicity we found that perceived discrimination was associated with reduced alcohol use among BIPOC MSM. These results are surprising given that previous research suggests experiencing discrimination is associated with increased drinking. The authors conclude that race/ethnicity may impact the relationship between sexual orientation discrimination and alcohol use among this sample of MSM. The exclusive sampling of cisgender MSM in our sample precludes us from examining how other identities (e.g., gender) may further impact the association between discrimination and drinking. Future research should examine how the intersection of multiple identities (e.g., transgender BIPOC MSM) may result in different

drinking behaviors compared to those with a single marginalized identity (e.g., White cisgender MSM).

Table 1.1 *Participant Demographics.*

Characteristics	Total (N=100) <i>Mean (SD)</i> or <i>n (%)</i>	BIPOC <i>n</i> =34) <i>Mean (SD)</i> or <i>n (%)</i>	White (<i>n</i> =66) <i>Mean (SD)</i> or <i>n (%)</i>	<i>T</i> or χ^2	<i>p</i>
Age (Range: 18 – 54)	27.1 (7.7)	27.1(7.2)	27.1(7.9)	.02	.98
18-29	79 (79)	28	51	.4	.56
30+	21 (21)	6	15		
Race					
Non-Hispanic White	66 (66.0)	10(29.4)	66(100.0)	61.3	.00
Black or African American	4 (4.0)	4 (11.8)	0		
Asian	8 (8.0)	8 (23.5)	0		
American Indian/Alaska Native	1 (1.0)	1 (2.9)	0		
Multiracial	6 (6.0)	6 (17.7)	0		
Chose not to respond	5 (5.0)	5 (14.7)	0		
Ethnicity (Hispanic or Latine)	16 (16.0)	16 (47)	0	37.0	.00
College degree	54 (54.0)	21 (61.8)	33 (50.0)	1.3	.26
Low income ¹	29 (29.0)	14 (41.2)	15 (22.7)	3.7	.05
Unemployed	13 (13.0)	6 (17.7)	7 (10.6)	1.0	.32
Identify as gay or bisexual	94 (94.0)	30 (88.2)	64 (97.0)	3.0	.08
AUDIT score	11.0 (4.4)	11.3 (4.6)	10.8 (4.3)	-.6	.52
Avg. # total EMA days completed	29.3 (1.7)	29.3 (1.3)	29.3(1.9)	-.2	.85

Table 1.2 *Results of Negative Binomial Regression Day-Level models predicting number of standard drinks consumed daily.*

	Number of Standard drinks			
	<i>IRR</i>	<i>SE</i>	<i>95% CI</i>	<i>p</i>
Within Participant				
Study Day (0 to 29)	.97	.00	.97--.98	.00
Main Effects				
Time-varying Discrimination				
Any	1.06	.15	.79—1.40	.71
None	Ref	Ref	Ref	Ref
Between Participant				
Age				
>30	1.09	.21	.75—1.60	.64
<30	Ref	Ref	Ref	Ref
Race/Ethnicity				
BIPOC	.91	.15	.66—1.27	.59
White	Ref	Ref	Ref	Ref
Interactions				
Discrimination*BIPOC	.58	.14	.37--.92	.02
Discrimination*Age	1.38	.44	.74--2.60	.31

*Dichotomous variables were effect coded as .5 or -.5. All referent groups were coded -.5.

**Values in bold represent $p < .05$

Table 1.3 *Results of Mixed Effects Logistic Regression Day-Level models predicting odds of heavy drinking.*

Odds of Heavy Drinking (per day)				
	<i>OR</i>	<i>SE</i>	<i>95% CI</i>	<i>p</i>
Within Participant				
Study Day (0 to 29)	.97	.01	.96--.98	.00
Main Effects				
Time-varying Discrimination				
Any	1.18	.27	.76—1.84	.46
None	Ref	Ref		Ref
Between Participant				
Age				
>30	1.05	.31	.59—1.88	.17
<30	Ref	Ref		Ref
Race/Ethnicity				
BIPOC	0.84	.22	.50—1.40	.50
White	Ref	Ref		Ref
Interactions				
Discrimination*BIPOC	.53	.21	.25—1.15	.11
Discrimination*Age	1.15	.61	.41--3.24	.79

*Dichotomous variables were effect coded as .5 or -.5. All referent groups were coded -.5.

**Values in bold represent $p < .05$

Table 1.4 *Results of Mixed Effects Negative Binomial Regression Week-Level models predicting number of standard drinks consumed during the weekend.*

	Number of Standard drinks during Weekend days			
	<i>IRR</i>	<i>SE</i>	<i>95% CI</i>	<i>p</i>
Within Participant				
Study Week (3 to 6)	.91	.08	.77—1.07	.26
Main Effects				
Time-varying Discrimination				
Any				
None	.85	.20	.53—1.34	.48
Between Participant	Ref	Ref	Ref	Ref
Age				
>30	1.38	.34	.85—2.24	.19
<30	Ref	Ref	Ref	Ref
Race/Ethnicity				
BIPOC	1.01	.22	.65—1.56	.97
White	Ref	Ref	Ref	Ref
Interactions				
Discrimination*BIPOC	1.07	.46	.47—2.48	.89
Discrimination*Age	.97	.46	.37--2.43	.95

*Dichotomous variables were effect coded as .5 or -.5. All referent groups were coded -.5.

**Values in bold represent $p < .05$

Table 1.5 *Results of Mixed Effects Logistic Regression Week-Level models predicting odds of weekend heavy drinking.*

Odds of Weekend Heavy Drinking				
	<i>OR</i>	<i>SE</i>	<i>95% CI</i>	<i>p</i>
Within Participant				
Study Week (3 to 6)	.79	.13	.57—1.10	.16
Main Effects				
Time-varying Discrimination				
Any	1.07	.54	.40—2.88	.90
None	Ref	Ref	Ref	Ref
Between Participant				
Age				
>30	1.51	1.02	.40—5.69	.54
<30	Ref	Ref	Ref	Ref
Race/Ethnicity				
BIPOC	.42	.27	.12—1.45	.17
White	Ref	Ref	Ref	Ref
Interactions				
Discrimination*BIPOC	.75	.61	.15—3.69	.72
Discrimination*Age	.31	.32	.04--2.28	.25

*Dichotomous variables were effect coded as .5 or -.5. All referent groups were coded -.5.

**Values in bold represent $p < .05$

Part 2

Chapter 3 – Study 2: “I’m gay with an asterisk”: How Intersecting Identities Influence LGBT Strengths

Research attributes health disparities between sexual minority (i.e., those whose orientation, or practices differ from society, [SM]) and heterosexual populations to social marginalization. LGBT strengths (e.g., resiliency derived from LGBT identity) may reduce the impact of social marginalization. However, it is unclear how LGBT strengths are impacted by SMs’ other identities (e.g., racial/ethnic and/or gender). To address this knowledge gap, the present study examined data from the LGBT Stress/Strength project, a qualitative research study investigating minority stress and LGBT strengths in relation to drinking. Participants (N=22) were self-identified SMs in the northeastern U.S. Transcripts from in-depth interviews were coded using thematic analysis. Participants reported social support from other SMs and empathy towards others were forms of LGBT strength. Sampled SMs assigned female at birth had more intergenerational friendships and relied more on social support than those assigned male at birth. In addition, Black, indigenous, and people of color (BIPOC) participants described social marginalization from within the LGBT community, which reduced their reliance on social support. Our results suggest that LGBT strengths are influenced by LGBT community members intersecting identities. More research can expand upon these results by investigating how the confluence of SMs identities and LGBT strengths impact health disparities.

Introduction

Sexual minority (i.e., those whose sexual identity, orientation, or practices differ from most of the surrounding society, [SM]) populations face significantly more health risks compared to heterosexual populations [145]. For example, SMs show increased rates of depression [16, 17], and anxiety [19]. In addition, SMs show higher rates of hazardous drinking [61, 126, 127] and alcohol use disorders [14, 128, 129] than heterosexual populations.

Despite such health disparities, SMs have shown tremendous resiliency in the face of adversity. For example, members of the LGBT community created grass roots organizations to support its members and demand policy changes during the HIV epidemic [146, 147]. Despite experiencing stigma ["the co-occurrence of labeling, stereotyping, separation, status loss, and discrimination in a context in which power is exercised"; 40] SMs can survive and thrive. Such evidence lends support to behavioral theories which hypothesizes that identifying with a marginalized group may confer unique benefits to individuals.

The theory of LGBT strengths [79] posits that acknowledgement and acceptance of an LGBT identity can be a source of resilience and strength. Research suggests that successfully navigating LGBT (e.g., SM) identity development and stigmatizing experiences may increase coping skills [80, 148]. In addition, an intervention designed to promote resilience among SMs showed efficacy in reducing mental disorder symptoms and alcohol use [81]. Despite such promising results, LGBT strengths are under researched, limiting the potential to utilize such attributes to reduce health disparities. As such there is a need to add to the LGBT strengths literature to better understand how said strengths may manifest across members of the community.

In addition, there is a need to expand upon this literature by exploring how LGBT strengths are impacted by other identities held by LGBT community members. Based on the intersectionality framework, people who have multiple marginalized identities are likely to experience unique social and health conditions due to the combination of societal forces impacting each of their identities [141]. For example, a SM who is also a gender minority (e.g., identifies as nonbinary) may have access to entirely different support networks than a White cisgender male SM. Previous measures of LGBT strengths tend to examine only resilience tied to SM identity, thereby limiting their ecological validity and generalizability to the broader LGBT community.

Present Study

The present research was designed to advance insight into LGBT strengths as a resource for individuals to cope with identity-relevant challenging situations and explore intersectionality in the context of LGBT strengths. Utilizing in-depth interviews, this study aimed to 1) identify ways in which SM individuals utilize their SM identity to overcome adversity; 2) identify ways in which LGBT strengths manifest differently with relation to SMs' gender identities; and 3) identify ways in which LGBT strengths manifest differently with relation to SMs' racial/ethnic identities.

Methods

Participants

Data for this study were derived from the LGBT Stress/Strengths project - a qualitative research study investigating how minority stressors and LGBT strengths influenced alcohol use among SMs in the New England region (N=22). To be eligible to participate, participants were required to: 1) be at least 18 years of age, 2) self-identify as an SM (e.g., gay, bisexual, or queer); 4) report current alcohol use (i.e., 1+ day of drinking per week or 1 day in the past month of 5+ drinks); and live in the New England area (i.e., Connecticut, Maine, Massachusetts, New

Hampshire, Rhode Island, or Vermont).

Study Procedures

Participants were recruited through Facebook advertisements targeted to the local LGBT population from July – December of 2020. All potential participants were screened over the telephone by me to confirm eligibility. Eligible participants were then scheduled for a 45–60-minute interview via Zoom with me. At the start of each interview, I provided an overview of the study procedures and obtained written informed consent and permission to audio record the interview from participants. At the conclusion of the interview, participants completed a brief self-administered survey to collect demographic information. After completing the survey, participants received an Amazon gift card of \$20. All study procedures were approved by the Institutional Review Board at Brown University.

Semi-structured interview

Qualitative interviews were semi-structured. The interviewer (myself) utilized a list of a priori questions based on relevant domains identified in the literature but also had the flexibility of pursuing relevant topics organically. That is, all participants were asked the same list of interview questions, but relevant topics that came up during interviews were also explored. The interview had three main foci: SMs' experiences of stigma (e.g., "What are some of the PROS of being [insert sexual self-identification here]?"), experiences of SM strengths (e.g., "What are some of the CONS of being [insert sexual self-identification here]?"), and SMs' use of alcohol (e.g., "Tell me a story about the most recent time you drank. Feel free to be as detailed as you like [for example, who you were with, what you did, etc.] "). See Appendix A for the complete interview guide. The current analyses do not explore SMs' drinking- these data will be presented in a future manuscript.

Data Analysis

All interviews were transcribed verbatim using Descript, a software that automatically

transcribes audio files into text files (<https://www.descript.com/>). Interview transcripts were coded independently by myself and second coder (Dr. Augustine Kang) using a variation of Thematic Analysis known as Codebook Thematic Analysis [149]. This type of qualitative analysis represents a hybridization of previous Thematic Analysis techniques [150] and more traditional post-positivist approaches [151]. Codebook Thematic Analysis tends to be more structured than other forms of Thematic Analyses (e.g., Reflexive) and relies on a codebook to record the developing analyses and guide data coding [152]. The benefit of Codebook Thematic Analysis is that it is flexible enough to meet predetermined information needs as well as allow for inductive theme development through data familiarization [153].

For the present study, Codebook Thematic Analyses approaches took on the following forms. Initially, I developed codes for the coding book based on the interview guide corresponding to question content/themes (e.g., themes on examples of SM strengths). Following this, emergent codes were developed by both myself and the second coder after reviewing study transcripts. Five randomly selected sessions were double-coded and compared to develop themes, which were then reviewed and finalized by the coders. These sessions were then double-coded again using the resultant codebook until reliability was reached. After this, myself and the second coder coded the remaining session transcripts independently and discussed discrepancies until consensus was reached. All qualitative analyses were conducted via NVivo version 12.

Results

Participants ($N = 22$) were on average 29 years old ($SD=6.2$). In the demographics survey participants were able to enter their identities (e.g., sexual and gender) via a textbox to capture individually meaningful terms for their identities. Despite this, most participants self-identified as either cisgender male or female ($n=18$, 81.8%) with the remaining participants identifying as

transgender or non-binary (n=4, 18.2%). Furthermore, the sample overwhelmingly self-identified as non-Hispanic White (n=19, 86%). In addition, most of the sample had a college degree or more (n=15, 68.2%) and were employed (either part- or full-time; n=14, 63.6%). See Table 2.1 for full list of demographic information.

Thematic analysis

Thematic Analysis revealed that participants benefited from their SM identities in myriad ways. Such benefits were of help to participants when faced with challenging circumstances. Three unique benefits of SM identity reported by participants included SM identity facilitating 1) deep interpersonal bonds with fellow SMs, 2) the development of empathy for other marginalized groups, and 3) self-reflection, self-discovery, and self-expression.

Theme 1: SM identity allows for deeper interpersonal relationships and access to social support systems with fellow LGBT community members

Participants reported one specific benefit of membership in the LGBT community was the potential for deep interpersonal connections with other LGBT community members. Across identities (e.g., race/ethnicity and gender) participants described how the shared experiences of SMs (e.g., discrimination/stigma) allowed them to understand their SM peers and offer them support when needed. That is, having a similar sexual identity to another SM person, despite other potential differences (e.g., race/ethnicity), provided them a shared frame of reference to understand the experiences of fellow LGBT community members. Such social support networks were noted to be especially helpful when SMs are in environments hostile to LGBT community members. As one participant described her identity as a lesbian often made her a target of discrimination while in a Catholic affiliated university:

...I had a really terrible experience where I had spoken up in class and the professor shut me down, and I called a friend afterwards to talk about it. And that was unbelievably helpful to just like, hear her, um, say like, what the fuck it's like, just

having that kind of like person to talk to is so helpful. (Participant 119: 27-year-old Non-Hispanic White, cisgender female)

In this instance, when the participant felt stigmatized due to the perceived incongruence between her lesbian identity and the prevailing religious ethos of the school setting, she was able to seek support from a fellow SM who would understand her experience and affirm her feelings.

Participants also described the usefulness of their social networks within the LGBT community. Multiple participants described how having close interpersonal relationships with other SM community members was valuable during times of stress. For example, one participant described how the benefits of solidarity with other SM people:

I remember the [2016 U.S. presidential election] I think just sitting in a student lounge with, with [LGBT] students who just coming together and like, what is this going to be? What is this going to be like if my, my family is undocumented or my, you know. All of this and at least having a moment of like, we're here together, all sitting in this room. And so finding like strength and power in that (Participant 120: 37-year-old Non-Hispanic White, cisgender female).

While another participant stated:

Um, so I have a fabulous network from undergrad of like 150 queer people, mostly women, um, who I could go to for anything or any kind of experience and they have lived it and they understood it and had great advice. So I, I feel really lucky that I got to go to school with mostly queer, politically active, um, totally like fabulous and intelligent people. (Participant 119: 27-year-old Non-Hispanic White, cisgender female)

In these examples, both participants utilized their queer networks for emotional support. In the first example, when faced with the rise to power of a political regime that was openly hostile to marginalized communities (e.g., undocumented immigrants and the LGBT community), this participant was able to draw strength from their LGBT peers. That is, these LGBT students were uncertain how their lives were about to change, but by coming together

they could derive support from one another. Similarly, in the second quote this participant described how their extensive social network of queer individuals was a source of valuable knowledge. That is, their peers collectively had a wide range of experiences navigating the world as members of the LGBT community and could offer insights into navigating potential life challenges. Table 2.2 provides additional examples demonstrating this theme.

Theme 2: SM identity allows one to develop a deeper sense of empathy for other marginalized groups

Participants described how a benefit of their LGBT identity was that it increased their sense of empathy for others. Through personally experiencing marginalization due to their sexual orientation, SMs were able to relate to other communities that faced social stigma. This was especially pronounced among SMs with privileged identities (e.g., those who held cisgender and/or White identities). For example, one participant described how his sexual identity gave him insight into racially marginalized groups:

I think that being gay has definitely given me perspective into like being marginalized... I feel like it's a lot easier for me to empathize with like Black people's struggles or ... other marginalized people. I feel like I do like understand it on a different level than maybe like a straight White man. But just because like, I obviously it's not like the same oppression, but I do feel like I like, kind of can relate and empathize more. (Participant 106: 19-year-old Non-Hispanic White, cisgender male)

This example suggests that had this individual not held a SM identity (i.e., gay), they believed they may have been less understanding of the social marginalization faced by individuals who identify as BIPOC. Similarly, another participant stated that:

I'm not one of those people who knew that they were gay from a very young age. I mean, looking back there were, there were signs [but] I certainly... strongly believed myself to be a cis and straight person through my teens. Um, but sort of being, having the experience of doing a complete 180 and being able to connect with myself and see myself as, uh, eventually come around to myself as a complete and good and worthy person. And while coming in touch with these identities... as well

as just the diversity that is in the lesbian community lead me to meet people of so many different backgrounds, religions, and, people. I wouldn't have necessarily come into contact through just the schools I went to and the places I lived. It's given me, I mean, it's given me, I think a bit of empathy, into other struggles for injustice and just needing... racial justice or religious tolerance or something else. (Participant 101: 25-year-old Non-Hispanic White, non-binary)

This statement suggests that experiencing social stigma was not the only reason why SMs may develop a deeper sense of empathy. Rather, the quote suggests that empathy for others can also be derived through a combination of successfully recognizing and accepting one's SM identity. Successfully completing this (sometimes difficult) process and recognizing the stigma associated with one's community may also allow for empathizing with other marginalized groups.

Still another participant described how his experience of being a gay man who worked with the LGBT community members in crisis impacted his sense of empathy. This participant described how after coming out in college, he began working with LGBT organizations (e.g., outreach for LGBT homeless youth). Concurrently, he also began connecting with LGBT community members at bars/club to build his own personal social network. This unique combination of experiences helped him develop a deeper sense of empathy for others which impacted his career:

So you have like nightlife and then I'm working with like homeless, LGBTQ youth. It's like such a different, you know, parts of the community... I've definitely benefited [from both experiences] because I get a deeper sense of empathy for people. ...I just feel like I've grown to be such an empathetic person who really cares. And I think that's, what's driven me to like be an [academic advisor at a university] because I really genuinely want to help people and meet them where they're at and help [them] whether that's literally like finding your meal for tomorrow or if it's like, um, I don't know getting into med school. So I feel like that's a benefit. (Participant 103: 24 year old Non-Hispanic White, cisgender male)

Theme 3: Self-reflection, self- discovery and self-expression are a benefit of being an SM

Another theme that participants described was that being an SM provided a reason for deep levels of self-reflection about their personal values. The experience of not sharing in the majority sexual attraction (i.e., heterosexuality) facilitated SMs to reflect on their internal feelings and behaviors. This introspection was not limited to their sexuality per se but extended to their values more broadly- impacting their place in the world and ability to connect/relate with others. This introspection allowed them to understand themselves and their needs on a deeper level than they may have done otherwise. Through successfully coming to terms with their sexuality, participants described becoming more in tune with their emotions/needs and feeling more confident to express themselves openly. For example, one participant described how they were able to grow and develop as a person since coming out as a lesbian.

My whole life trajectory would have been different if I hadn't gone to a women's college [and been exposed to the LGBT community]. I just, I would have figured out all of these things, but it could have been probably 10 years delayed and that would have been sad. Honestly, I wouldn't have been able to, I think that my young adulthood would have been filled with a lot more sadness and confusion than it has. ...I feel like I've, I've aged like 20 years in the past five just in terms of the amount of life experiences I've had and the number of things I've had to learn and unlearn about myself and other people, um, that I simply would not have, um, have like gained that knowledge or that empathy for myself and for others. (Participant 101: 25-year-old Non-Hispanic White, non-binary)

For this participant, the process of acknowledging their SM identity may have happened regardless of exposure to the LGBT community, but such exposure precipitated the process. This acknowledgement altered, their life trajectory in a positive way - they came to know their SM identity earlier and avoided the pain of discovering this on their own much later in life. The above quote also overlaps with theme two - suggesting that the process of coming to terms with one's SM identity increased their empathy for others. This quote implies that providing LGBT

individuals with supportive environments in which they can explore their identities without fear of rejection or reprisal may be critical in fostering LGBT strengths.

Another participant described how coming out allowed them to be “direct” with others:

I mean, I feel like I don't really care about people's opinions as much as like... I'm not so defensive in [my sexual identity] as far as like, you know, this is who I am and I'm very upfront and people take it as, as it is versus, you know, like, avoiding the questions or, you know, I was always like, this is my personality. This is what I'm doing. So I don't know if it's a trait that maybe some people would kind of walk away from, but I'd rather be upfront and direct with people. (Participant 131: 37-year-old Non-Hispanic White, cisgender female)

In the case of this participant, the process of coming to terms with her SM identity afforded her a certain degree of self-confidence. That is, by coming to accept her identity as valid, she no longer felt it was necessary to “defend” it. The way in which she lives her life is just as acceptable as any heterosexual person’s. Such statements suggest that these participants believe that SMs who successfully come to terms with their sexuality may have more self-awareness and self-acceptance than those who do not.

LGBT Strengths are influenced by the intersection of race and gender. This influence leads some SMs to critically reflect on their multiple minoritized identities

Across gender and racial/ethnic identities participants described how the intersecting privileges and disadvantages tied to different identities impacted LGBT strengths. For example, although participants from varied identities/backgrounds described social support from the community as a distinct benefit, differences in this support arose across gender and racial/ethnic lines. Those assigned female at birth tended to have more inter-generational friendships than those assigned male at birth. For the former, multiple participants described relationships with older women who acted as mentors and teachers, offering life advice on how to thrive as a SM woman. Similarly, such people also described more active participation in community events (e.g., volunteering with LGBT youth organizations). As one participant described:

...the other positive that's been interesting is that the kind of like the intergenerational thing, it's almost, you know, meeting people your own age and like the community care connection is great. But like I have ...other queer women in my life who are kind of like, almost like moms to me, um, who like I've known for years. Like almost most of the time I've been here. And so that's just really neat because, you know, beyond just like the community connections, like. It shows it's like possibility of like, Oh, you know, I don't know what the future holds now. ...when I first got to [state], I had no idea what I was going to be doing. I just graduated. I didn't have a job. I'm like, well, now my, my housing is done in December. Like, what am I going to do? But just seeing them of like, Oh, that's what a future could look like. That's like possibility, like they're living together and they're just, you know, out in. So I think having that bit of a role model I think that has been a really positive, um, piece of being in the community... (Participant 120: 37-year-old Non-Hispanic White, non-binary)

For participants assigned male at birth, statements about the LGBT community (specifically fellow SM men) tended to be less overtly positive. For example, one participant described their social circle thusly:

Um, I guess a tight knit gay community is kind of, I mean, when they're not being shady, but that's hard to kind of, that's like a twofold, so it's a positive and a negative. It's hard to kind of tap yourself into...now that I have a partner and I've been going out to the bars less, it's kind of like hard to keep those relationships going, you know, but, um, the tight knit community does help. That's definitely like a strength that I feel like the LGBT community has... is that everyone gets so close... I couldn't go home for Thanksgiving and like my friend would have me over stuff like that. So it's been kind of like, that's like one of the best things. (Participant 115: 26-year-old Non-Hispanic White, cisgender male)

This participant makes clear that their SM peers can be a source of support (i.e., they were able to spend a holiday with them friends when they couldn't travel). However, he also expresses some negative aspects of the same group (i.e., dubiousness ["being shady"]). In addition, he implies that these same community members can be somewhat insular, with new social bonds being difficult to form. Such statements reflect a certain degree of ambivalence observed among sampled SM men towards their peers, which was not observed in the interviews with SM women. Furthermore, unlike SM women, no SM men described intergenerational relationships,

and there was less of an emphasis on the mentor/mentee relationships between friends.

Additional examples of this theme are presented in Table 2.2.

The racial identity of participants also impacted social support found within LGBT spaces. Whereas White participants found acceptance with relative ease in such spaces, BIPOC participants did not necessarily share such experiences. BIPOC participants described how cisgender White community members could express potentially unconscious racism. As one participant described:

Um, it's just like, [cisgender White gay men can be] like low key racist. Like they love to be low key. I feel like that's definitely a thing. Like you can't be like, I feel like that's definitely a thing in the gay community. Like (they think) 'I'm gay. So I can't be racist. Like I'm a White gay boy. I'm oppressed too.' Which is like, yes beau, you are oppressed. I feel you, you are, but like you could still be racist. I hate to break it to you, you can still be racist. I feel like that definitely plays a role in like, there's a lot of like performative. I don't know what the term is, but there's a lot of like, Performative like 'black lives matter', like, or like, I don't know. 'I'm gay and like, I don't know, like I have a black friend, I like this black drag queen', like okay. And what, like, do you want a sticker because you have a black friend or like is black drag queen? (Participant 121: 24-year-old Hispanic Black, cisgender female)

Such rejection from fellow LGBT community members can be especially upsetting for BIPOC individuals. As another BIPOC participant described:

Yeah. And because I imagine also the alienating experience of feeling like, so we know when people. Um, hold multiple identities sometimes when they go into places they're not accepted.... I think negative outcome being alienated by a group, which you consider your own might be even more detrimental, um, than being alienated by a group that you already don't really feel like you're a part of. So I feel like if you walk into a queer space and you're turned away, it feels worse than if you're walking into a straight, like a straight setting and you're turned away. (Participant 110: 33-year-old Hispanic Black, cisgender male)

Such statements underscore how the pervasiveness of racism/misogyny is prevalent in U.S. culture, including within the LGBT community. For example, White gay cisgender men may be minoritized from the larger heterosexual society, but still carry the privileges associated

with their race/gender. This is evident by participants' discussions of segregation within the LGBT community by gay cisgender men.

Discussion

Participants in our sample described how the experience of living with an SM identity allowed them to form deep interpersonal bonds with fellow LGBT community members. Such relationships helped them overcome adversity by allowing them access to peers who could empathize with their life stresses and offer emotional/material support in times of need. In addition, participants described how experiencing social stigma offered them insights into the struggles of other marginalized groups. Furthermore, participants described how the process of accepting their own LGBT identity offered them greater self-efficacy/resilience in the face of other life challenges.

Although participants did not state so explicitly, their statements suggest that they believed that successfully coming to terms with their sexuality may have led them to be more self-aware and self-accepting than those who do not. That is, most societies regard heterosexuality as the preferred (e.g., normal) sexuality. The process of adopting an SM identity despite social pressures to conform to heterosexuality behavior may render SMs better equipped to be more aware of their individual needs and pursue them. SMs who can successfully recognize such social conditioning and then break free of this training must overcome significant internal psychic barriers. Overcoming such barriers may lead to higher overall resilience and fortitude.

Research on the positive impact of navigating sexual identity and adopting an SM identity corroborates our claim that successfully “coming out” as an SM can lead to higher resilience. For example, Brownfield et al [154] found in their qualitative study that accepting ones' bisexual identity led to personal growth among participants in their study. Specifically, participants displayed intrapersonal growth (e.g., living more authentically, improved mental

health), interpersonal growth (e.g., improved relationships, greater advocacy in daily interactions), and increased critical consciousness (i.e., greater awareness of privilege and oppression). In a quantitative survey, Cox et al [155] Found that adolescents' internalized homonegativity was reduced upon disclosing their SM identity.

The current research also sought to identify how the intersection of SM identity with racial/gender identities impacted such LGBT strengths. Our results suggest that the ways in which SMs interact with one another is influenced by both the gender and race/ethnicity of SM individuals. For example, those who identified as female emphasized the importance of inter-generational friendships in their social support networks. For these participants, older women were considered vital in demonstrating how to live a successful life and offered valuable advice ("mothering"). Such relationships were reciprocal with younger individuals also fostering their younger peers. In contrast those assigned male at birth did not describe having such relationships and expressed more ambivalence towards their SM peers. Race was also found to play an important role in the manifestation of LGBT strengths in our sample. For instance, BIPOC participants described marginalization from within the LGBT community, which impacted from where they found social support. White LGBT community members did not report such intra-group marginalization.

The observed differences in LGBT strengths due to gender and racial/ethnic identities underscore the importance of addressing the unique social positionality that exists both between minority SM groups and the larger population as well as disparities within SM communities. For example, when designing public health interventions for SM women it may be useful to emphasize these intergenerational relationships. These results also suggest that utilizing resilience training may be useful for clinicians working with SM populations. For example,

Pachankis et al [81] found in their clinical trial research that an interventions designed to help young SMs navigate the challenges of emerging adulthood can benefit from identifying and harnessing resilience as a means to overcome adversity. In addition, creating broader systemic protections for SMs may be particularly useful. That is, by creating a more open and accepting environment in which sexual diversity is accepted, SMs may come to accept their identities from an earlier age and be not face the same health disparities currently observed. This is supported by research showing that regions with protections for LGBT populations tend to have less pronounced health disparities than areas that do not [156].

Our research suggests that the Minority Stress and LGBT strengths research needs to consider the intersecting identities of the LGBT community members. As described by our participants, although all SMs experienced some social marginalization, there were distinct differences across racial/ethnicity and gender. Namely BIPOC LGBT community members experienced marginalization from fellow LGBT community members which had a distinct impact on their perceptions of the LGBT community. Although White participants seemed to perceive the LGBT community as a source of support and viewed fellow community members as allies, BIPOC participants had a more skeptical view. That is, BIPOC participants recognized that some of LGBT community members carried biases and prejudices, making BIPOC participants leery of the kind of support they may receive from the community.

The fact that BIPOC participants disclosed discrimination from within the LGBT community (specifically from White gay men) is not surprising. Some cisgender White gay men bring their heteronormative, cis-normative biases to queer spaces because that's how they have been socially conditioned to act by the larger society to which they belong. Since their SM identity marginalizes them from the larger “mainstream” culture of cisgender heterosexual White

men, they apply these biases to LGBT spaces. This is important since the health risks associated with social marginalization due to LGBT identities varies greatly in accordance with people's complex, intersecting identities.

Several studies show that the intersecting identities of individuals play a critical role in health behaviors. For instance, Mereish and Bradford found that SM Black and Latine participants demonstrated higher rates of substance use compared to racial/ethnically matched heterosexual counterparts [157]. Another study found that discrimination based on sexual orientation and on race/ethnicity uniquely predicted alcohol related health problems [158]. Yet another study found that intersectional discrimination (i.e., discrimination based on sexual orientation and race/ethnicity) was associated with emotional dysregulation and mental health problems among a sample of SM men [159]. Taken together, these empirical findings suggest that the identities held by individuals result in unique experiences due to the societal forces impacting each of their identities.

What is less clear from the literature is how intersecting identities may also be a source of strength. In the face of adversity, socially marginalized groups have shown tremendous resiliency and have created social networks for support when institutions have failed to. For example, members of the LGBT community (particularly BIPOC members) created grass roots organizations to support its members and demand policy changes during the HIV epidemic [146, 147]. The present work is consistent with this perspective, participants described how they utilized LGBT strengths to overcome challenges, but more research is needed to fully explore this phenomenon. Future researchers would do well to explore how SMs intersecting identities may moderate the negative impact of social marginalization. Leveraging LGBT Strengths may be a viable route through which public health officials may address health disparities between the

LGBT community and the general population.

Limitations

The findings from this study add to the LGBT strengths literature but should be considered in the context of several limitations. For example, the sample characteristics limit the generalizability of the present findings. For example, most participants in the sample were White, which limits our ability to extrapolate out findings to BIPOC LGBT community members. In addition, most participants identified as cisgender which further restricts the applicability of our results to transgender/gender-diverse populations. Future research is needed to more fully examine how LGBT strengths manifest among BIPOC and transgender/gender-diverse participants and how the intersecting identities of race and gender can influence LGBT strengths.

The time during which the study was conducted must also be acknowledged when considering our findings. The interviews for this research took place in 2020 at the height of Black Lives Matter (BLM) movement in the US. Some research suggests that the BLM movement has increased salience about Whiteness and privilege among many White people [160]. We cannot fully determine if White participants would have been as self-aware of their racial privilege prior to this social movement. It is probable that the unprompted discussions of racial privilege in this sample was an artefact of the extraordinary times of the interviews as well as the higher education level of participants. Ideally, members of the LGBT community who hold privileged identities (e.g., White cisgender SM men) may advocate for social justice and equity both from within the LGBT community and from U.S. society at large.

Table.2.1 Participant Demographics.

Variable (n=22)	Mean (SD) or N (%)
Age (Range: 18 - 41)	29.0 (6.2)
Gender Identity	
Cisgender male	9 (40.9)
Cisgender female	9 (40.9)
Transgender	2 (9.1)
Non-binary	2 (9.1)
Sexual Identity	
Gay/lesbian	13 (59.1)
Bisexual	5 (22.7)
Queer	4 (18.2)
Asexual	1 (4.5)
Hispanic/Latine	2 (9.1)
Race	
White	19 (86.4)
Black	3 (13.6)
Household income	
<\$40,000	12(54.4)
>%40,000	10(45.4)
Education	
Less than a college degree	7(31.8)
College degree of more	15 (68.2)
Employment	
Employed	14(63.6)
Unemployed	6(27.2)

Table 2.2 *Summary of identified themes and exemplar quotes.*

Theme	Exemplar Quotes
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SM identity allows for access to social support systems

I have been able to connect with a lot of people. So it's like, Having not experienced that too much, living in [state] and upstate [state]. Like, it's really cool to like have friends and meet other people who like, in some ways you just don't have to explain things to. And it's just like, you can just hang out (Participant 120: 37-year-old Non-Hispanic White, cisgender female).

Um, so I have a fabulous network from undergrad of like 150 queer people, mostly women, um, who I could go to for anything or any kind of experience and they have lived it and they understood it and had great advice. So I, I feel really lucky that I got to go to school with mostly queer, politically active, um, totally like fabulous and intelligent people. (Participant 119: 27-year-old Non-Hispanic White, cisgender female)

...I had a really terrible experience where I had spoken up in class and the professor shut me down, and I called a friend afterwards to talk about it. And that was unbelievably helpful to just like, hear her, um, say like, what the fuck it's like, just having that kind of like person to talk to is so helpful. (Participant 119: 27-year-old Non-Hispanic White, cisgender female)

I remember the [2016 U.S. presidential election] I think just sitting in a student lounge with, with [LGBT] students who just coming together and like, what is this going to be? What is this going to be like if my, my family is undocumented or my, you know. All of this and at least having a moment of like, we're here together, all sitting in this room. And so finding like strength and power in that. (Participant 120: 37-year-old Non-Hispanic White, cisgender female).

So I love the felt accepted, included, or heard. Um, um, well, I mean that's- so being felt seen feels fabulous. Um, [college] we called it the "dyke nod". When you would like walk past somebody would be like, hello... I think seeing queer people and being recognized as queer feels like really good. (Participant 119: 27-year-old Non-Hispanic White, cisgender female)

...the other positive that's been interesting is that the kind of like the

intergenerational thing, it's almost, you know, meeting people your own age and like the community care connection is great. But like I have ...other queer women in my life who are kind of like, almost like moms to me, um, who like I've known for years. Like almost most of the time I've been here. And so that's just really neat because, you know, beyond just like the community connections, like. It shows it's like possibility of like, Oh, you know, I don't know what the future holds now. ...when I first got to [state], I had no idea what I was going to be doing. I just graduated. I didn't have a job. I'm like, well, now my, my housing is done in December. Like, what am I going to do? But just seeing them of like, Oh, that's what a future could look like. That's like possibility, like they're living together and they're just, you know, out in. So I think having that bit of a role model I think that has been a really positive, um, piece of being in the community... (Participant 120: 37-year-old Non-Hispanic White, non-binary)

SM identity allows one to develop a deeper sense of empathy for other marginalized groups

I'm not one of those people who knew that they were gay from a very young age. I mean, looking back there were, there were signs [but] I certainly... strongly believed myself to be a cis and straight person through my teens. Um, but sort of being, having the experience of doing a complete 180 and being able to connect with myself and see myself as, uh, eventually come around to myself as a complete and good and worthy person. And while coming in touch with these identities... as well as just the diversity that is in the lesbian community lead me to meet people of so many different backgrounds, religions, and, people. I wouldn't have necessarily come into contact through just the schools I went to and the places I lived. It's given me, I mean, it's given me, I think a bit of empathy, into other struggles for injustice and just needing... racial justice or religious tolerance or something else. (Participant 101: 25-year-old Non-Hispanic White, non-binary)

I think that being gay has definitely given me perspective into like being marginalized... I feel like it's a lot easier for me to empathize with like Black people's struggles or ... other marginalized people. I feel like I do like understand it on a different level than maybe like a straight White man. But just because like, I obviously it's not like the same oppression, but I do feel like I like, kind of can relate and empathize more. (Participant 106: 19-year-old Non-Hispanic White, cisgender male)

Yeah. I feel like I definitely would be like less empathetic if I were straight. (Participant 106: 19-year-old Non-Hispanic White, cisgender male)
So you have like nightlife and then I'm working with like homeless, LGBTQ youth. It's like such a different, you know, parts of the community... I've definitely benefited [from both experiences] because I get a deeper sense of empathy for people. ...I just feel like I've grown to be such an empathetic person who really cares. And I think that's, what's driven me to like be an [academic advisor at a university] because I really genuinely want to help people and meet them where they're at and help [them] whether that's literally like finding your meal for tomorrow or if it's like, um, I don't know getting into med school. So I feel like that's a benefit. (Participant 103: 24 year old Non-

Hispanic White, cisgender male)

Self-reflection, self-discovery and self-expression is a benefit of being an SM

Like I wasn't living my truth for a very long time in [state] and then after coming out there was still that part of like learning what coming out really is, what does it mean to be me, you know, so I think that's definitely part of it and I have to acknowledge that... I didn't know that [my sexuality before]. (Participant 107: 28-year-old Non-Hispanic White, cisgender male)
I feel like I, well, I mean, I've had to do a lot more introspection on myself than most than like straight people have. And therefore I know myself better in some ways. (Participant 102: 25-year-old Non-Hispanic White, cisgender female)

I mean, I feel like I don't really care about people's opinions as much as like... I'm not so defensive in [my sexual identity] as far as like, you know, this is who I am and I'm very upfront and people take it as, as it is versus, you know, like, avoiding the questions or, you know, I was always like, this is my personality. This is what I'm doing. So I don't know if it's a trait that maybe some people would kind of walk away from, but I'd rather be upfront and direct with people. (Participant 131: 37-year-old Non-Hispanic White, cisgender female)

My whole life trajectory would have been different if I hadn't gone to a women's college [and been exposed to the LGBT community]. I just, I would have figured out all of these things, but it could have been probably 10 years delayed and that would have been sad. Honestly, I wouldn't have been able to, I think that my young adulthood would have been filled with a lot more sadness and confusion than it has. ...I feel like I've, I've aged like 20 years in the past five just in terms of the amount of life experiences I've had and the number of things I've had to learn and unlearn about myself and other people, um, that I simply would not have, um, have like gained that knowledge or that empathy for myself and for others. (Participant 101: 25-year-old Non-Hispanic White, non-binary)

Yeah, I mean, I definitely feel like, I, I feel like being queer has like, allowed me to accept myself in more ways, because I feel like, well, let, let let's assume that like, I, I was the same if I were straight, which probably wouldn't be the case, but whatever. Um, I mean, I feel like even, even with something really fundamental, like cooking, like I definitely think I would still be into cooking regardless of my sexuality. I mean, I've always liked to cook, but I feel like if I were straight, I probably would feel like more shame about liking things like that. Or like, I wouldn't really let myself like express

myself through my clothes or like cook as much because I don't know, like a lot of guys don't really do that... I feel like obviously there is a lot of like performative masculinity that comes with being straight. And I feel like it, like when you, when you are straight, not that straight people are like oppressed or anything, but I do think that like when you are straight, there's more pressure to. Like act more masculine... and like perform more than like a room full of gay guys, because I just think like, you do have more room to act how you want and to be who you want. (Participant 106: 19-year-old Non-Hispanic White, cisgender male)

**Minority Strengths are moderated
by the race/gender**

Um, well, like what comes with being White and being a man. I think like, although I feel like most people assume that I'm gay. I still think that... There's, there's just like a lot of, um, Like benefits or privileges that come with being a White man. And like, I dunno, I feel like I got like taken more seriously in academic settings and I feel like, I, I feel like I also like kind of have the privilege to be able to like be flamboyant or like to be expressive with my sexuality, because I had kind of have like my privilege to rest on. (Participant 106: 19-year-old Non-Hispanic White, cisgender male)

...especially in the district that I was teaching in, I was established there for a long time. Right. It's so often [my sexuality] seemed like a non-issue, like. And I'm also like the super socially acceptable version of a gay person.... educated White. I'm married. I present like straight people, except for I like guys. (Participant 104: 41-year-old Non-Hispanic White, cisgender male)

Yeah. And because I imagine also the alienating experience of feeling like, so we know when people. Um, hold multiple identities sometimes when they go into places they're not accepted.... I think negative outcome being alienated by a group, which you consider your own might be even more detrimental, um, than being alienated by a group that you already don't really feel like you're a part of. So I feel like if you walk into a queer space and you're turned away, it feels worse than if you're walking into a straight, like a straight setting and you're turned away. (Participant 110: 33-year-old Hispanic Black, cisgender male)

[City], you know, being like an arts capital. And we claim to be a very liberal place. It's like, there's still underpinnings of racism, not fully acceptance. Okay. Like even the drag queens at, um, [club], they were all White right up until recently the Black Lives Matter. And the George Floyd happenings where they included one, a drag queen who identifies it's like not White so. I dunno. I think it's more performative activism by adding a drag queen of a diverse background than like, actually, like, why didn't you do that before? Until like the national media and everything else happening and called attention to that. (Participant 103: 24 year old Non-Hispanic White, cisgender male)

Um, it's just like, [cisgender White gay men can be] like low key racist. Like

they love to be low key. I feel like that's definitely a thing. Like you can't be like, I feel like that's definitely a thing in the gay community. Like (they think) 'I'm gay. So I can't be racist. Like I'm a White gay boy. I'm oppressed too.' Which is like, yes beau, you are oppressed. I feel you, you are, but like you could still be racist. I hate to break it to you, you can still be racist. I feel like that definitely plays a role in like, there's a lot of like performative. I don't know what the term is, but there's a lot of like, Performative like 'black lives matter', like, or like, I don't know. 'I'm gay and like, I don't know, like I have a black friend, I like this black drag queen', like okay. And what, like, do you want a sticker because you have a black friend or like is black drag queen. (Participant 121: 24-year-old Hispanic Black, cisgender female)

I've been in public places with, um, past partners and I have predominantly dated women before [REDACTED]. Um, I've had some [gender non-conforming] partners here and there, but [REDACTED] is my first kind of long-term trans partner. And so I think for me, a lot of my own discomfort has been navigating, um, Being in a relationship that feels more visible and more stigmatized. Um, I think in general, queer women in couples, um, have this like sort of, I mean, it's a double-edged sword, but of being very sexualized. And, um, so in that way, we are seen as not a threat, we're seeing those like something to be looked at or for like the pleasure of like the male gaze. And so I think, um, In a couple where that's not the case, you lose that protective factor and it's not a good protective factor, obviously. It's still, um, what's the word I'm looking for? Very objectifying, but, um, yeah. And also in terms of whiteness, I mean, I think, I mean, it depends, but I think being white gives us just more political, social power. Um, and so I think if we. We're either a mixed race. Couple, if we were both black, like it would be very different. Um, especially in the more rural parts of Rhode Island, um, where like sometimes I feel nervous holding hands. And if I, if we were both black or one of us was, I would feel even more scared. (Participant 119: 27-year-old Non-Hispanic White, cisgender female)

Um, I guess a tight knit gay community is kind of, I mean, when they're not being shady, but that's hard to kind of, that's like a twofold, so it's a positive and a negative. It's hard to kind of tap yourself into...now that I have a partner

and I've been going out to the bars less, it's kind of like hard to keep those relationships going, you know, but, um, The tight knit community does help. That's definitely like a strength that I feel like the LGBT community has... is that everyone gets so close... I couldn't go home for Thanksgiving and like my friend would have me over stuff like that. So it's been kind of like, that's like one of the best things. (Participant 115: 26-year-old Non-Hispanic White, cisgender male)

I think sometimes I do have to be conscious of the fact that like, I have a lot more privilege than like people of color. So I feel like sometimes because I'm gay, I like kind of forget to like, to, to like separate myself from those issues to a certain degree. Like, I feel like a lot of the times, like marginalized people in general will just like lump themselves together. But I feel like, obviously, like with Black Lives Matter, like I have to recognize how I'm complicit in that also. So like, it kind of is like a weird in between where half the time I'm like, yeah, like I feel this too with like, Obviously in a different context, if like a black person who's talking about the oppression they face, I'm like, I feel this too with like being gay, but then on the other side, I'm like, I've contributed to this in a way. so It's kind of like a weird in between. (Participant 106: 19-year-old Non-Hispanic White, cisgender male)

Chapter 4: Study 3: The LGBT Strengths/Stress study

Research has shown that experiencing discrimination increases substance use, including alcohol, among sexual minorities (i.e., those whose sexual identity, orientation, and/or practices differ from the surrounding society, [SM]). To date, however, this research has not been successfully replicated- we have previously tried to replicate this work, but sampling and measurement limitations may have impacted our results. Furthermore, it is unknown how experiencing positive events due to minority identity (“Minority Strengths”) may impact the association between experiencing discrimination and same day drinking. The goal of the present research was to expand upon our previous work by utilizing detailed discrimination measures, incorporating Minority Strengths measures, and recruiting a diverse sample of SMs. Data from this study came from an ecological momentary assessment study examining SMs’ daily experiences and drinking ($N = 61$). Participants were adult self-identified SMs who engaged in recent alcohol use. Recruitment took place in the northeastern U.S. from May to December 2021. Mixed effects multi-level models indicated that experiencing discrimination was associated with increased same day drinking among Black, Indigenous, people of color (BIPOC) participants. Additionally, cisgender men drank more the same day they experienced discrimination than cisgender women and transgender/non-binary participants. Minority Strengths had no impact on these relationships. These results corroborate our previous findings that the association between discrimination and drinking among SMs is moderated by race and suggest gender also impacts this relationship. Future research should continue this research and examine how discrimination in different contexts (e.g., regions) and based on specific identities is associated with drinking.

Introduction

Sexual minority populations (i.e., those whose sexual identity, orientation, and/or practices differ from the surrounding society, [SM]) engage in more drinking [61, 126, 127] and have higher rates of alcohol use disorders [128-130] relative to heterosexual populations. Large scale, population level research suggests that stigma ["the co-occurrence of labeling, stereotyping, separation, status loss, and discrimination in a context in which power is exercised"; 40] is associated with higher rates of alcohol-related health issues among SMs [45-48]. However, research examining the temporal relationship between stigma and drinking among SMs has been somewhat equivocal.

Livingston and colleagues [114] found that experiencing discrimination was associated with greater odds of same day substance use among a sample of gender and sexual minorities, suggesting that substances (e.g., alcohol) may be used to cope with experiences of discrimination. However, the sample used by Livingston et al. consisted mostly of cisgender women and transgender/non-binary individuals, limiting its generalizability to the entire LGBT community.

In an attempt to expand upon this work, my colleagues and I [161] examined how perceived sexual orientation discrimination impacted alcohol use among a sample of MSM. As outlined in chapter two, we did not find a significant main effect of stigma on drinking when we examined the whole sample. However, when we separated the sample by race/ethnicity we found that BIPOC MSM drank less alcohol on the same day they perceived discrimination relative to White MSM. The results of these two studies suggest that a temporal relationship between discrimination and substance use may exist, but that such a relationship is influenced by the other identities (e.g., gender and/or race/ethnicity) held by SMs. This finding is consistent with the

Intersectionality framework [141].

The Intersectionality framework posits that the identities held by individuals result in unique experiences due to the societal forces impacting each of their identities: stigma and privilege associated with each identity results in intersecting experiences of discrimination and advantage [141]. The Intersectionality framework claims that these social forces interact with each other, resulting in unique conditions which shape behavior. For example, the lived experiences of an Asian lesbian non-binary person are shaped by societal forces acting upon their race/ethnicity, sexual orientation, and gender identity. That is, the opportunities and barriers that such a person encounters would be vastly different to a White heterosexual cisgender man, resulting in unique differences in behaviors and resultant health risks. Research supports the Intersectionality framework- the confluence of identities (e.g., BIPOC identity and LGBT identity) has been shown to influence health disparities in the U.S. [142].

The literature on Intersectionality may help contextualize the findings of research on the temporal associations between stigma and substance use. It is probable that all SMs experience some social marginalization given how hegemonic heterosexuality is in Western cultures[162-164]. However, the impact of such marginalization may vary across racial/ethnic and gender identities. As outlined in chapter three, my colleagues and I found that BIPOC LGBT community members experienced social marginalization from the general heterosexual population as well as fellow LGBT community members. Participants reflected that experiencing in-group stigma (i.e., discrimination from fellow LGBT community members) can have an especially “detrimental” impact on BIPOC individuals. This suggests that to better understand the temporal associations between stigma and substance use among SMs, researchers need to consider the intersecting identities of SMs.

It is important to emphasize that the Intersectionality framework pertains not only to how social stigma towards one's identities influences behavior, but also to how behavior is shaped by social privilege as well. Individuals' social identities dictate the amount and kinds of resources (e.g., economic, social, etc.) they have access to. For example, identifying as an SM may result in social marginalization from mainstream (i.e., heterosexual) society, but also can potentially be a source of resiliency and strength. As posited in the theory of LGBT strengths [79], the process of acknowledging and accepting one's LGBT identity can result in a greater capacity to overcome later adversity. Research supports this theory; studies show that successfully navigating SM identity development and stigmatizing experiences may increase coping skills [80, 148].

Membership in the LGBT community also has been shown to be a source of strength for some SMs. In chapter three, I outlined how a distinct benefit of SM identity is the social support community members can receive from fellow LGBT peers. Again, however, this unique strength was impacted by the intersecting social forces related to gender and race. White participants assigned female at birth tended to have more tight knit social connections and derived social support relative to participants assigned male at birth. BIPOC participants assigned female at birth, however, did not share such experiences. In fact, for the latter group the LGBT community could at times be as stigmatizing towards them as the general heterosexual population.

This underscores a limitation of the LGBT Strengths literature- namely that it ignores how LGBT community members' other identities may influence LGBT Strengths. Similarly, the LGBT Strengths model does not consider how *other* identities may be a similar source of strength to LGBT community members. As previously described, the intersectionality framework posits, the unique combination of societal forces impacting upon people's multiple

identities dictates their social positioning [141]. As we saw in chapter three, this impacted the ways in which SMs utilized LGBT Strengths. However, this work failed to investigate how these other identities (e.g., gender and race/ethnicity) were utilized as a source of strength. For example, a SM who is also a racial minority (e.g., identified as Black cisgender woman) may have not found support within the LGBT community, but may very well have found support from other Black women. This phenomenon more closely aligns with the concept of Minority Strengths- that is how individuals derive strength from their minority identities (e.g., through social support) [165]. This model is an extension of the LGBT Strengths theory- strengths can be derived from any of a person's identities *including LGBT identity*. To date this theory has been extremely under researched.

Taken together, both theory and empirical findings suggest that health disparities among SMs may be the result of the intersecting discrimination and strengths associated with the myriad marginalized/privileged identities they hold. Therefore, research examining substance use among SMs must concurrently examine the influence of participants' gender and racial/ethnic identities. Such a nuanced approach could offer a more detailed understanding of the development of health disparities and lead to strategies to reinforce minority strengths and reduce the impact of stigma on health disparities.

To this end, the goal of the current study was to examine if and how experiences of minority strengths/discrimination influenced daily alcohol use among a sample of SMs. Utilizing ecological momentary assessment (EMA) procedures, I sought to test if experiencing discrimination impacted participants' same day drinking. In addition, I sought to determine if experiencing minority strengths may impact the relationship between discrimination and alcohol use. I also designed this study to examine if participants' other identities (i.e., gender and

race/ethnicity) influenced these relationships. I hypothesized that 1) experiences of stigma would lead to more drinking; 2) The relationship between experiences of stigma and drinking would be moderated by experiences of minority strengths, and 3) non-cisgender and BIPOC participants would display less alcohol use in response to experiencing stigma than cisgender/White identified participants.

Methods

Pilot Testing

All measures were pilot tested prior to the full EMA study. Pilot study procedures were nearly identical to the full EMA study (see the “Study Procedures” section). The only differences between the pilot and full study procedures were: 1) pilot participants (N=12) engaged in the EMA procedures for two weeks instead of one month, and 2) following completion of the EMA protocol participants engaged in a feedback interview with me. This interview was designed to get participants’ feedback on their experience engaging in the EMA procedures. During these interviews, I worked with participants to modify study procedures to facilitate survey completion (e.g., changing when surveys were sent daily). I also worked with participants to modify the wording of items to ensure measures were understood by participants. This semi-structured interview lasted ~60 minutes and was conducted over Zoom. The EMA procedures were modified iteratively as pilot testing was conducted. Participants were compensated up to \$78 for completing all pilot testing procedures.

Participants

Participants in the full EMA study (N=61) were 1) adult (i.e., 18+ years of age) individuals who 2) identified as an SM (e.g., lesbian, gay, or bisexual), 3) reported current alcohol use (i.e., 1+ day of drinking per week or 1 day of 5+ drinks in the month before enrollment) and 4) were fluent in English.

Study Procedures

All procedures were reviewed and approved by the Brown University Institutional Review Board. Participants were recruited from the greater New England area (i.e., Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, or Vermont) for this research. Recruitment activities comprised exclusively of online efforts (e.g., posting to Facebook groups with SM members [e.g., “Providence Queer Exchange] and online advertisements). Recruitment took place from June 2021 to December 2021. Potential participants were then screened over the telephone by me to confirm their eligibility to participate. Eligible participants were then immediately sent an electronic copy of the study consent form and given an overview of the study’s procedures. Once informed consent was obtained, participants were sent a personalized link to the baseline survey. I instructed participants to complete the baseline survey at their earliest convenience. I also reiterated the daily study survey procedures and emphasized the importance of completing as many of these surveys as possible.

The current research utilized two types of EMA surveys: daily diary and evening surveys. Daily diary surveys were sent to participants daily at 8:00 AM EST for up to 31 days. The daily diary surveys were used to record daily drinking. In addition, these surveys asked about minority strengths and discrimination experiences. Participants were instructed on how to recognize stigma including both common forms (e.g., being “Threatened or harassed”) and subtler experiences (e.g., being “Avoided, excluded, or ignored” due to their SM identity). In addition, participants were instructed to be cognizant of positively valanced minority strengths experiences (e.g., feeling “Accepted, included, or heard”; “Encouraged” due to their SM identity) experiences. The second component of the EMA procedures was an evening survey. Evening surveys were sent to participants daily at 6:00 PM EST for up to 31 days. These evening surveys were designed to

assess changes in constructs relevant to the drinking/alcohol related consequences including current and drinking plans for the evening. All study surveys were administered via Qualtrics survey software.

Participants were compensated upon completion of each component of the study procedures. All compensation came in the form of Amazon gift cards. Participants were compensated \$20 upon completion of the baseline survey, plus \$1 in compensation per daily diary and \$1 per evening survey completed. In addition, participants received a \$20 bonus if they completed at least 90% of their daily diary and evening surveys. Participants had the opportunity to earn up to a total maximum of \$100 compensation for their participation.

Measures

Baseline Surveys

Immediately following informed consent, participants completed a baseline survey. This survey measured myriad factors that may have impacted the primary outcome (i.e., drinking behavior). The baseline survey included basic demographic information (e.g., gender, age, race/ethnicity, etc.). In addition, this survey included measures of trait level factors such as resiliency and depression [166]. It also assessed the degree to which participants were connected to the LGBT community via the LGBT Connectedness scale [167].

In addition, the baseline survey measured participants' past experiences of discrimination via a modified version of the multiple discrimination scale [168]. Titled the "Integrated Intersectional Multiple Discrimination Scale" (IIMDS) this measure expands upon Bogart's instrument by allowing participants to recount experiences of discrimination (both recent and lifetime) related to any potentially marginalized identities. For example, participants could

endorse discrimination in relation to their sexual, gender, racial/ethnic identities as well as physical appearance (e.g., weight) and health (e.g., able bodiedness).

The baseline survey also measured participant's current drinking behavior via the daily drinking questionnaire [DDQ; 169]. The DDQ measures the quantity and frequency of alcohol use by asking participants to estimate the number of drinks consumed each day of the week over the previous month. Motivation for drinking was measured via a modified Drinking Motivation Scale [DMS; 170]. The modified DMS operationalizes motivations for drinking across four domains: drinking to 1) cope with stress ("Coping"); 2) to enhance positive affect ("Enhance"); 3) to facilitate socialization ("Social"); and 4) facilitate sexual intercourse ("Sex"). Problems associated with drinking were measured via the Alcohol Use Disorders Identification Test [AUDIT; 135, 136]. The AUDIT is a 10-item scale used for screening people for potential alcohol use disorders. AUDIT scores of 16 or higher are considered evidence of possible alcohol use disorder [137].

Alcohol Use

Daily alcohol use was measured via the daily diary assessments. Participants were asked how many standard alcoholic drinks (i.e., 16 oz. beer, 5 oz. wine, or 1-1.5 oz. "shot" of liquor) they consumed over the previous 24 hours (i.e., since the previous day's daily diary survey).

Minority Strengths

Experiences of Minority Strengths were measured during the daily diary assessments with an approach developed specifically for this study. Participants were presented with a list of experiences derived from interviews in study two (chapter three)¹ and pilot tested to capture

¹ At the end of the qualitative interviews in study two, I showed participants prototype EMA measures of strengths and discrimination. I then asked each participant to discuss their interpretation of each item and how well they felt it reflected their lived experiences. Participants were encouraged to offer suggestions about how the measures

Minority Strengths (See Appendix B). Example items on this list included “My [SM] identity gave me an advantage in some way” and “I felt a deep emotional understanding with someone because of our shared [SM] identity”. Participants selected each experience that happened to them during the previous 24 hours (i.e., since the previous day’s daily diary assessment). Participants also had the option to select “Other” and write in any other experiences they may have had. If participants did not encounter any such experiences since the previous random prompt, they will have the option of selecting “Not applicable- none of these have happened since the last survey.” For each endorsed experience, participants were then asked a series of follow-up questions designed to capture nuanced data on the experience. These questions included who participants were with when the experience occurred (e.g., no one [they were alone], a friend or family member) and where this experience took place (e.g., at home) and what identity was the experience related to (e.g., sexual identity; race/ethnicity).

Discrimination

Experiences of discrimination were measured during the daily diary assessments. Participants were presented with a list of common discrimination experiences. These experiences included all 12 of those of used in Livingston et al [114] and included an additional four experiences derived from feedback from participants in study two (chapter three). These measures were designed to measure vicarious (e.g., “I was treated with less courtesy or respect than others” and “I was insulted/called names (direct or overheard)” as well as overt discrimination experiences (e.g., “I was physically assaulted”). Participants in the present study were asked to select all events which they had experienced since the previous day’s daily diary survey (See Appendix B). Participants also had the option to select “Other” and write in any other experiences they may have

could be improved (e.g., wording). This process was iterative- the items were edited after each interview with successive participants offering feedback on the latest version of the measures.

had. If participants did not encounter any such experiences since the previous random prompt, they had the option of selecting “Not applicable- none of these have happened since the last survey.” For each endorsed experience, participants were then asked a series of follow-up questions designed to capture nuanced data on the experience. For example, these questions included who caused this experience (e.g., a colleague), and where this experience took place (e.g., at work) and what identity was the experience related to (e.g., sexual identity; race/ethnicity).

Data Analysis Plan

Data Preparation

All data preparation and analyses were conducted in STATA version 17.

As in chapter one, most participants identified as cisgender women and/or as non-Hispanic White. To allow simultaneous examination of main effects and interactions, categorical variables were dummy coded with centered variables. For example, discrimination experiences each day (any = 0.5] vs. none = -.05), minority strength experiences each day (any = 0.5] vs. none = -.05), race (identified as White = 0.5 vs. BIPOC = 0.5). Gender was coded in two centered dummy variables. In the first centered dummy variable cisgender men were coded as $2/3$ and cisgender women and transgender/non-binary participants were coded as $-1/3$ (referent). In the second centered dummy variable transgender/non-binary participants were coded as $2/3$ and cisgender men and women were coded as $-1/3$ (referent). The rationale for using this coding schema was because utilizing traditional 0 vs. 1 dummy coding results in the simple effects of moderators only being interpretable for the referent group (e.g., cisgender women). When center coding is used as described previously, the coefficient for effects of gender on behavior are interpretable across all gender identities [171]. With traditional dummy coding the effect of a between subjects' factor (e.g., gender) will vary based on which group is used as the referent (e.g., cisgender women). When centered dummy coding is used, the effect of a factor on the

outcome of interest is interpretable regardless of the referent group. An additional benefit of this coding schema is that it allows for the examination of interactions and main effects simultaneously.

Model Construction

Analyses for this study utilized multilevel models (MLM) to examine how SM stigma/strengths influences alcohol use. The nested structure of EMA data makes MLMs a good choice for analysis. That is, EMA data are inherently multilevel with observations nested within participants (level-1 random effects) and inferences about differences between participants being the fixed effects of interest (level-2). The Level 1 model included only an intercept, which accounts for differences in the mean level of drinking across participants. The Level 2 model included predictors of drinking on a given day accounting for the differences in mean level of drinking during EMA between participants (i.e., the clustering of data). The Level 2 model included parameters for time (study day), each participant's baseline drinking (i.e., standard drinks per week at baseline assessment), race/ethnicity, gender, and interaction terms for race/ethnicity by gender.

Results

Participant demographics are reported in Table 3.1. Participants were fairly adherent to study procedures: on average, participants completed daily diary entries on 23.6 days of their participation ($SD=9.4$, Range=1-31). Participants completed slightly fewer evening surveys; participants completed evening surveys on 21.5 days of their participation ($SD=9.0$ Range=2-31).

Alcohol Use

The average AUDIT score was 11.1 ($SD=8.7$ Range=1—35), with most participants ($n=40$ 65.6%) scoring below 16, indicating that most participants were not at high risk for

alcohol use disorder. Out of 1560 total study days, participants reported a total of 531 drinking events. On average, participants drank on 8.7 days while in the study ($SD=8.3$, Range=0-28). Participants drank an average of 3.8 standard drinks ($SD=2.7$ Range=0-26) on days in which they drank. Of all the days that the participants drank, 189 (36.6%) were heavy drinking days (i.e., 5+ standard drinks in a day). Participants drank an average of 1.8 days per week ($SD=1.1$, Range=0-7). Participants drank 7.2 standard drinks per week on average ($SD=12$, Range=0-63).

Discrimination Experiences

Of 1456 total reports, 442 recorded discrimination events. Most participants reported at least one discrimination experience during their participation ($n=49$, 80%). On average participants, reported experiencing .5 discrimination experiences per day ($SD=.1$, Range 0-10). Participants also reported experiencing discrimination on 7.3 days of their participation ($SD=8.7$, Range=0-31). The most common experiences included "My perspective/feelings were overlooked or misunderstood" ($n=79$, 18%) and "I was treated as inferior, less smart/capable than others" ($n=73$, 17%). Logistic regression analyses showed that on average BIPOC participants were more likely to report any discrimination, but a significant gender by race/ethnicity interaction was also found suggesting that the association between BIPOC identity and discrimination was substantially weaker for transgender/nonbinary participants compared to male and female participants (See tables 3.2).

Strengths Experiences

Of 1456 total reports, 1101 recorded Minority Strengths events. All participants reported at least one Minority strengths experience during their participation ($N=61$, 100%). On average participants, reported experiencing 2.9 Strengths experiences per day ($SD=3.2$, Range 1-14). Participants also reported experiencing Strengths on 18.1 days of their participation ($SD=9.9$, Range=1-31). The most common experiences included "I felt safe enough to be my authentic

self" (n=628, 57%) and "I felt accepted, included, and/or like I belonged" (n=504, 46%). Logistic regression analyses showed that on average BIPOC participants were just as likely to report any minority strengths as White participants. However, a significant gender by race/ethnicity interaction was also found suggesting that the association between BIPOC identity and minority strengths was substantially weaker for cisgender male participants compared to cisgender female and transgender/nonbinary participants (See tables 3.3).

Model results

Model one yielded no significant association between experiencing discrimination and the number of standard drinks consumed at the day-level. Furthermore, I did not find evidence of an effect of experiencing minority strengths on alcohol use. I did not find a significant relationship between experiencing minority strengths and day-level alcohol use, nor did experiencing minority strengths significantly moderate the relationship between discrimination and drinking (See Table 3.4).

In model two, I found significant effects of race/ethnicity on the day-level drinking. Model two demonstrated that BIPOC participants were predicted to have a 60% higher expected number of drinks on days they experienced discrimination compared to White participants. Experiencing any LGBT strengths did not moderate this relationship (See Table 3.5). I then examined the association between participants' gender, discrimination, and minority strengths. Model three demonstrates a non-significant interaction between discrimination and gender at the day-level. This model suggest that cisgender men were predicted to have an 80% higher number of drinks on days when they experienced discrimination compared to cisgender women and transgender/non-binary participants. Experiencing any LGBT strengths did not moderate this relationship (See Table 3.6).

Finally model four demonstrated that gender and race interacted together to impact

alcohol use at the day level. The final model included all factors (i.e., participants' gender, race/ethnicity, experiences of discrimination and minority strengths, and interactions). The goal of this model was to demonstrate how all the identities I could codify were associated with drinking. There was a significant interaction between day level discrimination and race/ethnicity suggesting that BIPOC participants who experienced discrimination were predicted to have an 71% higher number of drinks per day relative to White participants. In addition, there was a significant gender by discrimination interaction, suggesting that cisgender men who experienced discrimination were predicted to have 112% higher number of standard drinks relative to cisgender women and transgender/nonbinary participants. Finally, there was a significant interaction between the race and gender, suggesting that BIPOC cisgender male participants were predicted to drink about 89% fewer standard drinks per day than White cisgender women and transgender/nonbinary participants (see table 3.7).

Follow-up analyses

To further explore potential factors which may have influenced the relationship between discrimination and alcohol use, several multi-level models were constructed utilizing factors from the baseline survey. These models included fixed effects such as individual participants' drinking motivation subscale scores, AUDIT scores, IIMDS scores, resiliency scale scores, and LGBT community connectedness. The only factor that significantly predicted daily diary drinking was the social subscale of the drinking motivation questionnaire, suggesting that increased social motivations for drinking resulted in a slightly higher predicted number of daily drinks (IRR=1.90, SE=.55, CI=1.07-3.35, $p=.03$). In all models, however, none of these fixed effects factors had a significant impact on the found associations between discrimination, race, and gender on day level drinking.

Discussion

The goal of the current chapter was to expand upon the previous research on the association between discrimination and drinking among SMs. Through the use EMA methodologies and multi-level modeling, I sought to determine how experiencing (and not just perceiving) discrimination impacted same day drinking, and how minority strengths moderated this relationship. Furthermore, my goal was to determine how SMs' intersecting racial/ethnic and gender identities were associated with their drinking. I did not find evidence of an association between minority strengths and day-level drinking. Furthermore, experiencing discrimination did not influence day-level drinking across the entire sample, but experiencing discrimination did appear to be associated with drinking in unique ways across subsamples of participants. Specifically, BIPOC participants who experienced discrimination drank more on days they experienced discrimination than White participants. Additionally, cisgender men drank more the same day they experienced discrimination than cisgender women and transgender/non-binary participants.

It is important to consider the findings of the present analyses in the context of the results of chapter two. In chapter two, we found that MSM did not drink more on the same day that they perceived being discriminated against because of their sexual orientation. We also found that perceived sexual orientation discrimination earlier in the week was not associated with drinking later the same week. As we previously stated, such null findings may have been due to several factors, including the exclusive recruitment of cisgender men who were heavy drinkers for that sample. We did find, however, that BIPOC MSM drank relatively *less* on the same day they perceived they were being discriminated against due to their sexual orientation. These results may be due to differences in methodologies and samples between the present EMA study and that of chapter two, which I outline in the next few paragraphs.

For the current analyses, I utilized a more diverse sample that included cisgender women and transgender/non-binary participants. In addition, I recruited a sample of participants whose drinking was more diverse— although all participants reported regular drinking, they were not required to have engaged in heavy drinking to participate like chapter two participants were. Thus, the sample of the present research was more representative of the larger LGBT community and a range of drinking than that presented in chapter two. As such, we can analyze day-level experiences of discrimination and drinking among LGBT community members with more varied identities and drinking behavior.

Another important difference to this research and that presented in chapter two is that discrimination experiences in the current analyses were not limited to just experiences related to sexual orientation. The current data refer to experienced discrimination due to *any* of the participants' identities. As already described, chapter two operationalized day-level discrimination as participants perceived sexual orientation discrimination. This proxy measure of discrimination experiences was used because the data were derived from a previously completed research study. In contrast, the present study measured participants' *experiences* of discrimination each day. This measure allowed participants to endorse myriad experiences per day covering a wide range of experiences from overt hostility (e.g., physical assault) to more subtle stigmatization (e.g., overhearing someone saying something offensive). Importantly these experiences could be due to any of a participant's identities (e.g., sexual, gender, racial/ethnic). The measures of discrimination in these studies are vastly different- chapter two used a very narrow measure which only captured perceptions of sexual orientation discrimination while chapter four measured a broad range of experiences of discrimination due to any identity.

These differences should be considered when interpreting the results of the current

analyses. The present analyses suggest that BIPOC SMs drink more in response to experiences of discrimination, which seems to contradict findings of chapter two. However, when considering the differences described previously may offer clues as to these divergent results. For example, since discrimination in chapter two was specifically that related to sexual identity whereas that in chapter four was related to any identity it is possible that BIPOC SMs respond differently to different discrimination experiences. Perhaps BIPOC participants are more impacted by racial/ethnicity-based discrimination than sexual identity experiences.

It is also important to consider the extant literature when interpreting the present results. The few other EMA research which has found an association between discrimination and substance use among SMs has often examined discrimination due to specific characteristics. For example, Rendina et al found that HIV status-based discrimination was associated with stimulant use among a sample of MSM [172]. These researchers heavily sampled BIPOC MSM (78.8% of their sample did not identify as White). This is relevant because it may suggest that discrimination due to different characteristics (e.g., HIV status) may be more or less associated with behaviors (e.g., substance use) in different SMs communities (e.g., BIPOC SMs). In the present analyses, I collapsed all experiences of discrimination together potentially obfuscating how discrimination due to different characteristics was associated with drinking.

My methodologies of chapter four more closely resembles those of Livingston et al, who also collapsed discrimination experiences across participant characteristics [114]. However, the sample analyzed in chapter four was more diverse than that used by Livingston et al (16% of their sample were BIPOC and 62% were female). It is possible that the association found by Livingston et al was being driven by discrimination experiences that were relevant to this mostly White female sample (e.g., gender-based discrimination). In a similar vein, experiences of

racial/ethnic discrimination experienced by BIPOC participants may have been driving the association found between discrimination experiences and drinking among BIPOC SMs in my sample.

My results demonstrate that discrimination seems to be associated with same day alcohol use among SMs in this sample, but this relationship varies across race and gender of participants. Namely, these data show that on a day on which they experienced discrimination BIPOC and cisgender male participants in this sample drank more than White and transgender/nonbinary and cisgender female SMs. However, it is important to point out that a significant race/ethnicity by gender interaction was also observed, signifying that BIPOC cisgender SM men drank less overall than White cisgender SM women and transgender/non-binary participants. This suggests that without experiencing discrimination, BIPOC SM men in the sample drank less on average than their White/non-cisgender male counterparts. These findings may suggest that individual responses to discrimination may vary across different members of the LGBT community. For example, BIPOC SM men may react to discrimination around sexual identity by self-isolating and therefore drink less because they are not socializing with their peers (e.g., in gay bars). Alternatively, SM women may engage in drinking to cope with the distress of being discriminated against. These are speculations and should be examined in future analyses examining how the social context of drinking varies across genders within the LGBT community. In addition, there was an unexpected interaction, indicating overall higher levels of drinking during the EMA study even when controlling for baseline drinking. This was not related to experiences of discrimination, and there is no rationale for why such an effect could occur. I caution against any interpretation of that result.

Limitations

Unfortunately, the current research has several limitations which must be considered

when interpreting my findings. As in chapter two, the present sample suffered from a lack of diversity. Beyond being predominantly non-Hispanic White and cisgender, the sample was young and well-educated. This is important as discrepancies in socioeconomic status have been directly linked to drinking and related health disparities [142]. Although I did try to recruit a diverse range of participants (including BIPOC SMs for this research) my efforts still resulted in a relatively homogenous study sample. Given that the number of BIPOC and transgender/non-binary participants was so small, I am not certain if the associations found between race/ethnicity and gender reflect trends in the larger LGBT community. It is possible that the association found simply reflect a subset that is very different than the larger population. This is especially unfortunate as a goal of this work was to examine the degree to which experiencing discrimination differentially impacts alcohol use among SMs with other marginalized identities.

It is also important to point out that this lack of diversity influenced the kinds of statistical modeling I could conduct. That is, given the limited number of participants of differing identities it was difficult to examine all possible combinations of marginalized identities. For example, given the small number of transgender male ($n=2$) and transgender female ($n=1$) participants these categories had to be collapsed into gender non-binary ($n=18$) category. This is particularly problematic as research suggests that the experienced of transgender men and women are vastly different. For example, previous work I have conducted with Guy et al [173] suggests that the process that transgender women and men go through while transitioning to a new gender identity involves giving up and taking on unique social stigmas and privileges. For example, transgender men in this research described how being perceived by others as men resulted in being feared by cisgender women (i.e., being perceived as potential threat). Conversely, transgender women described how relinquishing their previous male identity

amounted to giving up “privilege”. It is likely that similar experiences were shared by participants in the current sample, and such experiences may have impacted participants drinking. Unfortunately, given the small sample size I was unable to separate gender into more specific categories, and therefore could not examine such differences.

Given the high level of endorsement we saw of Minority Strengths, we can assume that the sample is highly resilient. This may partially explain the lack of impact of strengths in our models. That is, such a resilient sample may not make it easy to see evidence of a relationship between these factors. It is possible that had we done a better job of recruiting marginalized people (e.g., participants with a lower SES) may have less resiliency and would be able to show evidence more easily for a relationship between these factors. The fact of the matter is since the sample was so highly resilient (everyone endorsed at least one strengths experience and the average per day was 3) it then becomes hard to see its impact. Had there been more variability in the sample we may have seen more of an effect. This is also relevant because we only recruited people from New England. New England is relatively liberal (or at least the urban areas are) region of the U.S. Had we been able to recruit people from other regions it is possible we would have gotten a more diverse look into how Minority Strengths influences behavior.

In a similar vein, it is important to acknowledge the limitations of the discrimination and strengths measures used. As there currently do not exist validated EMA measures for discrimination and strengths, I had to use exploratory measures. As such, it is unclear how reliable and valid these measures were at capturing discrimination and strengths. However, I did try to ensure these measures were ecologically valid; I utilized community members’ feedback (participants from chapter three) to adapt the discrimination measures from Livingston et al [114]. I also developed the measures of minority strengths iteratively from input from participant

in chapter three as well as pilot participants from chapter four. Despite such efforts, it is possible that these measures did not capture all experiences of discrimination/strengths.

In addition, the time in history during which the study was conducted may have influenced the observed results. My study took place from June through December 2021- during the second year of the COVID-19 pandemic. Although the restrictions in social gatherings due to the COVID-19 pandemic had begun to be lifted in the U.S. during this time, New England public health authorities continued to emphasize minimizing unnecessary social interaction [174]. As such, it is likely that some participants may have engaged in less drinking compared to before the COVID-19 pandemic. This claim is partially supported by reports from participants in the study from chapter three of reduced drinking due to the closing of gay bars being due to the COVID-19 pandemic [175]. In addition, it is possible that participants were less likely to experience discrimination and minority strengths due to social distancing measures (e.g., quarantine).

Conclusion

The present study found that the association between experienced discrimination on a given day and alcohol use that same day varied across participants in the sample. Specifically, experiencing discrimination was associated with increased drinking the same day for BIPOC and for cisgender male participants. In addition, a significant gender by race interaction was observed, suggesting that BIPOC cisgender men were predicted to drink less on any given day in the absence of discrimination experiences. Experiencing Minority Strengths did not influence the association between experiencing discrimination and same day drinking. These results lend support to the Intersectionality framework, which posits that the idiosyncratic combination of marginalized identities held by individuals results in unique experiences and subsequent health behaviors. Given my results and those of previous studies I conclude that discrimination could play a role in alcohol use and resultant health disparities among LGBT community members.

However, the way discrimination impacts drinking varies across individuals based on the social forces acting upon their identities. Unfortunately, the lack of diversity in sample (e.g., gender identity of participants) limits the generalizability of the results. Future research is needed to examine how differences across gender identities (e.g., transgender men and transgender women) may result in different drinking behaviors compared to those with a single marginalized identity (e.g., White cisgender SM men).

Table 3.1 *Participant Demographics.*

Characteristics	Total (N=61) <i>Mean (SD)</i> or <i>n (%)</i>	BIPOC (n=16) <i>Mean (SD)</i> or <i>n (%)</i>	White (n=45) <i>Mean (SD)</i> or <i>n (%)</i>	<i>T</i> or χ^2	<i>p</i>
Age (Range: 18 – 54)	26.8 (7.6)	25.3(7.2)	27.1(7.9)	.02	.98
Gender					
Cisgender Female	27(44.3%)	7(43.8%)	8(17.8%)	4.3	.12
Cisgender Male	15(25%)	5(31.3%)	22(48.9%)		
Transgender/Non-binary	19(31%)	4(25.0%)	15(33.3%)		
Sexual Identity					
Homosexual/Gay/Lesbian	22(44.3%)	8(50.0%)	14(31.1%)	3.6	.61
Bisexual	17(27.9%)	3(18.8%)	14(31.1%)		
Queer	12(19.7%)	2(12.5%)	10(22.2%)		
Asexual	1(1.6%)	0	1(2.2%)		
Pansexual	8(13.1%)	3(18.8%)	5(11.1%)		
Panromantic	1(1.6%)	0	1(2.2%)		
Ethnicity (Hispanic or Latine)	5(8.2%)	4(25.0%)	1(2.2%)	8.1	.00
Race					
White	45(73.8%)	0	45(100%)	61.0	.00
Black or African American	9(14.8%)	9(56.3%)	0		
Asian	1(1.6%)	1(6.3%)	0		
American Indian/Alaska Native	2(3.3%)	2(12.5%)	0		
Multiracial	4(6.6%)	4(25%)	0		
College degree	34(55.7%)	5(31.3%)	29(64.4%)	5.3	.02
Low income ¹	31(49.2%)	8(50%)	22(48.9%)	.01	.94
Unemployed	13 (21.3)	4(25.0%)	9(20.0%)	.2	.68
AUDIT score	11.1 (8.7)	19.2(10.4)	8.2(5.7)	-5.2	.00
Avg. # total EMA days completed	25.6 (9.6)	27.3(9.1)	24.9(9.8)	-.85	.40

Table 3.2 *Results of Logistic Multi-Level models predicting odds of reporting discrimination² experiences daily by race/ethnicity and gender.*

	Odds of Reporting Discrimination per day			
	<i>OR</i>	<i>SE</i>	<i>95% CI</i>	<i>p</i>
Level 2 Predictors				
Study Day (0 to 31)	0.96	.01	.94-- .98	.00
Race/ Ethnicity				
BIPOC	5.79	3.61	1.70—19.68	.01
White	Ref	Ref	Ref	Ref
Gender				
Cisgender men	0.32	.23	.08—1.30	.11
Transgender/nonbinary	0.32	.24	.07—1.44	.14
Cisgender women	Ref	Ref	Ref	Ref
Interactions				
Race/Ethnicity *Gender (Cisgender men)	0.22	.32	.01—3.65	.29
Race/Ethnicity *Gender (Transgender/nonbinary)	0.03	.05	.33—1.22	.02

*Level 1 models included only an intercept term to account for clustering of data within participants

**Dichotomous variables were effect coded as .5 or -.5. All referent groups were coded -.5.

***Gender was effects coded; cisgender men were coded as .33 when cisgender women and transgender/non-binary participants were the referral group (coded as -.67). When examining transgender/non-binary participants (.33) relative to cisgender women and men (-.67).the coding schema was reversed.

****Values in bold represent $p < .05$

² For these analyses discrimination could be due to any participant identity/characteristic. For example, race, ethnicity, gender and/or sexual orientation.

Table 3.3 *Results of Logistic Multi-Level models predicting odds of reporting Minority Strengths experiences daily by race/ethnicity and gender.*

Odds of Reporting Discrimination per day				
	<i>OR</i>	<i>SE</i>	<i>95% CI</i>	<i>p</i>
Level 2 Predictors				
Study Day (0 to 31)	0.93	.01	.92--.95	.00
Race/ Ethnicity				
BIPOC	.92	.66	.22—3.80	.91
White	Ref	Ref	Ref	Ref
Gender				
Cisgender men	0.38	.31	.08—1.88	.24
Transgender/nonbinary	0.55	.51	.09—1.36	.52
Cisgender women	Ref	Ref	Ref	Ref
Interactions				
Race/Ethnicity *Gender (Cisgender men)	.03	.04	.00--.63	.03
Race/Ethnicity *Gender (Transgender/nonbinary)	.09	.16	.00—3.25	.19

*Level 1 models included only an intercept term to account for clustering of data within participants

**Dichotomous variables were effect coded as .5 or -.5. All referent groups were coded -.5.

***Gender was effects coded; cisgender men were coded as .33 when cisgender women and transgender/non-binary participants were the referral group (coded as -.67). When examining transgender/non-binary participants (.33) relative to cisgender women and men (-.67).the coding schema was reversed.

****Values in bold represent $p < .05$

Table 3.4 *Results of Mixed Effects Multi-Level Poisson models predicting number of standard drinks consumed daily.*

	Number of Standard drinks			
	<i>IRR</i>	<i>SE</i>	<i>95% CI</i>	<i>p</i>
Level 2 Predictors				
Study Day (0 to 31)	.99	.00	.98--1.00	.01
Baseline drinking	1.5	.12	1.3--1.8	.00
Time-varying Discrimination				
Any	.79	.15	.54—1.14	.21
None	Ref	Ref	Ref	Ref
Time-varying LGBT Strengths				
Any	1.38	.15	.54—1.14	.21
None	Ref	Ref	Ref	Ref
Interactions				
Discrimination*Strengths	1.72	.64	.83--3.58	.15

*Level 1 models included only an intercept term to account for clustering of data within participants

**Dichotomous variables were effect coded as .5 or -.5. All referent groups were coded -.5.

***Gender was effects coded; cisgender men were coded as .33 when cisgender women and transgender/non-binary participants were the referral group (coded as -.67). When examining transgender/non-binary participants (.33) relative to cisgender women and men (-.67).the coding schema was reversed.

****Values in bold represent $p < .05$

Table 3.5 *Results of Mixed Effects Multi-Level models predicting number of standard drinks consumed daily by race/ethnicity.*

Number of Standard drinks				
	<i>IRR</i>	<i>SE</i>	<i>95% CI</i>	<i>p</i>
Level 2 Predictors				
Study Day (0 to 31)	.99	.00	.98--1.00	.01
Baseline drinking	1.5	.10	1.26--1.67	.00
Time-varying Discrimination				
Any	.98	.12	.78—1.23	.86
None	Ref	Ref	Ref	Ref
Time-varying LGBT Strengths				
Any	1.11	.14	.86—1.43	.42
None	Ref	Ref	Ref	Ref
Race/ Ethnicity				
BIPOC	2.85	.94	1.49—5.45	.00
White	Ref	Ref	Ref	Ref
Interactions				
Discrimination*Race/Ethnicity	1.60	.37	1.02--2.51	.04

*Level 1 models included only an intercept term to account for clustering of data within participants

**Dichotomous variables were effect coded as .5 or -.5. All referent groups were coded -.5.

***Gender was effects coded; cisgender men were coded as .33 when cisgender women and transgender/non-binary participants were the referral group (coded as -.67). When examining transgender/non-binary participants (.33) relative to cisgender women and men (-.67).the coding schema was reversed.

****Values in bold represent $p < .05$

Table 3.6 Results of Mixed Effects Multi-Level models predicting number of standard drinks consumed daily by gender.

Number of Standard drinks				
	<i>IRR</i>	<i>SE</i>	<i>95% CI</i>	<i>p</i>
Level 2 Predictors				
Study Day (0 to 31)	.99	.00	.98—1.00	.02
Baseline drinking	1.53	.13	1.29—1.81	.00
Time-varying Discrimination				
Any	1.02	.13	.80—1.30	.87
None	Ref	Ref	Ref	Ref
Time-varying LGBT Strengths				
Any	1.72	.14	.83—1.39	.60
None	Ref	Ref	Ref	Ref
Gender				
Cisgender men	.97	.40	.43—2.18	.95
Transgender/nonbinary	.81	.32	.38—1.76	.60
Cisgender women	Ref	Ref	Ref	Ref
Interactions				
Discrimination*Gender (Cisgender men)	1.68	.47	.98--2.90	.06
Discrimination*Gender (Transgender/nonbinary)	.88	.24	.51—1.51	.64

*Level 1 models included only an intercept term to account for clustering of data within participants

**Dichotomous variables were effect coded as .5 or -.5. All referent groups were coded -.5.

***Gender was effects coded; cisgender men were coded as .33 when cisgender women and transgender/non-binary participants were the referral group (coded as -.67). When examining transgender/non-binary participants (.33) relative to cisgender women and men (-.67).the coding schema was reversed.

****Values in bold represent $p < .05$

Table 3.7 Results of Mixed Effects Multi-Level models predicting number of standard drinks consumed daily by race and gender.

Number of Standard drinks				
	<i>IRR</i>	<i>SE</i>	<i>95% CI</i>	<i>p</i>
Level 2 Predictors				
Study Day (0 to 31)	.99	.00	.98--1.00	.01
Baseline drinking	1.36	.10	1.18—1.58	.00
Time-varying Discrimination				
Any	1.07	.14	.84—1.38	.58
None	Ref	Ref	Ref	Ref
Time-varying LGBT Strengths				
Any	1.03	.14	.79—1.33	.84
None	Ref	Ref	Ref	Ref
Race/ Ethnicity				
BIPOC	2.88	.89	1.57—5.28	.00
White	Ref	Ref	Ref	Ref
Gender				
Cisgender men	.68	.24	.34—1.35	.27
Transgender/nonbinary	.57	.22	.26—1.23	.15
Cisgender women	Ref	Ref	Ref	Ref
Interactions				
Discrimination*Race/Ethnicity	1.71	.42	1.06—2.74	.03
Discrimination*Gender (Cisgender men)	2.12	.60	1.21—3.70	.01
Discrimination*Gender (Transgender/nonbinary)	1.15	.34	.65—2.05	.63
Race/Ethnicity *Gender (Cisgender men)	.11	.08	.03--.45	.00
Race/Ethnicity *Gender (Transgender/nonbinary)	.30	.23	.07—1.37	.12

*Level 1 models included only an intercept term to account for clustering of data within participants

**Dichotomous variables were effect coded as .5 or -.5. All referent groups were coded -.5.

***Gender was effects coded; cisgender men were coded as .33 when cisgender women and transgender/non-binary participants were the referral group (coded as -.67). When examining transgender/non-binary participants (.33) relative to cisgender women and men (-.67).the coding schema was reversed.

****Values in bold represent $p < .05$

Part 3

Chapter 5 – Conclusion

My goal when designing this line of research was to expand upon past literature by adding needed specificity to the relationship between discrimination and drinking-related health disparities. Utilizing broad measures of discrimination and cross-sectional data collection techniques, past research has unequivocally shown an association between social marginalization and substance use related health disparities. However, only a very small number of studies have examined the association between experiences of discrimination and subsequent alcohol use on the day level, and no studies have examined what factors may moderate this association. Through developing a nuanced measure of discrimination and a measure of experiences of minority strengths and utilizing micro-longitudinal EMA methodologies, I sought to examine in depth the association between discrimination and drinking among SMs at the day level. All three of my studies showed that how discrimination is associated with day-level drinking behavior among SMs differs substantially depending on the other identities concurrently held by individuals.

Summary of Key Findings

In chapter two, the association between perceived sexual orientation discrimination and drinking varied among a sample of MSM depending on participants' racial identity. Specifically, perceived discrimination on the day level was associated with less alcohol use that same day among BIPOC MSM but had no impact on drinking behavior among White MSM. We were surprised by these results, given that previous research had found that discrimination was associated with increased substance use among SMs [114]. We speculated that the experience of navigating the world as both a sexual and racial minority impacted the ways in which BIPOC MSM reacted to discrimination or the contexts in which they experienced discrimination related

to their sexual identity. For example, BIPOC MSM may be more likely to experience sexual orientation-based discrimination in contexts where they normally would not drink (e.g., with heterosexual BIPOC peer or family members). Alternatively, BIPOC MSM may be more accustomed to experiencing discrimination due to their marginalized racial identity and therefore may be more resilient to it. However, given the low number of BIPOC participants, exclusive sampling of cisgender MSM who were at risk of HIV infection, and measurement limitations of discrimination (i.e., we only had perceptions of sexual orientation-based discrimination and not actual experiences), we could not explore this phenomenon further with these data.

These limitations precipitated the need for more detailed research on the impact of discrimination and strengths on drinking. Before this work could be undertaken, it was necessary to conduct qualitative research on the lived experiences of LGBT community members. The rationale for this work was that a better understanding of the range of positive and negative experiences related to SMs myriad identities would facilitate the development of quantitative measures for chapter four. The results of chapter three revealed that participants' identities played a pivotal role in how discrimination and strengths manifested. For example, across identities participants reported that social support from other SMs and empathy towards others were forms of minority strength. However, female-identified SMs relied more on social support than male-identified SMs in the sample. In addition, BIPOC participants described experiencing racial discrimination from within the LGBT community, which reduced their reliance on social support. Our results suggest that experiences of strengths and discrimination are influenced by LGBT community members' intersecting identities.

The results of chapter three were utilized in creating quantitative measures for chapter four. Study three had three main goals. First, I wanted to test whether experiencing discrimination

influenced same day alcohol use among a sample of SMs with diverse gender identities. Second, this study was meant to determine how experiencing Minority Strengths may impact the relationship between discrimination and alcohol. Finally, the study examined how participants' other identities (i.e., gender and race/ethnicity) influenced these relationships. In a series of multi-level models, I found that experiencing discrimination was not associated with alcohol use across all participants. However, I did find that BIPOC and cisgender male participants drank relatively more after experiencing discrimination compared to White and cisgender female and transgender/non-binary participants. Experiencing Minority Strengths was not found to significantly impact the associations between experiencing discrimination and same day drinking.

Implications

Before discussing the implications of this work, it is necessary to clarify that this work does *not* suggest that differences in behavior found across racial/ethnic and gender identities are due to individuals possessing these identities. That is, I am *not* making the case that identifying as a racial/ethnic or gender minority *causes* elevated drinking in this sample. Rather, any relationships between discrimination and drinking are more likely due to a myriad of complex social and societal factors, including a history of marginalization and mistreatment. The use of racial/ethnic and gender identities in the models can be conceptualized as proxy measures of the experience of systemic marginalization faced by these groups.

The social context in which minorities exist (i.e., experienced social marginalization) impacts behavior over the life course. That is, individuals' social position constrains the available options and choices one can make and shapes behavior. For example, individuals may use substances to cope with stressors (e.g., discrimination experiences) because due to social marginalization there is a paucity of alternative coping techniques. This is supported by research

studies which suggest that systemic social marginalization of BIPOC populations (e.g., through redlining) are associated with alcohol and substance use [176-178]. The differences in drinking behavior observed in this suite of research studies is likely the result of the social stigma surrounding specific identities and is *not* a character flaw of the individuals sampled nor a reflection of the morality (or “rightness”) of the community. With this understanding in mind, the presented work has several broad themes which have implications for future research.

One implication of this work is that the Intersectionality framework may be a more accurate model for predicting complex health behaviors among marginalized groups than the Minority Stress framework. The Minority Stress framework posits that individuals with marginalized identities experience more stress due to their identities and therefore have worse health behaviors [40, 179]. Minority stress is additive—theoretically each marginalized identity held by an individual results in increasingly more stress, resulting in increasingly worse health behavior (e.g., increased problematic alcohol use). Therefore, we would hypothesize that in response to experiencing discrimination, (a presumably stressful event) those with multiple minority identities would be more likely to utilize substances than SMs with a single minority identity. The results of both chapters two and four, however, do not provide evidence in support of this claim. In both studies, I and my coauthors found that holding multiple minority identities did not result in elevated drinking for SMs after experiencing discrimination for all participants. Racial/ethnic minorities (BIPOC) SMs drank more after experiencing discrimination, but gender minority (transgender/non-binary) SMs did not. These results are more in line with other empirical studies examining the Intersectionality framework

Although the public health literature on Intersectionality is still burgeoning, several studies show that the intersecting identities of individuals play a critical role in health behaviors.

For instance, Mereish and Bradford found that SM Black and Latine participants demonstrated higher rates of substance use compared to racial/ethnically matched heterosexual counterparts [157]. Another study found that discrimination based on sexual orientation and on race/ethnicity uniquely predicted alcohol related health problems [158]. Yet another study found that intersectional discrimination (i.e., discrimination based on sexual orientation and race/ethnicity) was associated with emotional dysregulation and mental health problems among a sample of MSM [159]. Taken together, these empirical findings support the Intersectionality framework, which posits that the identities held by individuals result in unique experiences due to the societal forces impacting each of their identities: stigma associated with each identity result in intersecting experiences of discrimination *as well as* privilege [141].

The observations that intersecting identities result in unique experiences of discrimination and privilege is critical. In the face of adversity, socially marginalized groups have shown tremendous resiliency and have created social networks for support when institutions have failed to do so. For example, members of the LGBT community created grass roots organizations to support its members and demand policy changes during the HIV epidemic [146, 147]. The present work is consistent with this perspective, participants described how they utilized their SM identities to overcome challenges. Chapter four did not find evidence that such Minority Strengths experiences were associated with drinking behavior. However, past retrospective research suggests that related constructs (e.g., social support from LGBT peers) have positively impacted other health behaviors [e.g., HIV medication adherence; 180]. However, this lack of evidence may be due to a sampling limitation of chapter four as described below.

Participants in the chapter four study had high levels of Minority Strengths endorsement (all participants had at least one Minority Strengths experience and the average number of

experiences *per day* was approximately three). Such high level of Minority Strengths endorsement suggests that the sample had substantial resilience resources. The consistently high level of experienced strengths among participants may have obfuscated evidence of a relationship between Minority Strengths and behavior. That is, the low deviation Minority Strengths experience endorsement may have made it difficult to detect evidence for an association between Minority Strengths and drinking. Had I recruited a more diverse sample (e.g., individuals with a lower socioeconomic status) I may have seen more variability in Minority Strengths experiences and perhaps would be seen the expected protective effects of strengths. Future research should examine the temporal relationship between Minority Strengths experiences and health behaviors to determine if leveraging such strengths would be a viable route through which public health officials may address health disparities between the LGBT community and the general population.

The present work also has implications for the Minority Strengths literature. Vaughan and Rodriguez posited that research examining LGBT Strengths (a type of Minority Strength) needs to move towards precise operationalizations in a similar fashion as Positive Psychology [79]. They suggest that LGBT Strengths is composed of many domains (or “pillars”) which individuals may utilize to overcome adversity. Unfortunately, in the nearly 10 years since their manuscript was published the field continues to rely on diffuse, non-specific operationalizations [148, 181, 182]. The closest researchers have come to following Vaughan and Rodriguez’s suggestions has been the work of Perrin et al whose path analyses suggest that LGBT community social support and LGBT identity pride are associated with positive health behaviors [165]. To my knowledge, my research is one of the few to suggest key domains of Minority Strengths. Namely I identified three potentially important domains (support networks, empathy, critical

self-reflection) which can serve as targets for future measure development and levers for future intervention.

In a similar vein, it would be beneficial for future research to explore how the ebb and flow of Minority Strengths throughout the day may be associated with drinking behavior. In chapter four, we did not find a relationship between Minority Strengths and drinking at the day level. This was surprising given past cross-sectional research suggesting that such experiences are associated with lowered drinking. It is possible that our collapsing of experiences into a daily binary (presence of said experiences vs. not) obfuscated an association between these parameters. It may be that fluctuations in Minority Strengths throughout the day, or changes in the person-level averages of such experiences may impact behavior. Unfortunately, given the structure of these data, we cannot examine this further. As far as I am aware, such analyses have not been done before and would be an ideal area for future research to expand upon.

Another implication of the presented research is it suggests novel methodological approaches to address research questions in the field of Intersectionality. Critics of previous Intersectionality research have noted that quantitative methodologies have lacked necessary sophistication- for example relying on simple linear regression and ANOVA techniques fail to capture the lived experiences of individuals [141, 183]. In addition, a limitation of the Intersectionality literature is that it has generally been retrospective and/or cross-sectional [184], which limits temporal inference of the impact of discrimination/strengths on behavior. As far as I am aware, this is the first study which utilized both mixed effects multi-level modeling and EMA methodologies to examine how intersecting privilege and stigma around LGBT community members' identities influenced their health behaviors. Thus, the present research addresses both the quantitative and methodological limitations of previous Intersectionality research. This work

offers insights into how the unique constellation of identities held by participants influenced their drinking behavior.

Yet another implication of this work is that discrimination due to different characteristics may be differently associated with drinking depending on SMs' other identities. As described previously, both Livingston et al and I collapsed all discrimination experiences together to examine how discrimination for *any* reason was associated with substance use. However, I failed to find evidence for an association while Livingston et al did. This discrepancy may have been due to my sample containing more BIPOC and male participants. It is possible that the association found by Livingston et al was being driven by discrimination experiences that were relevant to their mostly White female sample (e.g., gender-based discrimination). In contrast, experiences of racial/ethnic discrimination experienced by BIPOC participants may have been driving the association found between discrimination experiences and drinking among BIPOC SMs in my sample. This may explain why I only found an association between discrimination experiences and drinking when participants were disaggregated by race/ethnicity. To my knowledge this is the first time such analyses have been done with EMA data and presents a highly novel finding.

Despite the novelty of the present work, this work suffers from several important limitations. First, the present research suffers from a common issue of previous Intersectionality research—I collapsed across gender and racial/ethnic identities. Critics of past Intersectionality research have pointed out that utilizing such an approach goes against the spirit of Intersectionality [183]. That is, such approaches imply that social identities are divisible when they are interlocking and interdependent [185-187]. Although the initial goal of the study was to eschew such practices, sample limitations precluded me from including more of the participants'

identities within statistical models. The challenges associated with codifying Intersectionality continue, as evidenced by recent reviews which suggest there is a lack of consistency in quantitative methodologies in the literature [188].

It is also important to note that collapsing across genders and including participants from all genders may have made it more difficult to detect relationships between discrimination, strengths, and drinking. Alcohol-related health disparities between SMs and heterosexuals are not equivalent across all members of the LGBT community. For example, SM women have displayed notably more alcohol use and related health issues relative to heterosexual women [55, 61, 122]. Furthermore, transgender individuals' drinking has been shown to vary due to individual differences [e.g., the degree to which they "pass" as cisgender; 189]. Nevertheless, my rationale for including participants of all gender was twofold. First, I wanted to increase the generalizability of my findings to a broader swath of the SM community. This was especially salient for me as the participant sample in chapter two was quite specific (cisgender MSM at risk for HIV infection). Second, research does suggest that discrimination does contribute to drinking behavior and alcohol problems [48, 190]. As such, I felt it was appropriate to include all genders in the samples discussed in chapters three and four.

In a similar vein is critical to acknowledge that the research presented (especially that in chapter three) had fairly homogenous samples. For example, my research studies had a paucity of BIPOC, transgender/non-binary, and participants from different socioeconomic strata. It is likely that differences between people within the broad gender and racial/ethnic categories due to other identities (e.g., social class) also influenced discrimination experiences and behavior, but given the small sample size such differences could not be examined. The small number of sampled BIPOC participants severely restricts the generalizability of my findings and caution

must be exercised with interpretations of these data. Thus, it is important for future research to utilize larger and more diverse samples and utilize multiple identity categorizations in regression models.

Another limitation of this work is the time scale utilized may not be appropriate for examining the relationship between discrimination and drinking. This work helped us test whether drinking was associated with proximal (i.e., the same day) discrimination perceptions/experiences, but participants' drinking patterns may have been established well before participating. This may explain why despite our use of a highly refined measure of discrimination in chapter four, it was still difficult to find evidence of a relationship between discrimination and drinking across all participants. We can infer that discrimination may be associated with drinking disparities based on previous research, but we cannot tell from the presented data how discrimination impacts the creations of said disparities. This suggests that the way EMA methodologies were used in these studies may be better suited to elucidating the impact of more transient antecedents of behaviors (e.g., affect), but not for determining how discrimination impacts the formation of drinking behaviors over the lifespan. That is, my EMA procedures can show us a brief glimpse into how a behavior unfolds in the short term but cannot tell us how that behavior developed over time. Day-to-day discrimination experiences may not have a tremendous impact on already established drinking behaviors, but the socio-political and historic context in which SMs exist may have more of an influence on the development of drinking behaviors.

It is also possible that the structure of the presented EMA study designs are not ideal for the proposed research questions. By design, EMA styles of data collection focus on how individual-level factors are associated with behaviors. EMA is predicated on the assumption that

behavior follows a stimulus-response pattern. It may be possible that discrimination experiences in the moment are not the fundamental stimulus that precipitates drinking. That is, the relationship between discrimination and drinking does not follow a stimulus-response pattern. Potentially the context of social marginalization (and not individual experiences of discrimination per se) in which SMs live may render individuals more likely to drink.

Another consideration when interpreting the results of these research studies is that the primary outcome of the EMA studies may not be the best measure of the impact of discrimination on health disparities. That is, individual-level number of standard drinks consumed may not necessarily constitute problematic alcohol use. Myriad personal factors are known to impact alcohol metabolism [e.g., weight; 191]. This means that different amounts of alcohol may impact individual SMs differently. It is plausible that a better measure of the impact of discrimination on alcohol related health disparities would be to examine how experiences of discrimination are associated with alcohol related problems for participants. This is corroborated by research suggesting that there is relationship between identity-based discrimination and alcohol-related problems [190]. This may explain why I only found an interaction between one measure of drinking (day-level standard drinks) and race/ethnicity in chapter two. BIPOC MSM may drink less the same day they perceived being discriminated against because they were not socializing with their peers (e.g., in gay bars).

It is also plausible that we did not find an association between discrimination, Minority Strengths, and drinking because of the developmental phase of our participants. The sample utilized by Livingston et al was comprised primarily of young undergraduate students [participants' average age was 21.8 years; 114]. In contrast, the participants in chapter two and four were older (average ages 27.1 and 26.8 years respectively) non-college students. This

difference is relevant because the literature has shown that college students may drink more in response to stress than they do when not experiencing stress [192-194]. This could mean that the association found by Livingston et al between proximal discrimination and substance use was an artifact of the age of the participants. Similarly, younger SMs' drinking may be more impacted by the positive affect associated with Minority Strengths. The drinking behavior of the older participants of chapters two and four may have not been as impacted by daily stressors (i.e., discrimination experiences). This is corroborated by the literature showing that drinking behavior patterns tend to be less impacted by proximal affect by early adulthood [195]. As such, it is possible that the younger participants' drinking behavior in the Livingston et al study were more influenced by proximal events than those of the participants in our studies.

Future Directions

The present work offers myriad avenues for future research. For instance, the analytical approaches used in this research could be utilized to examine the multiple levels of social marginalization. One approach could entail incorporating different identities or characteristics of individuals into models to determine their influence on behavior. For instance, nesting sexual orientation within gender within each participant. Potentially such analyses could demonstrate how social marginalization due to different identities may differentially impact individuals. This would advance the field by demonstrating a method by which to examine intersectionality without collapsing across identities.

Alternatively, another approach could be to examine how LGBT community members nested within different regions vary in alcohol-related health disparities. The current research provided an in-depth understanding of individuals over the course of a month, but only in New England. Alternative approaches would be able to examine people within other contexts. For

example, how differences in substance use varies between regions with legal protections for LGBT community members compared to those that do not have such protections. The rationale for such analyses is that (as outlined in chapter one) social marginalization varies across geographic regions. For example, sexual and gender minorities face differing levels of discrimination across US states [34, 196]. Concurrently health disparities between the LGBT community and the general population are especially pronounced in such areas [156]. Unfortunately, it is likely that such health disparities will intensify in the future- recent developments in federal legislation suggest that nationally protected rights will be revoked and individual states will be allowed to determine if they want to codify said rights at the local level [197]. If the anti-sodomy laws outlined in chapter one are any indication, it seems unlikely that more conservative regions of the US will extend such protections to SMs.

To reduce health disparities among the LGBT community future research is critical to expand upon the mechanisms through which the intersection of gender and sexual identity impact substance use behavior. An Intersectionality framework suggests that interventions would be most effective if targeted to specific intersectional identities therefore understanding these mechanisms would be very valuable. That is, we cannot make broad generalizations about the entire LGBT community based on our limited samples. For example, research has shown that SM women (especially those who identify as bisexual) have evidenced elevated substance use and related disorders relative to other members of the LGBT community [44, 61, 77]. It is unclear why these populations specifically display such health disparities, but it is possible social marginalization due to such individuals' intersecting gender and sexual identities plays a role. Unfortunately, I was unable to examine this in chapter four due to sampling size limitations. A better understanding of the relationship between discrimination and drinking among SM women

may help facilitate public health interventions to address alcohol-related health disparities among SM women.

Similarly, there is a need to expand the EMA methodologies used in this work. Initially, the goal of chapter four was to employ event sampling (i.e., sending participants multiple surveys at random time points throughout the day) and event-contingent surveys (i.e., participant-initiated reports whereby they can report events immediately when they occur). The rationale for the latter surveys being that participants would be able to report experiences of discrimination and Minority Strengths as they occurred. The goal of these surveys was to track affect and substance use immediately prior to and after such events. However, due to practical limitations (e.g., funding) the number of daily surveys had to be reduced to only two per day (the daily diary and evening survey). As such, our measure of discrimination, strengths, and drinking were all retrospective and therefore of limited usefulness in determining how these behaviors unfolded over time. Although we could see the association of discrimination and strengths at the day level, the causal influence of these factors on later substance cannot be clearly established from our data. Clearly establishing the causal influence of discrimination on drinking could be utilized as evidence in support of policies designed to protect LGBT community members- as such laws do not exist in every state [58]. Such an understanding would be especially valuable as it can potentially allow for public health interventions which act to reduce the impact of social marginalization on health risk behaviors.

It would also be important to expand upon the analyses presented in this dissertation by exploring how discrimination due to different identities may differentially impact behavior. In chapter two, we found that perceived sexual orientation discrimination was associated with reduced drinking only for BIPOC MSM but could not explore this phenomenon further with

those data (i.e., data from those analyses came from an already completed research study). As such, we deliberately expanded the discrimination measures in chapter four to examine how experiencing *any* discrimination was associated with drinking. The results of chapter four suggest that experiencing discrimination due to any of a person's identities had an impact on subsamples of participants (e.g., BIPOC SMs). However, the presented analyses do not tell us *which* identities were the reason for the discrimination. It is plausible that those with multiple minoritized identities (BIPOC and/or transgender/non-binary SMs) could face discrimination from more than one identity.

This may partially explain the discrepancy in findings between chapters two and four. The sample of participants in chapter two may have been less socially marginalized than those in chapter four. For example, the participants in chapter two consisted exclusively of HIV negative MSM, all of whom were cisgender men, White, and of a higher socio-economic status than those in chapter four. Although participants in chapter two were all SMs (a socially marginalized group), the fact that they also had several social advantages (e.g., a college education and higher income) may have served as a buffer against the negative impact of identifying as a member of LGBT community. Had this sample included MSM who faced more stigma (e.g., HIV positive MSM) the relationship between perceived discrimination and drinking may have looked quite different. This is supported by research which suggests that HIV infection can serve as a significant predictor of negative health outcomes regardless of socio-economic status [198].

In a similar vein, it may be important to examine how strengths derived from different identities may be differentially associated with drinking. As with discrimination, daily minority strengths experiences were dichotomized across identities—having *any* minority strengths that day versus none. Participants may have had multiple minority strengths experiences due to

myriad social identities. The race/ethnicity by gender interactions seen in preliminary logistic models suggesting that BIPOC cisgender men were less likely to report minority strengths. There is no theoretical explanation for this finding. It may be fruitful to conduct qualitative research with BIPOC MSM to investigate why we observed this. It would also be useful for future research to examine how social context of LGBT Strengths experiences may impact drinking. Cursory analyses of the qualitative data from chapter three suggest that alcohol use may be linked with LGBT social support. This is not surprising given the historical relevance of gay bars in the LGBT community. As highly visible outlets of LGBT world, they often serve as a safe way for young SMs to meet and socialize with other community members [199].

Future research could also examine how drinking motivations and plans are associated with experiences of discrimination and strengths. For example, experiencing discrimination may result in a desire to drink to alleviate negative affect associated with being discriminated against. This would result in someone potentially drinking on a day when they previously had planned not to drink. Experiencing specific minority strengths may also lead to more drinking. For example, through individuals looking to enhance the time they spend socializing with their SM peers. Such associations may be especially pronounced for young SMs- as outlined previously young peoples' drinking is more influenced by same day affect (e.g., stressors) than the older people. Researching such associations can yield valuable insights into how social context influences behavior.

Another direction of future research could be to examine the contexts in which discrimination and strengths occurred, including from whom these experiences originate. As chapter three suggests, experiencing discrimination from fellow LGBT community members may be more “detrimental” than experiencing it from those who do not share an individual’s

identity. It is possible that such in-group stigma may have a different impact on substance use. For example, the effect of being isolated from the larger LGBT community may remove this as a potential source of resiliency/strength and impact substance use. Although this topic is not heavily researched, the literature that does exist seems to support this claim [200].

Conversely, determining contexts in which Minority strengths occurred may be useful for researchers as it may offer valuable insights into behavior. For example, one study found that social support was associated with worse health behavior [i.e., lower HIV medication adherence; 201]. Conversely another study found that social support *specifically from fellow MSM* was associated with increased HIV medication adherence [202]. These disparate results may indicate that the context in which LGBT Strengths are expressed (including by and with whom they occur) may have an impact on behavior. A better understanding of this phenomenon is needed to help us offer suggestions for how to increase resiliency among LGBT community members. Future research would do well to expand upon these findings and shed light on how the context of LGBT strengths may possibly be leveraged to improve health disparities.

Ultimately, it is important to consider the practical implications of this work. Unfortunately, the present analyses do not offer a clear route through which to reduce alcohol-related health disparities. Although study four suggests that BIPOC SMs may drink more on days they experienced discrimination, as outlined previously the number of drinks consumed does not necessarily indicate problems with alcohol. Future research should expand upon this work to better understand the association between discrimination experiences and potential alcohol use disorder symptomology. A positive association between these factors may indicate that interventions targeting discrimination are warranted. Such interventions should target both systemic stigma (e.g., widespread adoption of legislation protecting LGBT populations from

discrimination) and individuals impacted by discrimination (e.g., individual level interventions designed to ameliorate the emotional impact of discrimination). That is, public health interventions must address both the socio-political context in which LGBT community members exist as well as meet individual people's needs. Continued work is needed to understand more fully how social context and resilience factors impact the development of alcohol problems and their expression on the daily level among LGBT community member. Better understanding of the mechanisms can lead to more targeted interventions to reduce alcohol-related health disparities.

Appendix A - LGBT Stress/Strength Qualitative Interview Guide

Before we get started, I want to thank you for agreeing to be a part of this study. I really appreciate you volunteering your time to help me conduct my research. I want to start by telling you a little about myself and then I'll explain a little about what we'll be discussing for the next hour or so.

My name is [insert name here], I am a student at [redacted]. I'm from [insert city here] but moved here to [redacted] to attend school. I am studying sexual minorities (that is people who identify as lesbian, gay, bisexual, and everything in between).

For this study I am investigating how sexual minorities deal with experiences of stigma/discrimination. Stigma refers to the social disapproval, or discrimination against, someone based on characteristics that make them unique. These characteristics could be their sexual orientation, gender identity, race, or health. By discrimination I mean being treated badly and/or unfairly because of who you are (for example a landlord won't rent an apartment to you because of your sexual identity).

I am also interested in talking to sexual minorities about the positive aspects of their identity. There are a lot of ways that being a member of the LGBT community can actually be a source of strength. For example, finding support and comfort from our friends/chosen families. Another example could be finding pride in expressing your sexual identity openly and being true to yourself. Any way that being a member of a minority group makes you stronger.

Research has been done looking at these topics but there is a lot we still don't know. I want to get your input on how these things have been measured in the past- what we've gotten right and what we got wrong. I am going to share some measures we were thinking of using and want to know what these items means to you. If there are better ways of measuring them I would definitely want to know.

I am also interested in alcohol use among sexual minorities.

I want you to know upfront that my main job is to listen to you, not to tell you what to do. I will not judge you. Feel free to be as open as you like. I know these topics can be hard to talk about. If you don't want to talk about something or want to stop at any time that is totally fine. You will still be compensated for your time.

How does all of that sound to you? What questions do you have?

Opening questions

I want to start out by asking you some basic questions about yourself.

Where are you from?

How long have you lived in Rhode Island?

How do you feel about living here?

What do you consider your sexual identity?

Tell me about your alcohol use.

Grand-tour questions

Tell me how your [insert sexual self-identification here] has impacted your daily life.

What has your experience been like since mid-March when social distancing was implemented in this state vs. before that?

What are some of the PROS of being [insert sexual self-identification here]?

What are some of the CONS of being [insert sexual self-identification here]?

How do you think being [insert sexual self-identification here] impacts how people treat you?

What's it like being [insert sexual self-identification here] in Rhode Island?

Tell me a story about the most recent time you drank. Feel free to be as detailed as you like (for example, who you were with, what you did, etc.)

How does your drinking look like now compared to before COVID-19 social distancing was put in place?

Probes/follow-ups

Tell me more about your experience as a [insert sexual self-identification here].

(If not originally from Rhode Island or has lived elsewhere) What are some of the differences between living as a [insert sexual self-identification here] in Rhode Island versus other places you've lived.

Now I would like to switch gears a bit and ask your thoughts on some measures I wanted to use.

[Pull out draft EMA measures]

Here is a draft of some of the measures I was thinking of using for my dissertation research. I would like you to read them over and tell me your thoughts. The idea here is I would like people to do fill out surveys every day. Participants would be prompted 3 times a day at random intervals to sample their experiences. Participants would be asked to select all the experiences that happened to them since their last prompt. Please take a moment to read over these items.

[share screen so participant can see the draft measures] *What do these questions mean to you?*

What are your thoughts on these questions?

What about these questions make sense to you?

What about these questions doesn't make sense to you?

What do you like about these questions?

How would you answer these questions right now? Why would you answer in that way?

How would you ask this question if you were talking to/texting one of your friends?

What do you not like about these questions?

Interview close

We're about done with the interview today. Before we end our time together, is there anything important you'd like to add I didn't ask you about?

Thank you so much for helping me to conduct my research. It was great talking to you today. You've helped me get a better idea of what it's like living as a [insert sexual self-identification here] here. Your input should help those in public health better serve the LGBT community.

Appendix B – EMA Discrimination / Strengths Measures

Question	Range/Values
Since your last prompt, did you experience any of the following (check all that apply):	1. I was treated with less courtesy or respect than others³ 2. I was treated as if others are afraid of you³ 3. I was treated as if others think you are dishonest or immoral³ 4. I was treated as inferior, less smart/capable than others³ 5. I was insulted/called names (direct or overheard)³ 6. I received poorer service than others (restaurants, stores, etc.)³ 7. I was stereotyped or negatively labeled³ 8. I was threatened or harassed³ 9. People avoided, excluded, or ignored me³ 10. My perspective/feelings overlooked or misunderstood³ 11. I was physically assaulted 12. I was sexually assaulted 13. I was NOT referred to by my preferred name/pronouns⁴ 14. I overheard someone saying something discriminating/offensive⁴ 15. Someone I interacted with was only pretending to be accepting of me⁴ 16. I heard/read/saw something online that was made me feel bad/ashamed/uncomfortable about my identity⁴ 17. Other 18. Not applicable – none of these have happened since the last survey
(If yes to “other”) “Please describe:”	[Text Response]
If “yes” to any of the previous was this experience related to any of the following identities/characteristics/statuses (select all that apply)?	0. None/Not applicable 1. Sexual orientation 2. Gender/gender identity 3. Race/ethnicity 4. Disability

³ These items were adapted from Livingston et al (2017).

⁴ These items were created from input from participants in chapter three.

Question	Range/Values
	5. Mental health 6. Physical health 7. Age 8. Physical appearance (e.g., height, weight/body shape) 9. Religion 10. I don't know 11. Other: 12. Not Applicable – none of these have happened since the last survey
(If yes to “other”) “Please describe:”	[Text Response]
How negative was this experience?	0=Not at all 100=Extremely ⁵
What was the source of this experiences? For example, who treated you poorly (check all that apply)?	0. No one/Not applicable 1. My partner/significant other 2. A friend 3. A family member 4. A co-worker/colleague 5. A stranger (someone I did not know) 6. A neighbor 7. Someone online 8. Other (please specify):
What was the source of this experiences? For example, who treated you poorly (check all that apply- BUT DO NOT NAME)? OTHER	[text entry]
Were any of the persons who treated you this way from the LGBTQ+ community?	0. I don't know 1. No 2. Yes

Strengths

Question	Range/Values
Since your last prompt, did you experience any of the following (check all that apply):	1. I felt safe enough to be my authentic self 2. I felt accepted, included, and/or like I belonged 3. I was encouraged to express myself 4. I was treated with respect 5. I felt pride in my identity 6. I received equal service as others (e.g., restaurants, stores, etc.) 7. I was treated like “a human being”⁶ 8. I felt physically safe⁶ 9. I was included in group activities 10. My perspective/input was valued 11. My physical space was respected⁶ 12. I felt represented (e.g., in the media) 13. I was referred to by my preferred name/pronouns 14. My identity gave me an advantage in some way 15. I felt a deep emotional understanding with someone because of our shared identity 16. I felt like I was understood or heard 17. I heard/read/saw something that made me feel pride/affirmed in my identity 17.Other (please explain) 18. Not applicable – none of these have happened since the last survey
(If yes to “other”) “Please describe:”	[Text Response]
If “yes” to any of the previous “select all that apply” items:	0.None/Not applicable 1. Sexual orientation 2. Gender/gender identity 3. Race/ethnicity 4. Disability 5. Mental health 6. Physical health

⁶ These items were removed after pilot testing.

Question	Range/Values
	7. Age 8. Physical appearance (e.g., height, weight/body shape) 9. Religion 10. I don't know 11. Other: 12. Not Applicable – none of these have happened since the last survey
(If yes to “other”) “Please describe:”	[Text Response]
How positive was this experience?	0=Not at all 100=Extremely ⁷
What was the source of this experiences? For example, who treated you well (check all that apply- BUT DO NOT NAME)?	0. No one/Not applicable 1. My partner/significant other 2. A friend 3. A family member 4. A co-worker/colleague 5. A stranger (someone I did not know) 6. A neighbor 7. Someone online 8. Other:
What was the source of this experiences? For example, who treated you well (check all that apply)? OTHER	[text entry]
Were any of the persons who treated you this way from the LGBTQ+ community?	0. I don't know 1. No 2. Yes

References

1. Lim, S.S., et al., *A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions, 1990–2010: a systematic analysis for the Global Burden of Disease Study 2010*. The lancet, 2012. **380**(9859): p. 2224-2260.
2. NIAAA, *Ninth Special Report to the U.S. Congress on Alcohol and Health*. 1997, Bethesda, MD: US Department of Health and Human Services.
3. Organization, W.H. and W.H.O.M.o.S.A. Unit, *Global status report on alcohol and health, 2014*. 2014: World Health Organization.
4. Harper, C., *The neuropathology of alcohol-specific brain damage, or does alcohol damage the brain?* Journal of neuropathology and experimental neurology, 1998. **57**(2): p. 101-110.
5. Tapert, S.F., et al., *fMRI measurement of brain dysfunction in alcohol-dependent young women*. Alcohol Clin Exp Res, 2001. **25**(2): p. 236-45.
6. Harper, C., *The neuropathology of alcohol-related brain damage*. Alcohol & Alcoholism, 2009. **44**(2): p. 136-140.
7. Schwarzingner, M., et al., *Contribution of alcohol use disorders to the burden of dementia in France 2008–13: a nationwide retrospective cohort study*. The Lancet Public Health, 2018. **3**(3): p. e124-e132.
8. Rosenbloom, M.J., et al., *Alcoholism, HIV infection, and their comorbidity: factors affecting self-rated health-related quality of life*. J Stud Alcohol Drugs, 2007. **68**(1): p. 115-25.
9. Parsons, J.T., et al., *Sexual risk behaviors and substance use among alcohol abusing HIV-positive men who have sex with men*. J Psychoactive Drugs, 2005. **37**(1): p. 27-36.
10. Purcell, D.W., et al., *Illicit substance use, sexual risk, and HIV-positive gay and bisexual men: differences by serostatus of casual partners*. Aids, 2005. **19 Suppl 1**: p. S37-47.
11. Reisner, S.L., et al., *Predictors of Identifying as a Barebacker among High-Risk New England HIV Seronegative Men Who Have Sex with Men*. J Urban Health, 2009. **86**(2): p. 250-62.
12. Vosburgh, H.W., et al., *A review of the literature on event-level substance use and sexual risk behavior among men who have sex with men*. AIDS and Behavior, 2012. **16**(6): p. 1394-1410.
13. Purcell, D., et al. *Calculating HIV and syphilis rates for risk groups: estimating the national population size of men who have sex with men*. in *National STD Prevention Conference*. 2010.
14. Stall, R., et al., *Alcohol use, drug use and alcohol-related problems among men who have sex with men: the Urban Men's Health Study*. Addiction, 2001. **96**(11): p. 1589-601.
15. Cochran, S.D., et al., *Prevalence of non-medical drug use and dependence among homosexually active men and women in the US population*. Addiction, 2004. **99**(8): p. 989-998.
16. Reisner, S.L., et al., *Problematic alcohol use and HIV risk among Black men who have sex with men in Massachusetts*. AIDS Care, 2010. **22**(5): p. 577-87.
17. Pantalone, D.W., et al., *Psychosocial correlates of HIV-monoinfection and HIV/HCV-coinfection among men who have sex with men*. J Behav Med, 2012. **35**(5): p. 520-8.
18. Morgenstern, J., et al., *A randomized controlled trial of goal choice interventions for alcohol use disorders among men who have sex with men*. J Consult Clin Psychol, 2007. **75**(1): p. 72-84.
19. Lee, J.H., et al., *Co-occurring psychiatric and drug use disorders among sexual minority men with lifetime alcohol use disorders*. Drug Alcohol Depend, 2015. **151**: p. 167-72.

20. Li, J., et al., *Prevalence and associated factors of depressive and anxiety symptoms among HIV-infected men who have sex with men in China*. AIDS Care, 2016. **28**(4): p. 465-70.
21. Anthenelli, R.M. and M.A. Schuckit, *Affective and anxiety disorders and alcohol and drug dependence: Diagnosis and Treatment*. Comorbidity of Addictive and Psychiatric Disorders, 1993: p. 73-87.
22. Cadoret, R. and G. Winokur, *Depression in alcoholism*. Annals New York Academy of Sciences: p. 34-39.
23. Rhew, I.C., et al., *Effects of sexual assault on alcohol use and consequences among young adult sexual minority women*. Journal of consulting and clinical psychology, 2017. **85**(5): p. 424.
24. Dyar, C., M.E. Newcomb, and B. Mustanski, *Longitudinal associations between minority stressors and substance use among sexual and gender minority individuals*. Drug and Alcohol Dependence, 2019.
25. Whitehead, J., J. Shaver, and R. Stephenson, *Outness, stigma, and primary health care utilization among rural LGBT populations*. PloS one, 2016. **11**(1): p. e0146139.
26. Rosser, B.S. and K.J. Horvath, *Predictors of success in implementing HIV prevention in rural America: A state-level structural factor analysis of HIV prevention targeting men who have sex with men*. AIDS and Behavior, 2008. **12**(2): p. 159-168.
27. Preston, D.B., et al., *Issues in the development of HIV-preventive interventions for men who have sex with men (MSM) in rural areas*. Journal of Primary Prevention, 2002. **23**(2): p. 199-214.
28. Law, S.A., *Homosexuality and the social meaning of gender*. Wis. L. Rev., 1988: p. 187.
29. Drescher, J., *Out of DSM: Depathologizing Homosexuality*. Behav Sci (Basel), 2015. **5**(4): p. 565-75.
30. Cain, P.A., *Litigating for lesbian and gay rights: A legal history*. Virginia Law Review, 1993: p. 1551-1641.
31. Choi, K.-H., et al., *Experiences of discrimination and their impact on the mental health among African American, Asian and Pacific Islander, and Latino men who have sex with men*. American Journal of Public Health, 2013. **103**(5): p. 868-874.
32. Bilimoria, D. and A.J. Stewart, " *Don't ask, don't tell*": *The academic climate for lesbian, gay, bisexual, and transgender faculty in science and engineering*. NWSA Journal, 2009. **21**(2): p. 85-103.
33. Harper, G.W. and M. Schneider, *Oppression and discrimination among lesbian, gay, bisexual, and transgendered people and communities: A challenge for community psychology*. American journal of community psychology, 2003. **31**(3-4): p. 243-252.
34. Hasenbush, A., et al., *The LGBT divide: A data portrait of LGBT people in the Midwestern, Mountain & Southern states*. 2014.
35. Lehman, J.S., et al., *Prevalence and public health implications of state laws that criminalize potential HIV exposure in the United States*. AIDS and Behavior, 2014. **18**(6): p. 997-1006.
36. *R.I. Gen. Laws, ch. 11-24 (public accommodations)*.
37. *R.I. Gen. Laws ch. 28-5 (employment)*.
38. *R.I. Gen. Laws ch. 34-37 (housing and credit)*.
39. Sears, B., *Rhode Island—Sexual Orientation and Gender Identity Law and Documentation of Discrimination*. 2009.
40. Hatzenbuehler, M.L., J.C. Phelan, and B.G. Link, *Stigma as a fundamental cause of population health inequalities*. Am J Public Health, 2013. **103**(5): p. 813-21.
41. Williams, D.R., Neighbors, H. W., & Jackson, J. S. , *Racial/ethnic discrimination and health: findings from community studies*. American journal of public health, 2003. **93**(2): p. 200-208.

42. Williams, E.D., et al., *Psychosocial risk factors for coronary heart disease in UK South Asian men and women*. J Epidemiol Community Health, 2009. **63**(12): p. 986-91.
43. Hatzenbuehler, M.L., *The social environment and suicide attempts in lesbian, gay, and bisexual youth*. Pediatrics, 2011. **127**(5): p. 896-903.
44. Hatzenbuehler, M.L., *Structural stigma and the health of lesbian, gay, and bisexual populations*. Current Directions in Psychological Science, 2014. **23**(2): p. 127-132.
45. Hatzenbuehler, M.L., W.R. Corbin, and K. Fromme, *Trajectories and determinants of alcohol use among LGB young adults and their heterosexual peers: results from a prospective study*. Developmental psychology, 2008. **44**(1): p. 81.
46. Cunningham, R.M., et al., *Alcohol, tobacco, and other drugs: future directions for screening and intervention in the emergency department*. Acad Emerg Med, 2009. **16**(11): p. 1078-88.
47. Hatzenbuehler, M.L., W.R. Corbin, and K. Fromme, *Discrimination and alcohol-related problems among college students: A prospective examination of mediating effects*. Drug & Alcohol Dependence, 2011. **115**(3): p. 213-220.
48. Wray, T.B., et al., *The role of discrimination in alcohol-related problems in samples of heavy drinking HIV-negative and positive men who have sex with men (MSM)*. Drug Alcohol Depend, 2016. **166**: p. 226-34.
49. Brooks, V.R., *Minority stress and lesbian women*. Lexington. MA: Lexington Books. doi, 1981. **10**: p. 2068618.
50. Meyer, I.H. and D.M. Frost, *Minority Stress and the Health of Sexual Minorities*, in *Handbook of Psychology and Sexual Orientation*. 2012. p. 252-266.
51. Hayes, J.A., et al., *Do double minority students face double jeopardy? Testing minority stress theory*. Journal of College Counseling, 2011. **14**(2): p. 117-126.
52. Chen and Y.C. Georgiana Shick Tryon, *Dual minority stress and Asian American gay men's psychological distress*. Journal of Community Psychology, 2012. **40**(5): p. 539-554.
53. Lytle, M.C., S.M. De Luca, and J.R. Blosnich, *The influence of intersecting identities on self-harm, suicidal behaviors, and depression among lesbian, gay, and bisexual individuals*. Suicide and Life-Threatening Behavior, 2014. **44**(4): p. 384-391.
54. Plöderl, M. and P. Tremblay, *Mental health of sexual minorities. A systematic review*. International review of psychiatry, 2015. **27**(5): p. 367-385.
55. Hughes, T., L.A. Szalacha, and R. McNair, *Substance abuse and mental health disparities: Comparisons across sexual identity groups in a national sample of young Australian women*. Social Science & Medicine, 2010. **71**(4): p. 824-831.
56. Gonzales, G., J. Przedworski, and C. Henning-Smith, *Comparison of health and health risk factors between lesbian, gay, and bisexual adults and heterosexual adults in the United States: results from the National Health Interview Survey*. JAMA internal medicine, 2016. **176**(9): p. 1344-1351.
57. Svensson, A.C., et al., *Cohort profile: the Stockholm public health cohort*. International journal of epidemiology, 2013. **42**(5): p. 1263-1272.
58. ; Available from: https://www.lgbtmap.org/equality-maps/non_discrimination_laws.
59. Health, M.o., *Methodology Report 2016/17: New Zealand Health Survey*. . 2017: Wellington: Ministry of Health.
60. Hatzenbuehler, M.L., J.E. Pachankis, and J. Wolff, *Religious climate and health risk behaviors in sexual minority youths: A population-based study*. American journal of public health, 2012. **102**(4): p. 657-663.
61. Surace, A., B. Riordan, and T. Winter, *Do New Zealand sexual minorities engage in more hazardous drinking than non-sexual minorities?(vol 38, pg 519, 2019)*. DRUG AND ALCOHOL REVIEW, 2019. **38**(6): p. 725-725.
62. Bränström, R. and J.E. Pachankis, *Sexual orientation disparities in the co-occurrence of*

- substance use and psychological distress: a national population-based study (2008–2015)*. Social psychiatry and psychiatric epidemiology, 2018. **53**(4): p. 403-412.
63. Pachankis, J.E., et al., *Hidden from health: structural stigma, sexual orientation concealment, and HIV across 38 countries in the European MSM Internet Survey*. AIDS (London, England), 2015. **29**(10): p. 1239.
 64. Flores, A.R. and A. Park, *Polarized progress: Social acceptance of LGBT people in 141 countries, 1981 to 2014*. . 2018 The Williams Institute of Law, UCLA. : Los Angeles, CA.
 65. Bränström, R. and J.E. Pachankis, *Sexual orientation disparities in the co-occurrence of substance use and psychological distress: a national population-based study (2008–2015)*. Social psychiatry and psychiatric epidemiology, 2018: p. 1-10.
 66. Pachankis, J.E., et al., *The geography of sexual orientation: Structural stigma and sexual attraction, behavior, and identity among men who have sex with men across 38 European countries*. Archives of sexual behavior, 2017. **46**(5): p. 1491-1502.
 67. Birkett, M., M.E. Newcomb, and B. Mustanski, *Does it get better? A longitudinal analysis of psychological distress and victimization in lesbian, gay, bisexual, transgender, and questioning youth*. Journal of Adolescent Health, 2015. **56**(3): p. 280-285.
 68. Nadal, K.L., et al., *Sexual orientation microaggressions: "Death by a thousand cuts" for lesbian, gay, and bisexual youth*. Journal of LGBT Youth, 2011. **8**(3): p. 234-259.
 69. Scharer, J.L. and M.J. Taylor, *Coping with sexual orientation microaggressions: Implications for psychological distress and alcohol use*. Journal of Gay & Lesbian Mental Health, 2018. **22**(3): p. 261-279.
 70. Link, B.G. and J.C. Phelan, *Conceptualizing stigma*. Annual review of Sociology, 2001. **27**(1): p. 363-385.
 71. Corrigan, P.W., et al., *Structural stigma in state legislation*. Psychiatric Services, 2005. **56**(5): p. 557-563.
 72. Rosario, M., M.J. Rotheram-Borus, and H. Reid, *Gay-related stress and its correlates among gay and bisexual male adolescents of predominantly Black and Hispanic background*. Journal of Community Psychology, 1996. **24**(2): p. 136-159.
 73. Bogart, L.M., et al., *Perceived discrimination and physical health among HIV-positive Black and Latino men who have sex with men*. AIDS and Behavior, 2013. **17**(4): p. 1431-1441.
 74. Pachankis, J.E., M.R. Goldfried, and M.E. Ramrattan, *Extension of the rejection sensitivity construct to the interpersonal functioning of gay men*. Journal of consulting and clinical psychology, 2008. **76**(2): p. 306.
 75. Rosario, M., et al., *Gay-related stress and emotional distress among gay, lesbian and bisexual youths: A longitudinal examination*. Journal of Consulting and Clinical Psychology, 2002. **70**(4): p. 967.
 76. Liu, R.T. and B. Mustanski, *Suicidal ideation and self-harm in lesbian, gay, bisexual, and transgender youth*. American journal of preventive medicine, 2012. **42**(3): p. 221-228.
 77. Newcomb, M.E., A.J. Heinz, and B. Mustanski, *Examining risk and protective factors for alcohol use in lesbian, gay, bisexual, and transgender youth: A longitudinal multilevel analysis*. Journal of Studies on Alcohol and Drugs, 2012. **73**(5): p. 783-793.
 78. Vincke, J., L.D. Rycke, and R. Bolton, *Gay Identity and the Experience of Gay Social Stress 1*. Journal of Applied Social Psychology, 1999. **29**(6): p. 1316-1331.
 79. Vaughan, M.D. and E.M. Rodriguez, *LGBT strengths: Incorporating positive psychology into theory, research, training, and practice*. Psychology of Sexual Orientation and Gender Diversity, 2014. **1**(4): p. 325.
 80. Wang, K., H.J. Rendina, and J.E. Pachankis, *Looking on the bright side of stigma: How stress-related growth facilitates adaptive coping among gay and bisexual men*. Journal of gay & lesbian mental health, 2016. **20**(4): p. 363-375.
 81. Pachankis, J.E., et al., *LGB-affirmative cognitive-behavioral therapy for young adult gay*

- and bisexual men: A randomized controlled trial of a transdiagnostic minority stress approach. *Journal of consulting and clinical psychology*, 2015. **83**(5): p. 875.
82. Pachankis, J.E., *Uncovering clinical principles and techniques to address minority stress, mental health, and related health risks among gay and bisexual men*. *Clinical Psychology: Science and Practice*, 2014. **21**(4): p. 313-330.
 83. McCabe, S.E., et al., *The relationship between discrimination and substance use disorders among lesbian, gay, and bisexual adults in the United States*. *American journal of public health*, 2010. **100**(10): p. 1946-1952.
 84. Stone, A., et al., *The science of real-time data capture: Self-reports in health research*. 2007: Oxford University Press.
 85. Bradburn, N.M., L.J. Rips, and S.K. Shevell, *Answering autobiographical questions: The impact of memory and inference on surveys*. *Science*, 1987. **236**(4798): p. 157-161.
 86. Hammersley, R., *A digest of memory phenomena for addiction research*. *Addiction*, 1994. **89**: p. 283-293.
 87. Schwarz, N., *Self-Reports: How the questions shape the answers*. *American Psychologist*, 1999. **54**(2): p. 93-105.
 88. Ross, M., *Relation of implicit theories to the construction of personal histories*. *Psychological review*, 1989. **96**(2): p. 341.
 89. Robinson, M.D. and G.L. Clore, *Belief and feeling: evidence for an accessibility model of emotional self-report*. *Psychological bulletin*, 2002. **128**(6): p. 934.
 90. Robinson, M.D. and G.L. Clore, *Episodic and semantic knowledge in emotional self-report: evidence for two judgment processes*. *Journal of personality and social psychology*, 2002. **83**(1): p. 198.
 91. Shiffman, S., et al., *Remember that? A comparison of real-time versus retrospective recall of smoking lapses*. *Journal of Consulting and Clinical Psychology*, 1997. **65**(2): p. 292-300.
 92. Sobell, L.C. and M.B. Sobell, *Timeline followback: A technique for assessing self-reported alcohol consumption*, in *Measuring alcohol consumption: Psychosocial and biological methods*, R.Z. Litten and J. Allen, Editors. 1992, Humana Press: New Jersey. p. 41-72.
 93. Hjorthøj, C.R., A.R. Hjorthøj, and M. Nordentoft, *Validity of timeline follow-back for self-reported use of cannabis and other illicit substances—systematic review and meta-analysis*. *Addictive behaviors*, 2012. **37**(3): p. 225-233.
 94. Robinson, S.M., et al., *Reliability of the Timeline Followback for cocaine, cannabis, and cigarette use*. *Psychology of addictive behaviors*, 2014. **28**(1): p. 154.
 95. Shiffman, S., A.A. Stone, and M.R. Hufford, *Ecological momentary assessment*. *Annu. Rev. Clin. Psychol.*, 2008. **4**: p. 1-32.
 96. Flynn, H.A., *Comparison of cross-sectional and daily reports in studying the relationship between depression and use of alcohol in response to stress in college students*. *Alcohol Clin Exp Res*, 2000. **24**(1): p. 48-52.
 97. Todd, M., et al., *Do we know how we cope? Relating daily coping reports to global and time-limited retrospective assessments*. *Journal of Personality and Social Psychology*, 2004. **86**(2): p. 310.
 98. Arbeau, K.J., D. Kuiken, and T.C. Wild, *Drinking to enhance and to cope: A daily process study of motive specificity*. *Addictive Behaviors*, 2011. **36**(12): p. 1174-1183.
 99. Teasdale, J.D. and S.J. Fogarty, *Differential effects of induced mood on retrieval of pleasant and unpleasant events from episodic memory*. *Journal of abnormal psychology*, 1979. **88**(3): p. 248.
 100. Collins, L.M., et al., *Agreement between retrospective accounts of substance use and earlier reported substance use*. *Applied Psychological Measurement*, 1985. **9**(3): p. 301-309.

101. Jensen, H.A.R., et al., *Consistency in Adults' Self-Reported Lifetime Use of Illicit Drugs: A Follow-Up Study Over 13 Years*. Journal of studies on alcohol and drugs, 2018. **79**(3): p. 490-494.
102. Dulin, P.L., et al., *Comparisons of alcohol consumption by timeline follow back vs. smartphone-based daily interviews*. Addiction research & theory, 2017. **25**(3): p. 195-200.
103. FAVILL, J. and C.F. RENNICK, *A case of family periodic paralysis*. Archives of Neurology & Psychiatry, 1924. **11**(6): p. 674-679.
104. Barker, R.G., *Habitats, environments, and human behavior*. 1978: Jossey-Bass Incorporated Pub.
105. Csikszentmihalyi, M., *The flow experience and its significance for human psychology*. 1988.
106. Platt, J., *The development of the "participant observation" method in sociology: Origin myth and history*. Journal of the History of the Behavioral Sciences, 1983. **19**(4): p. 379-393.
107. Litt, M.D., N.L. Cooney, and P. Morse, *Ecological momentary assessment (EMA) with treated alcoholics: methodological problems and potential solutions*. Health Psychology, 1998. **17**(1): p. 48.
108. Stone, A.A., et al., *Patient compliance with paper and electronic diaries*. Controlled clinical trials, 2003. **24**(2): p. 182-199.
109. Broderick, J.E., et al., *Signaling does not adequately improve diary compliance*. Annals of Behavioral Medicine, 2003. **26**(2): p. 139-148.
110. Lauritsen, K., et al., *Symptom recording in a randomised clinical trial: paper diaries vs. electronic or telephone data capture*. Controlled Clinical Trials, 2004. **25**(6): p. 585-597.
111. Stone, A.A., et al., *Intensive momentary reporting of pain with an electronic diary: reactivity, compliance, and patient satisfaction*. Pain, 2003. **104**(1-2): p. 343-351.
112. Stone, A.A., et al., *Does the peak-end phenomenon observed in laboratory pain studies apply to real-world pain in rheumatoid arthritis?* The Journal of Pain, 2000. **1**(3): p. 212-217.
113. Russell, G.M. and J.A. Richards, *Stressor and resilience factors for lesbians, gay men, and bisexuals confronting antigay politics*. American journal of community psychology, 2003. **31**(3-4): p. 313-328.
114. Livingston, N.A., et al., *Ecological momentary assessment of daily discrimination experiences and nicotine, alcohol, and drug use among sexual and gender minority individuals*. Journal of consulting and clinical psychology, 2017. **85**(12): p. 1131.
115. Rendina, H.J., B.M. Millar, and J.T. Parsons, *The critical role of internalized HIV-related stigma in the daily negative affective experiences of HIV-positive gay and bisexual men*. Journal of affective disorders, 2018. **227**: p. 289-297.
116. Lewis, R.J., et al., *Stressors for gay men and lesbians: Life stress, gay-related stress, stigma consciousness, and depressive symptoms*. Journal of Social and Clinical Psychology, 2003. **22**(6): p. 716-729.
117. Feinstein, B.A. and M.E. Newcomb, *The role of substance use motives in the associations between minority stressors and substance use problems among young men who have sex with men*. Psychology of sexual orientation and gender diversity, 2016. **3**(3): p. 357.
118. Lewis, R.J., et al., *Pathways to hazardous drinking among racially and socioeconomically diverse lesbian women: Sexual minority stress, rumination, social isolation, and drinking to cope*. Psychology of women quarterly, 2016. **40**(4): p. 564-581.
119. Parsons, J.T., et al., *Alcohol use and stigmatized sexual practices of HIV seropositive gay and bisexual men*. Addict Behav, 2004. **29**(5): p. 1045-51.
120. Pachankis, J.E., M.L. Hatzenbuehler, and T.J. Starks, *The influence of structural stigma*

- and rejection sensitivity on young sexual minority men's daily tobacco and alcohol use. *Social Science & Medicine*, 2014. **103**: p. 67-75.
121. Noga-Styron, K.E., C.E. Reasons, and D. Peacock, *The last acceptable prejudice: An overview of LGBT social and criminal injustice issues within the USA*. Contemporary Justice Review, 2012. **15**(4): p. 369-398.
 122. Operario, D., et al., *Sexual Minority Health Disparities in Adult Men and Women in the United States: National Health and Nutrition Examination Survey, 2001-2010*. Am J Public Health, 2015. **105**(10): p. e27-34.
 123. Kinsel, B.I., *Older women and resilience: a qualitative study of adaptation*. 2004, The Ohio State University.
 124. Lena Aléx, R. and B. Lundman, *Lack of resilience among very old men and women: A qualitative gender analysis*. 2011.
 125. Alessi, E.J., *Resilience in sexual and gender minority forced migrants: A qualitative exploration*. Traumatology, 2016. **22**(3): p. 203.
 126. Drabble, L.A., et al., *Harmful drinking, tobacco, and marijuana use in the 2000–2015 National Alcohol Surveys: Examining differential trends by sexual identity*. Substance Abuse, 2020: p. 1-12.
 127. Fish, J.N., T.L. Hughes, and S.T. Russell, *Sexual identity differences in high-intensity binge drinking: findings from a US national sample*. Addiction, 2018. **113**(4): p. 749-758.
 128. Fish, J.N. and C. Exten, *Sexual Orientation Differences in Alcohol Use Disorder Across the Adult Life Course*. American journal of preventive medicine, 2020. **59**(3): p. 428-436.
 129. Skeer, M.R., et al., *Patterns of substance use among a large urban cohort of HIV-infected men who have sex with men in primary care*. AIDS Behav, 2012. **16**(3): p. 676-89.
 130. Stall, R., et al., *Alcohol use, drug use and alcohol-related problems among men who have sex with men: the Urban Men's Health Study*. Addiction, 2001. **96**(11): p. 1589-1601.
 131. van der Star, A., J.E. Pachankis, and R. Bränström, *Sexual orientation openness and depression symptoms: A population-based study*. Psychology of Sexual Orientation and Gender Diversity, 2019.
 132. Eldahan, A.I., et al., *Daily minority stress and affect among gay and bisexual men: A 30-day diary study*. Journal of affective disorders, 2016. **190**: p. 828-835.
 133. Mereish, E.H., et al., *A daily diary study of minority stress and negative and positive affect among racially diverse sexual minority adolescents*. Journal of Counseling Psychology, 2021.
 134. Wray, T.B. and P.M. Monti, *Characteristics of Sex Events, Partners, and Motivations and Their Associations with HIV-Risk Behavior in a Daily Diary Study of High-Risk Men Who Have Sex with Men (MSM)*. AIDS and Behavior, 2019: p. 1-14.
 135. Reinert, D.F. and J.P. Allen, *The alcohol use disorders identification test (AUDIT): a review of recent research*. Alcoholism: Clinical and Experimental Research, 2002. **26**(2): p. 272-279.
 136. Saunders, J.B., et al., *Development of the Alcohol Use Disorders Identification Test (AUDIT): WHO collaborative project on early detection of persons with harmful alcohol consumption. II*. Addiction, 1993. **88**: p. 791-804.
 137. Babor, T.F., et al., *The alcohol use disorders identification test: Guidelines for use in*. World Health Organization. Recuperado de <https://apps.who.int/iris/handle/10665/67205>, 2001.
 138. Pal, H.R., R. Jena, and D. Yadav, *Validation of the Alcohol Use Disorders Identification Test (AUDIT) in urban community outreach and de-addiction center samples in north India*. Journal of studies on alcohol, 2004. **65**(6): p. 794-800.
 139. Hallit, J., et al., *Validation of the AUDIT scale and factors associated with alcohol use*

- disorder in adolescents: results of a National Lebanese Study*. BMC pediatrics, 2020. **20**: p. 1-10.
140. Neufeld, M., et al., *The Alcohol Use Disorders Identification Test (AUDIT) in the Russian language-a systematic review of validation efforts and application challenges*. 2021.
 141. Bowleg, L., *The problem with the phrase women and minorities: intersectionality—an important theoretical framework for public health*. American journal of public health, 2012. **102**(7): p. 1267-1273.
 142. Shangani, S., et al., *Intersectional minority stress disparities among sexual minority adults in the USA: the role of race/ethnicity and socioeconomic status*. Culture, health & sexuality, 2019: p. 1-15.
 143. Saha, T.D., et al., *Concurrent use of alcohol with other drugs and DSM-5 alcohol use disorder comorbid with other drug use disorders: Sociodemographic characteristics, severity, and psychopathology*. Drug and alcohol dependence, 2018. **187**: p. 261-269.
 144. Esser, M.B., et al., *Binge drinking, other substance use, and concurrent use in the US, 2016–2018*. American journal of preventive medicine, 2021. **60**(2): p. 169-178.
 145. Graham, R., et al., *The health of lesbian, gay, bisexual, and transgender people: Building a foundation for better understanding*. Washington, DC: Institute of Medicine, 2011.
 146. Parker, R., *Grassroots Activism, Civil Society Mobilization, and the Politics of the Global HIV/AIDS Epidemic*. Brown J. World Aff., 2010. **17**: p. 21.
 147. Lorway, R., *AIDS activism, science and community across three continents*. Vol. 1. 2016: Springer.
 148. Smith, N.G., *Resilience Across the Life Span: Adulthood*. Trauma, Resilience, and Health Promotion in LGBT Patients, 2017: p. 75-88.
 149. Braun, V. and V. Clarke, *Can I use TA? Should I use TA? Should I not use TA? Comparing reflexive thematic analysis and other pattern-based qualitative analytic approaches*. Counselling and Psychotherapy Research, 2021. **21**(1): p. 37-47.
 150. Braun, V. and V. Clarke, *Using thematic analysis in psychology*. Qualitative research in psychology, 2006. **3**(2): p. 77-101.
 151. Braun, V. and V. Clarke, *Reflecting on reflexive thematic analysis*. Qualitative research in sport, exercise and health, 2019. **11**(4): p. 589-597.
 152. Braun, V. and V. Clarke, *Conceptual and design thinking for thematic analysis*. Qualitative Psychology, 2021.
 153. Liamputtong, P., *Handbook of research methods in health social sciences*. 2019: Springer.
 154. Brownfield, J.M., et al., *More than simply getting bi: An examination of coming out growth for bisexual individuals*. Psychology of Sexual Orientation and Gender Diversity, 2018. **5**(2): p. 220.
 155. Cox, N., et al., *Stress-related growth, coming out, and internalized homonegativity in lesbian, gay, and bisexual youth. An examination of stress-related growth within the minority stress model*. Journal of Homosexuality, 2010. **58**(1): p. 117-137.
 156. Gonzales, G. and J.M. Ehrenfeld, *The association between state policy environments and self-rated health disparities for sexual minorities in the United States*. International journal of environmental research and public health, 2018. **15**(6): p. 1136.
 157. Mereish, E.H. and J.B. Bradford, *Intersecting identities and substance use problems: Sexual orientation, gender, race, and lifetime substance use problems*. Journal of studies on alcohol and drugs, 2014. **75**(1): p. 179-188.
 158. Cerezo, A. and A. Ramirez, *Perceived discrimination, alcohol use disorder and alcohol-related problems in sexual minority women of color*. Journal of Social Service Research, 2021. **47**(1): p. 33-46.
 159. English, D., H.J. Rendina, and J.T. Parsons, *The effects of intersecting stigma: A*

- longitudinal examination of minority stress, mental health, and substance use among Black, Latino, and multiracial gay and bisexual men.* Psychology of violence, 2018. **8**(6): p. 669.
160. Cole, G., *Types of white identification and attitudes about Black lives matter.* Social Science Quarterly, 2020. **101**(4): p. 1627-1633.
 161. Surace, A., C.W. Kahler, and T.B. Wray, *The association between sexual orientation discrimination and drinking among men who have sex with men: Results from an ecological momentary assessment study.* Psychology of Sexual Orientation and Gender Diversity, 2022.
 162. Frank, B., *Hegemonic heterosexual masculinity.* Studies in Political Economy, 1987. **24**(1): p. 159-170.
 163. Phillips, S.R., *The hegemony of heterosexuality: A study of introductory texts.* Teaching Sociology, 1991: p. 454-463.
 164. Bibbings, L.S., *The heterostate: Hegemonic heterosexuality and state power,* in *State Power Crime.* 2009, SAGE Publications Ltd. p. 35-48.
 165. Perrin, P.B., et al., *The minority strengths model: Development and initial path analytic validation in racially/ethnically diverse LGBTQ individuals.* Journal of clinical psychology, 2020. **76**(1): p. 118-136.
 166. Mohebbi, M., et al., *Psychometric properties of a short form of the Center for Epidemiologic Studies Depression (CES-D-10) scale for screening depressive symptoms in healthy community dwelling older adults.* General hospital psychiatry, 2018. **51**: p. 118-125.
 167. Frost, D.M. and I.H. Meyer, *Measuring community connectedness among diverse sexual minority populations.* Journal of sex research, 2012. **49**(1): p. 36-49.
 168. Bogart, L.M., et al., *Perceived discrimination and mental health symptoms among Black men with HIV.* Cultural diversity and ethnic minority psychology, 2011. **17**(3): p. 295.
 169. Collins, R.L., G.A. Parks, and G.A. Marlatt, *Social determinants of alcohol consumption: the effects of social interaction and model status on the self-administration of alcohol.* Journal of consulting and clinical psychology, 1985. **53**(2): p. 189.
 170. Cooper, M.L., et al., *Development and validation of a three-dimensional measure of drinking motives.* Psychological Assessments, 1992. **4**(2): p. 123-132.
 171. Kraemer, H.C. and C.M. Blasey, *Centring in regression analyses: a strategy to prevent errors in statistical inference.* Int J Methods Psychiatr Res, 2004. **13**(3): p. 141-51.
 172. Rendina, H.J., B.M. Millar, and J.T. Parsons, *Situational HIV stigma and stimulant use: A day-level autoregressive cross-lagged path model among HIV-positive gay and bisexual men.* Addictive behaviors, 2018. **83**: p. 109-115.
 173. Guy, A.A., Surace, A., Zelaya, D.G., Flynn, R., Opalo, C., Lyman, P., Keuroghlian, A., Mayer, K.H., Monti, P.M., Kahler, C.W., *"Ew, okay": Transgender adults' reflections on alcohol use counseling and recommendations for providers.* 2022: Manuscript in preparation
 174. *Here's Where New England States Stand on Masks After CDC Released New Guidelines.* 2021; Available from: <https://www.necn.com/news/coronavirus/heres-where-new-england-states-stand-on-masks-after-cdc-released-new-guidelines/2455812/>.
 175. Surace, A., et al. *How the Loss of Gay Spaces has Impacted Alcohol Use Among Sexual Minorities During the COVID-19 Pandemic.* in *ALCOHOLISM-CLINICAL AND EXPERIMENTAL RESEARCH.* 2021. WILEY 111 RIVER ST, HOBOKEN 07030-5774, NJ USA.
 176. Lee, J.P., et al., *What explains the concentration of off-premise alcohol outlets in Black neighborhoods?* SSM-Population Health, 2020. **12**: p. 100669.
 177. Trangenstein, P.J., et al., *Alcohol outlet clusters and population disparities.* Journal of urban health, 2020. **97**(1): p. 123-136.

178. Fliss, M.D., *Measuring and Mapping Alcohol Outlet Environment Density, Clusters, and Racial and Ethnic Disparities in Durham, North Carolina*, 2017. Preventing chronic disease, 2021. **18**.
179. Meyer, I.H. and D.M. Frost, *Minority stress and the health of sexual minorities*. 2013.
180. Holloway, I., et al., *Network support, technology use, depression, and ART adherence among HIV-positive MSM of color*. AIDS care, 2017. **29**(9): p. 1153-1161.
181. Rostosky, S.S., et al., *LGB positive identity and psychological well-being*. Psychology of Sexual Orientation and Gender Diversity, 2018. **5**(4): p. 482.
182. Klibert, J.J., S. Choudhury, and C.T. Yancey, *A sexual minority model of flourishing: Examining the interactions among negative emotions, positive emotions, and sexual orientation identity status*. Journal of Gay & Lesbian Mental Health, 2022. **26**(1): p. 24-47.
183. Bowleg, L., *When Black+ lesbian+ woman ≠ Black lesbian woman: The methodological challenges of qualitative and quantitative intersectionality research*. Sex roles, 2008. **59**(5-6): p. 312-325.
184. Garcia, T.C. and A. Zajicek, *Incorporating Intersectionality in Public Policy: A Systematic Literature Review*. Humanity & Society, 2021: p. 0160597620988591.
185. Collins, P.H., *Symposium: On West and Fenstermaker's "doing difference"*. Gender & Society, 1995. **9**(4): p. 491-494.
186. Cuadraz, G.H. and L. Uttal, *Intersectionality and in-depth interviews: Methodological strategies for analyzing race, class, and gender*. Race, Gender & Class, 1999: p. 156-186.
187. Weber, L. and D. Parra-Medina, *Intersectionality and women's health: Charting a path to eliminating health disparities*, in *Gender perspectives on health and medicine*. 2003, Emerald Group Publishing Limited.
188. Guan, A., et al., *An investigation of quantitative methods for assessing intersectionality in health research: A systematic review*. SSM-Population Health, 2021. **16**: p. 100977.
189. Staples, J.M., et al., *A descriptive analysis of alcohol behaviors across gender subgroups within a sample of transgender adults*. Addictive behaviors, 2018. **76**: p. 355-362.
190. Guy, A.A., et al., *Discrimination and alcohol problems among heavy drinking HIV-positive men who have sex with men: The buffering effect of a brief Motivational Intervention to reduce alcohol use*. Drug and Alcohol Dependence, 2022. **233**: p. 109384.
191. Lieber, C.S., *The metabolism of alcohol*. Scientific American, 1976. **234**(3): p. 25-33.
192. Carney, M.A., et al., *Positive and negative daily events, perceived stress, and alcohol use: a diary study*. Journal of consulting and clinical psychology, 2000. **68**(5): p. 788.
193. Park, C.L. and M.R. Levenson, *Drinking to cope among college students: prevalence, problems and coping processes*. Journal of studies on alcohol, 2002. **63**(4): p. 486-497.
194. Park, C.L., S. Armeli, and H. Tennen, *The daily stress and coping process and alcohol use among college students*. Journal of studies on Alcohol, 2004. **65**(1): p. 126-135.
195. Arnett, J.J., *The developmental context of substance use in emerging adulthood*. Journal of drug issues, 2005. **35**(2): p. 235-254.
196. Burn, I., *Not all laws are created equal: Legal differences in state non-discrimination laws and the impact of LGBT employment protections*. Journal of Labor Research, 2018. **39**(4): p. 462-497.
197. Alito, S., *THOMAS E. DOBBS, STATE HEALTH OFFICER OF THE MISSISSIPPI DEPARTMENT OF HEALTH, ET AL, PETITIONERS v. JACKSON WOMEN'S HEALTH ORGANIZATION, ET AL*. 2022.
198. Zelaya, D.G., Guy, A., Surace, A., Mastroleo, N., Pantalone, D., Monti, P., Mayer, K., & Kahler, C., *Modeling the Impact of Race, Socioeconomic Status, Discrimination and*

- Cognitive Appraisal on Mental Health Concerns Among Heavy Drinking HIV+ cisgender MSM.* AIDS & Behavior., in press.
199. Croff, J.M., et al., *Hidden Rainbows: Gay Bars as Safe Havens in a Socially Conservative Area Since the Pulse Nightclub Massacre.* Sexuality Research and Social Policy, 2017. **14**(2): p. 233-240.
 200. Feinstein, B.A., C. Dyar, and B. London, *Are outness and community involvement risk or protective factors for alcohol and drug abuse among sexual minority women?* Archives of Sexual Behavior, 2017. **46**(5): p. 1411-1423.
 201. Woodward, E.N. and D.W. Pantalone, *The role of social support and negative affect in medication adherence for HIV-infected men who have sex with men.* Journal of the Association of Nurses in AIDS Care, 2012. **23**(5): p. 388-396.
 202. Horvath, K.J., et al., *Feasibility, acceptability and preliminary efficacy of an online peer-to-peer social support ART adherence intervention.* AIDS and Behavior, 2013. **17**(6): p. 2031-2044.