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DEVELOPING AND TESTING A BRIEF ALCOHOL INTERVENTION FOR
LESBIAN, GAY, BISEXUAL, TRANSGENDER,
AND QUEER POPULATIONS

By

Lucas A. Mirabito, B.A., M.A.

A Dissertation submitted to the Faculty of the Graduate School,
Marquette University,
In Partial Fulfillment of the Requirements for
The Degree of Doctor of Philosophy

Milwaukee, Wisconsin

August 2021

ABSTRACT
DEVELOPING AND TESTING A BRIEF ALCOHOL INTERVENTION FOR
LESBIAN, GAY, BISEXUAL, TRANSGENDER,
AND QUEER POPULATIONS

Lucas A. Mirabito, B.A., M.A.

Marquette University, 2021

Lesbian, gay, bisexual, transgender, and queer people are disproportionately affected by alcohol and substance use disorders (SUDs). Meyer (2003) and Hatzenbuehler (2009) extended minority stress theory to lesbian, gay, and bisexual populations and introduced stressors unique to these identities to explain general mental health disparities. However, no cohesive theory has emerged to explain the specific pathways that lead to alcohol use disorders (rather than internalizing syndromes such as anxiety and depression). This study draws on preventative intervention research, motivational interviewing based interventions (MIBIs), and existing LGBTQ-tailored interventions research published since Meyer (2003) to fill this research gap and propose a model to explain this pathway. This model also identifies the necessary components of an intervention to disrupt the minority stress-alcohol use pathway. Based on this model, the Discussing Identity, Substance use, Coping, and Useful Strategies for Sexual/gender minorities (DISCUSS) intervention was developed and tested with a diverse sample of LGBTQ participants to investigate the efficacy, feasibility, acceptability, and appropriateness of the protocol. Initial evidence shows promise for the DISCUSS intervention in correcting distorted norms about alcohol use and reducing participants' generalized distress. Qualitative and quantitative findings are presented to inform the next iteration of this program.

ACKNOWLEDGMENTS

Lucas A. Mirabito, B.A., M.A.

In no particular order, I would like to thank my mother, Roberta Mirabito, father, John Mirabito, sister, Martina Mirabito, and fiancé, Alexander Pisarek, for their unending and unconditional support and love throughout graduate school.

I would also like to thank my dissertation chair, Ed de St. Aubin, Ph.D. for his support and guidance, and Kim Skerven, Ph.D. for her amazing mentorship and guidance in the clinical side of this work.

I would also like to thank Juan Zapata, M.S. and Zane Ballard, M.S. for their extremely valuable help in conducting the study and providing feedback.

Additionally, I wish to acknowledge Vanecia McCullough and Richard Dempsey, my wonderful research assistants, for their help and support in preparing this project.

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Introduction

Substance use disorders (SUDs) are a substantial public health problem in the United States, costing over \$740 billion annually in health care, criminal justice costs, and lost productivity (National Institute on Drug Abuse, 2017). Evidence-based treatment approaches for SUDs such as Twelve Step Facilitation Therapy (Nowinski, Baker, & Carroll, 1995), the Community Reinforcement Approach (Budney & Higgins, 1998), Cognitive-Behavioral Coping Skills Training (Longabaugh & Morganstern, 1999), and Motivational Enhancement Therapy (Miller, Zweben, DiClemente, & Rychtarik, 1994) have been empirically supported and show efficacy in reducing or preventing SUDs.

However, the interventions discussed above suffer from a common research gap: none of them have been validated with lesbian, gay, bisexual, transgender, or queer (LGBTQ) populations. A search of the Substance Abuse and Mental Health Services Administration's National Registry of Evidence-Based Programs and Practices reveals that only 2 of the 577 listed interventions have been researched with LGBTQ populations, neither of which are intended to treat or prevent SUDs (but do show some evidence that they reduce substance use). Moreover, no publicly available manuals currently exist, and these programs are currently listed with the status of "programs with promising outcomes" rather than as empirically supported (SAMHSA, 2018). A search of The University of Washington Alcohol and Drug Abuse Institute's Evidence-Based Practices database similarly reveals no SUD interventions (out of 45 currently included in the list) classified as validated for use with LGBTQ populations. Similarly, APA's Society of Clinical Psychology database of evidence-based practices for alcohol and

mixed substance use disorders returned no interventions that have been validated with LGBTQ populations.

Alcohol and Substance Use Disparities in LGBTQ Populations

This lack of research with LGBTQ populations is a substantial concern, as the burden of SUDs and problematic substance use (defined as using substances in a way that results in negative impacts or health problems but does not rise to the level of disorder) is disproportionately borne by the LGBTQ community. LGBTQ adults and adolescents have been consistently shown to suffer from higher rates of SUDs and to engage in more problematic substance use compared to their heterosexual and cisgender peers (Meyer, 2003; Kecojevic, Wong, Schrage, Silva, Bloom, Iverson, & Lankenau., 2012; McCabe, West, Hughes, & Boyd, 2013; Mereish & Bradford, 2014; Hatzenbuehler, 2009; Clements-Nolle, Marx, & Katz, 2006; Xavier, Bobbin, Singer, & Budd, 2008). Lesbian, gay, and bisexual (LGB) college students show even higher rates of heavy episodic drinking and consequences such as increased alcohol tolerance (a risk factor for later alcohol problems) (Ebersole, Moorer, Noble, & Madson, 2015; Reed, Prado, Matsumoto, & Amaro, 2010). Additionally, LGB individuals report higher severity of SUD symptoms (Allen & Mowbray, 2016).

LGBTQ subpopulations may also suffer from even greater disparities. In a representative and ethnically diverse sample of sexual minority women, Hughes, Wilsnack, Szalacha, Johnson, Bostwick, Seymour and colleagues (2006) found that sexual minority women (and particularly bisexual women) reported consistently higher rates of drinking-related problems compared to heterosexual women from a nationally collected sample. Similar findings have emerged for adolescent sexual minority women

(Talley, Hughes, Aranda, Birkett, & Marshal, 2014). In addition, other research shows relatively few differences between age cohorts for levels of drinking problems in sexual minority women (Hughes et al., 2006), which is contrary to research showing that rates of drinking for heterosexual women tend to decrease with age (Johnstone, Leino, Ager, & Ferrer, 1996).

A recent systematic review showed that these disparities continue (Ploderl & Tremblay, 2015). A vast majority of the studies examined (93% of studies with adults and young adults, 94% with adolescents) found significantly higher rates of SUDs for sexual minorities (with the exception of alcohol problems for sexual minority men). For drug use problems, studies consistently showed more problems for sexual minority adolescents and adults (Ploderl & Tremblay, 2015). Other recently published longitudinal research has indicated that sexual minority adolescents have a 60-100% greater risk of polysubstance abuse (abuse of more than one substance) than their heterosexual peers (Kecojevic, Jun, Reisner, & Corliss, 2017) and that substance use disparities between heterosexual and sexual minority individuals increase with age (Dermody, Marshal, Cheong, Burton, Hughes, Aranda, & Friedman, 2014). Clearly, effective sociological and psychological intervention is needed to reduce these disparities. Unfortunately, traditional SUD prevention and intervention research has failed to be inclusive of this population in outcome data of clinical trials. What's more, even research within the LGBTQ field has largely failed to be inclusive of those with diverse gender identities, and even less research has looked at how both sexual and gender minority status interact to impact treatment or substance use outcomes.

While no existing substance use interventions have been validated with LGBTQ populations, Motivational Interviewing-based interventions (MIBIs) provide a promising theoretical framework for researchers seeking to develop tailored interventions to reduce alcohol use disparities. First, MIBIs have a strong evidence base and have shown efficacy in preventing and reducing problematic drinking in general populations (Rubak, Sandbaek, Lauritzen, & Christensen, 2005; Jensen, Cushing, Aylward, Craig, Sorell, & Steele, 2011; Kaner, Dickinson, Beyer, Pienaar, Schlesinger, Campbell, et al., 2009). Second, historical and well-founded distrust of mental health providers by LGBTQ populations results in low retention in SUD treatment (Senreich, 2010). MIBIs may have an advantage over other interventions in this area because they can often be delivered with relatively little training, do not require a licensed mental health professional to deliver them, and can be delivered in generally less than five sessions. A preventative intervention that can be delivered in this way has the potential to reduce the higher therapy drop-out rates seen in LGBTQ populations in outpatient mental health settings. The efficacy of and theoretical framework for these interventions in general populations will be discussed below.

Motivational Interviewing-Based Interventions for Substance Use Disorders

Of the many interventions that have been developed to treat SUDs, only MIBIs could be considered both a preventative approach for problem substance users and a treatment for those meeting criteria for SUDs. Evidence suggests that early treatment and intervention for SUDs (and mental disorders in general) results in a cost-benefits savings of between \$2 and \$10 for every \$1 spent (Miller & Hendrie, 2008). These savings result from decreases in healthcare costs, criminal and juvenile justice costs, and lost

productivity. Arguably more important than the cost savings, preventative approaches have the advantage of disrupting the trajectory to developing SUDs before the life-threatening and quality-of-life destroying consequences of a diagnosable disorder occur.

Research evidence continues to accumulate on the effectiveness of MIBIs in reducing problematic drinking (Rubak, et al., 2005; Jensen, et al., 2011; Kaner et al., 2009). These interventions are typically based on Motivational Interviewing (MI) developed by Miller & Rollnick (1991; 2013) or are adapted from Motivational Enhancement Therapy (Miller, et al., 1994). The theoretical framework and important clinical principles of MI are summarized below.

Theoretical Framework of Motivational Interviewing-Based Interventions

Miller and Rollnick (2013) theorize that attitudes about change are not only expressed by client statements, they are actively shaped by client statements (Miller & Rollnick, 2013). By continuing to reinforce and draw the focus of the session on client reasons for behavior change, an MI counseling style helps tilt the client's language to change talk (defined in the literature as client vocalizations of the reasons or steps to change the behavior) and moves them away from sustain talk (defined as client vocalizations of the reasons to keep engaging in the problem behavior). Miller and Rose (2009) propose that therapist reflection and reinforcement of change talk increases the frequency of change talk, which mediates the relationship between receiving MI-based treatment and reductions in problematic drinking.

MIBIs typically incorporate the following six treatment components (defined as any therapeutic skill, process, or component with a relationship to a desired outcome or to a mediator of outcome; Longabaugh, Magill, Morgenstern, & Huebner, 2013): 1)

personalized feedback about substance use, 2) an emphasis on personal responsibility and autonomy about the decision to change substance use, 3) advice giving (with permission), 4) a menu of options for change, and 5) an empathic counseling style (Bien, Miller, & Tonigan, 1993; Miller & Sovereign; 1989; Miller et al., 1994). The empathic counseling style portion of these interventions typically incorporate MI-consistent (MICO) therapist behaviors outlined in motivational interviewing (MI) (Miller & Rollnick, 2013; Prochaska & DiClemente, 1982; Norcross, Krebs, & Prochaska, 2011). They are defined by the original treatment developers and in the Motivational Interviewing Skill Code (MISC; Miller, Moyers, Ernst, & Amrhein, 2008) as advisement with permission, affirmation, complex reflections, emphasizing client control, open questions, raising concerns with permission, reframing client language, simple reflections, and support. These therapist behaviors are theorized to create the necessary environment for change and to influence mediators of treatment outcome (Miller & Rose, 2009).

Why Existing MIBIs Are Likely Not Enough to Prevent LGBTQ Drinking

While research interest in identifying the vital treatment components and mediators of treatment outcomes in brief interventions has continued in recent years, this research has neglected to validate the interventions for LGBTQ populations or to report sexual orientation of participants in clinical outcomes research. Given this lack of research with LGBTQ populations, there is no evidence that mediators of treatment outcome or treatment components of MIBIs function in the same way for this population. However, lack of outcomes data alone does not provide evidence that MIBIs need to be adapted for use with LGBTQ populations.

One approach to this problem would be to test existing interventions with LGBTQ populations specifically (without adapting them) to determine whether they can be efficacious for this population. While some scholars have endorsed this approach (Elliott and Mihalic, 2004), others have argued that interventions must be adapted and tailored for diverse populations to achieve optimal engagement and intervention impact (Castro, Barrera, & Martinez, 2004). Research has tended to support the culturally tailored approach more. Several meta-analytic studies point to culturally tailored interventions being more efficacious with diverse populations than the original intervention (Benish, Quintana, & Wampold, 2011; Griner & Smith, 2006; Sundell, Beelmann, Hasson, & von Thiele Schwarz, 2016). In addition to this evidence, an examination of theoretical explanations for mental health disparities in LGBTQ populations reveals potential differences between the mediators of change in the MIBI literature and the mediators of mental health in LGBTQ populations. While none of the prominent theories of LGBTQ health disparities specifically focus on explaining alcohol use disparities, an examination of them is useful for highlighting why interventions may need to be tailored to LGBTQ populations.

Minority Stress Theory

Meyer's (2003) Minority Stress Theory (see Figure 1) drew upon previous work documenting the relationship between stress experiences and psychological distress/psychopathology (e.g. Dohrenwend, 2000) to explain mental health disparities seen in lesbian, gay, and bisexual populations. This theory states that the stress related to proximal (defined as internalized homophobia, concealment of sexual orientation, and expectations of rejection) and distal (prejudice, discrimination, violence) stressors

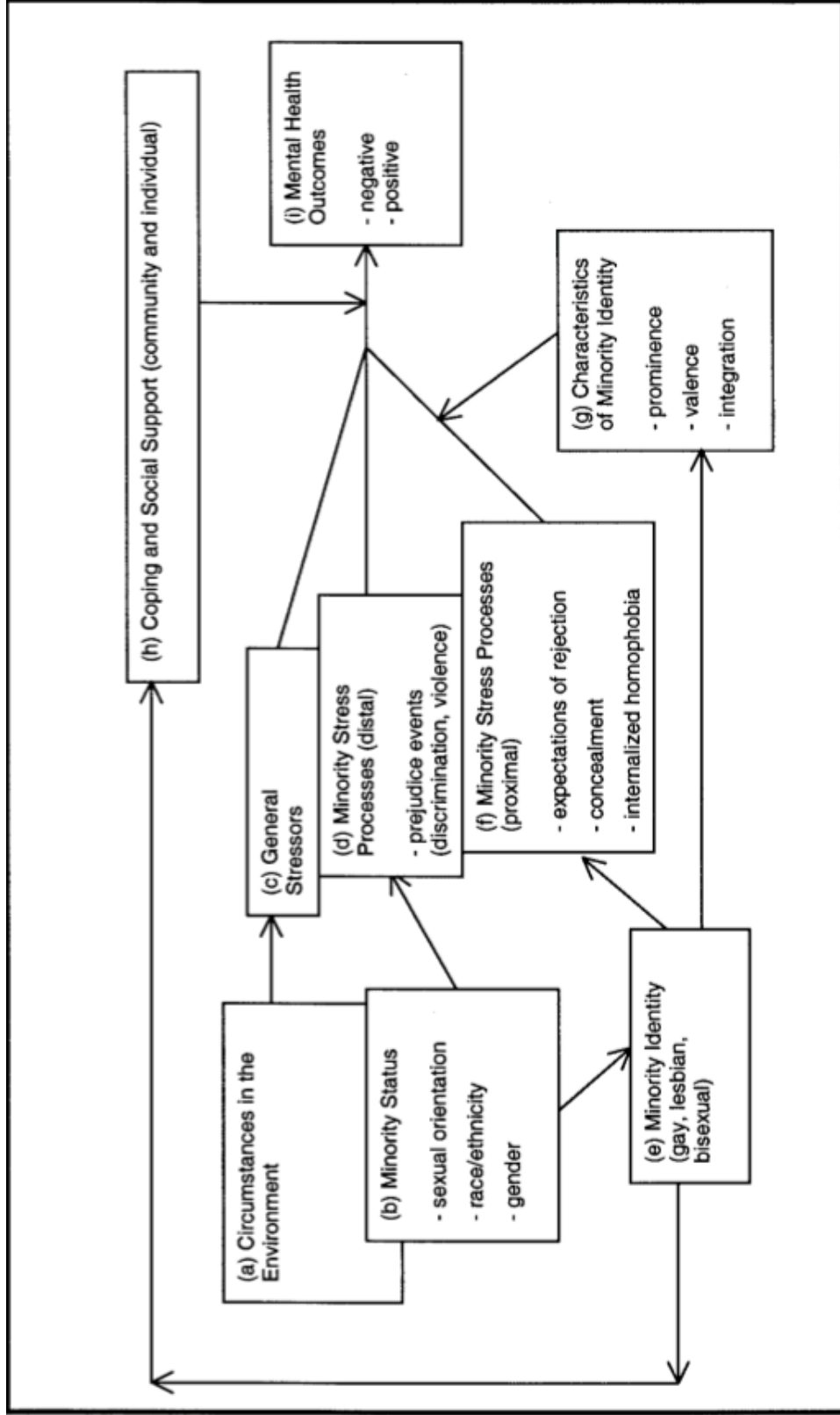


Figure 1. Minority Stress Processes in Lesbian, Gay, and Bisexual populations (taken from Meyer, 2003)

experienced by LGB individuals can explain mental health disparities. According to the theory, the increased burden of stress related to LGB identity (in addition to any stressors related to other identities, such as racial/ethnic minority, gender minority, lower socioeconomic status) can exceed the person's ability to cope, resulting in disorder (Meyer, 2003). Indeed, evidence does suggest that LGB adults and adolescents suffer from more victimization, prejudice events, and discrimination (Meyer, Schwartz, & Frost, 2008; Corliss, Cochran, & Mays, 2002; Kann et al., 2016; Fedewa & Ahn, 2011) and there is also evidence that internalized homophobia is significantly correlated with greater psychopathology (Williamson, 2000). In terms of substance use, evidence has emerged that links perceived discrimination to SUDs in LGBTQ individuals (McKirnan & Peterson, 1988, 1989) and neighborhood-level violence with marijuana use in LGB adolescents (Duncan, Hatzenbuehler, & Johnson, 2014).

Meyer (2003) also proposed that several individual-level factors may moderate the effects of stress and explain why some individuals develop psychopathology as a result of experiencing minority stress and while most do not. Meyer (2003) proposed that identity salience (i.e., how important to the person's identity and sense of self is their identity as an LGB person) can moderate the effects of minority stress. If identity salience is low, he proposed that minority stress is lower; while higher identity salience results in higher minority stress. Meyer (2003) also suggests that, for some individuals, identifying as LGB can result in greater social support and affiliation, which reduces the amount of minority stress through group coping resources. In addition, the model allows for the influence of individual-level coping resources as a moderator by theorizing that those with higher levels of healthy coping skills can reduce the impact of minority stress.

Offering stress as a mediator between social status and psychopathology is a limitation of the model because it does not explain the mechanisms through which greater stress leads to greater psychopathology other than to state that it exceeds some theoretical maximum ability to cope. Therefore, it offers little explanation as to how minority stress leads to different externalizing (e.g. SUDs) and internalizing disorders, or how LGBTQ-specific stress leads to psychopathology. Most problematically, it does not examine research on or extend the model to include transgender/gender minority individuals and is limited to offering an explanation of higher rates of mental health problems in lesbian, gay, and bisexual populations.

Hendricks and Testa (2012) provided an important extension of the Minority Stress Model to transgender individuals. They noted that the limited existing research points to transgender individuals experiencing many of the same proximal and distal stressors as sexual minorities (Hendricks & Testa, 2012). Existing evidence suggests that transgender individuals experience high rates of physical and sexual violence (Clements-Nolle et al., 2006; Kenagy & Bostwick, 2005) and other forms of discrimination (rejection, discrimination, and prejudice events) (Beemyn & Rankin, 2011). Some very limited support has also been found for an association between transgender identity concealment and psychological distress (Beemyn & Rankin, 2011).

Psychological Mediation Framework

Hatzenbuehler's (2009) Psychological Mediation Framework (see Figure 2) was an attempt to expand Meyer's (2003) model to understand how general psychological processes and coping resources mediate the relationship between distal stressors (e.g. discrimination, stigma events) experienced by LGB individuals and poor mental health

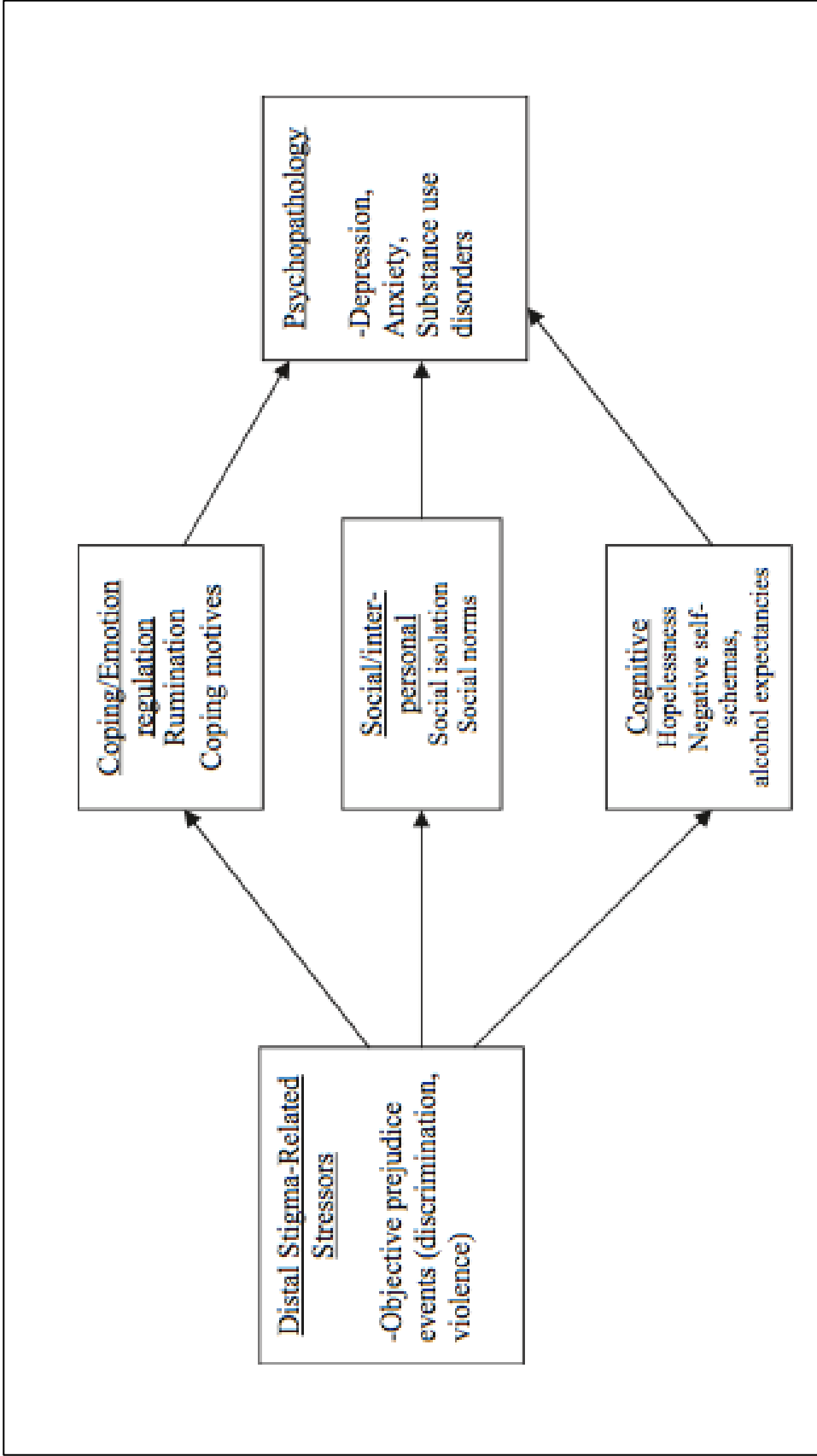


Figure 2. The Psychological Mediation Framework (taken from Hatzenbuehler, 2009)

outcomes. However, it should be noted that it focused only on explaining poor mental health outcomes in lesbian, gay, and bisexual populations. Hatzenbuehler's (2009) definition of mediation was based on Baron and Kenny's (1986) conceptual framework of mediation, where an independent variable has a direct impact on an outcome variable (a→c pathway). However, there is an additional causal path feeding into the outcome variable through the mediating variable (path b). There should also be a path from the independent variable to the mediator (path a). Hatzenbuehler (2009) assumes that mediators in his model (i.e. tendency to ruminate, social isolation, negative self-schemas) either become characteristics of the individual in response to minority stress or are changed by the experience of minority stress. He proposes that the experience of minority stressors alter the mediator variable, which in turn alters the outcome variable. In this mediational model, Hatzenbuehler (2009) attempts to explain how different mediational processes may lead to different externalizing or internalizing psychopathology, including alcohol use disorders. While both Meyer (2003) and Hatzenbuehler's (2009) models drew upon research showing that LGB individuals suffer from higher rates of discrimination and that this higher experience of discrimination is related to the mental health disparities observed, Hatzenbuehler (2009) also drew upon research examining whether the same general psychological processes that predicted poor mental health outcomes in heterosexual populations also predicted these outcomes for LGB individuals. Research examined at the time did indeed show that some of the same general psychological processes that predict poor mental health outcomes in heterosexual populations also predict them in LGB populations (e.g. Diamond, 2003; Savin-Williams & Ream, 2003). However, Hatzenbuehler (2009) argued that, to explain mental health disparities, research

would need to demonstrate that minority stress experiences somehow resulted in an *elevated rate* of these general psychological processes in LGB populations. In synthesizing these two areas, the Psychological Mediation Framework theorizes that stigma-related stress increases vulnerability to the general psychological processes that predict poor mental health outcomes (Hatzenbuehler, 2009). In this framework, the relationship between sexual minority stress and poor mental health outcomes (including SUDs) should be mediated by general psychological processes known to predict these poor mental health outcomes in general populations.

Pathways to Substance Use for LGB Populations

In addition to providing a general framework for understanding elevated rates of general psychopathology in LGB populations, the Psychological Mediation Framework (Hatzenbuehler, 2009) has the advantage of providing evidence-based theory regarding the mediators of alcohol use in LGB populations. Drawing on research linking stress to alcohol use through the mediator of coping motives (using alcohol to regulate, escape, or avoid negative emotions; Cooper, Frone Russell, & Mudar, 1995; Greeley & Oei, 1999), Hatzenbuehler (2009) argued that coping motives should also be a mediator of the relationship between sexual minority stress and alcohol use. Supporting this relationship, a study conducted by Hatzenbuehler, Corbin, & Fromme (2008) showed that discrimination experienced by LGB young adults was associated with positive alcohol expectancies, which led to coping motives to consume alcohol, which, in turn, led to greater alcohol problems. In addition, other research has shown that more rejection in response to sexual orientation disclosure was associated with increased cigarette, alcohol, and marijuana use among sexual minorities (Rosario, Scrimshaw, & Hunter, 2008) and

that perceived discrimination predicts binge drinking in gay male college students (Flood, McLaughlin, & Prentice, 2013). This *suggests* that substances may be used to cope with rejection and discrimination, but mediation and longitudinal research would need to be used to determine the underlying mechanisms through which this stress results in increased substance use.

Hatzenbuehler (2009) also theorized that a higher number of positive expectancies about alcohol use (e.g. that it will reduce negative affect or tension related to minority stress) are another mediator of the relationship between increased minority stress and higher alcohol use. Some research has shown that LGB young adults have more positive alcohol expectancies compared to heterosexual populations and that these positive alcohol expectancies mediate the relationship between sexual minority status and higher alcohol use (Hatzenbuehler et al., 2008). However, this study did not examine the role of specific minority stressors, only sexual minority status. Based on the literature available at the time on coping motives and alcohol expectancies, Hatzenbuehler (2009) theorized that both higher alcohol expectancies and more coping motives are important mediators of the relationship between sexual minority stress and higher alcohol use. He also noted that the specific alcohol expectancies that LGB individuals hold that lead to higher alcohol consumption have not been assessed, and this would be important to researchers attempting to develop interventions. Nonetheless, the Psychological Mediation Framework suggests that alcohol expectancies and coping motives for LGB individuals may be different than those found for heterosexual individuals.

Finally, Hatzenbuehler (2009) suggests that individuals' perceptions of social norms for alcohol use are another important mediator of the relationship between

minority stress and substance use outcomes. Social norms for alcohol (defined as the environment's impact on individuals' alcohol use and individuals' perceptions of them) have been shown to predict alcohol use and alcohol problems in samples of heterosexual young adults (Larimer, Turner, Mallett, & Geisner, 2004). Some research has shown that specific social norms within the LGB community are predictive of substance use (Hatzenbuehler et al., 2008; McKirnan & Peterson, 1989), and this relationship has also been found for Black sexual minority men (Tobin, Davey-Rothwell, Tang, Siconolfi, & Latkin, 2014). Research has also shown that school-wide social norms for substance use (based typically on general student populations' drinking habits) are not predictive of LGBTQ students' substance use (Eisenberg & Wechsler, 2003). This is problematic because many brief interventions purport to work by changing perceived drinking norms (a mediator of alcohol use) (e.g. the BASICS program; Dimeff, Baer, Kivlahan, & Marlatt, 1999) by providing accurate peer substance use norms (typically based on general samples of students or young adults).

There are many possible reasons why social norms for drinking may be different for LGBTQ adolescents and college students. One common explanation in the research is that many of the safe spaces for LGBTQ people are centered around or encourage alcohol use (Rosario, Schrimshaw, & Hunter, 2004). Closed environments such as LGBTQ-friendly bars can be a safe environment for those identifying as LGBTQ to receive social support, validation, and other important resources such as group solidarity and cohesiveness that come with identifying as a stigmatized minority (Meyer, 2003). While these environments may help to ameliorate some of the minority stress associated with an LGBTQ identity, they may *also* encourage higher alcohol use. Permissive social norms

for alcohol use in the LGB community may be learned through these settings, and positive alcohol expectancies and coping motives may work to maintain this use (Hatzenbuehler, 2009). Hughes and colleagues (2006) showed that sexual minority women with social networks made up of primarily other sexual minorities reported higher alcohol availability and higher levels of alcohol consumption in their friend groups. Other research has indicated that lesbian women tend to socialize more in bars, which is related to higher rates of alcohol abuse (Ricks, 2012; Taliaferro, Lutz, Moore, & Scipien, 2014). In addition, recent research following the Pulse Nightclub shooting showed that LGB individuals believed their peers were likely to cope with this minority stressor by using alcohol and other drugs (Boyle, LaBrie, Costine, & Witkovic, 2017). However, few members of the LGB community personally reported using substances to cope with the tragedy, suggesting an overestimation of peers' substance use and highlighting the potential usefulness of norms correction in this population.

Taken together, the above theory and research findings suggest that LGBTQ individuals may learn early on that alcohol helps to numb rumination and negative emotions from stigma-related events, while developing beliefs that heavy alcohol use is normative within the community. This is perhaps compounded by findings that early initiation of drinking is linked to higher levels of alcohol misuse later on in general population research (Hawkins, Graham, Maguin, Abbott, Hill, & Catalano, 1997), a pattern that has also been found with sexual minorities (Kecojevic et al., 2017). Therefore, the additive effects of minority stress, coping motives, higher positive alcohol expectancies, and the perception of more permissive social norms for alcohol use may lead to earlier onset of drinking, heavier use, and different drinking motives for LGBTQ

adolescents and young adults. To be effective with LGBTQ young adults, brief interventions may need to be sensitive to the unique coping motives and social norms present in this population.

Pathways to Substance Use for Sexual Minority Women

Given that both Meyer's (2003) and Hatzenbuehler's (2009) models specifically left out the interaction between gender and sexual minority stress, other researchers have tried to fill some of these gaps. Hughes's (2011) model of alcohol problems in sexual minority women suggests that there are unique risk factors and pathways to alcohol problems among this group. This author argues that sexual minority women are more likely to experience generalized early risk factors for alcohol problems (childhood sexual abuse, early first sexual experiences, early drinking onset) and early sexual minority risk factors (early sexual identity development milestones). In addition, the model argues that sexual minority women also experience higher rates of general population risk factors for alcohol problems (physical and sexual assault, relationship distress, intimate partner violence, racial minority stressors) and sexual minority stressors. Consistent with Minority Stress Theory (Meyer, 2003) and the Psychological Mediation Framework (Hatzenbuehler, 2009), Hughes (2006) argues that the cumulative burden of this stress increases risk for hazardous drinking through the mediator of increased psychological distress, and the impact of these stressors may be lessened by social support (a moderator variable in the model). Supporting this model, research conducted by Hughes and colleagues (2006) indicated that lesbian women reported more severe and more frequent child sexual abuse compared to heterosexual women, which was consistent with other national studies (e.g. Austin, Roberts, Corliss, & Molnar, 2008). Pooled data from several

large studies has also shown that sexual minority women report higher rates of both childhood sexual abuse and adult sexual assault (Hughes, Szalacha, Johnson, Kinnison, Wilsnack, & Cho, 2010). While this might suggest that these factors could explain higher rates of substance abuse, other research has shown that childhood victimization only partially mediates the relationship between sexual minority status and hazardous drinking in sexual minority women, suggesting other variables also contribute to greater risk (Drabble, Trocki, Hughes, Korcha, & Lown, 2013). Hughes and colleagues' (2006) research further supports this model, indicating that psychological distress mediates the relationship between childhood physical abuse and alcohol abuse in sexual minority women. Other findings supporting the model are that younger age of sexual orientation disclosure is positively associated with risk of adult hazardous drinking and that early age of drinking onset is a strong predictor of lifetime alcohol abuse (Hughes et al., 2006) and polysubstance abuse (Kecojevic et al., 2017) in sexual minority women. Additionally, other findings indicate that substance use disparities between young sexual minority and heterosexual women are high, and these disparities remain high as they age into young adulthood (ages 27-31) (Dermody et al., 2014). This model and the findings supporting it are consistent with both the Minority Stress Model and Psychological Mediation Frameworks, showing that general risk factors are predictive of sexual minority women's alcohol use but cannot fully explain the disparities without including minority stress.

Overall Limitations

The LGBTQ theoretical literature has succeeded in documenting health disparities between LGBTQ and heterosexual/cisgender populations and has begun to identify the ways that minority stressors lead to negative mental health outcomes. However, much of

the research supporting these frameworks is correlational in nature, and the pathways through which minority stress leads to specific mental health outcomes such as SUDs have not been determined conclusively. In addition, many studies that support these models suffer from methodological flaws such as inappropriate comparison groups or non-random or non-representative samples. This is particularly true when it comes to transgender populations, who continue to be severely understudied both in empirical research and theory construction.

A New, Comprehensive Theoretical Model for LGBTQ Substance Use and Intervention

Due to the above noted research gaps (in particular with gender minorities), a new model to specifically explain elevated rates of alcohol use and provide a theoretical basis for intervention in sexual and gender minority populations was developed as the first phase of this research (see Figure 3). This research provided an update by compiling evidence for mediators of alcohol use in LGBTQ populations published since these two important theories were published. The literature review identified common mediators of alcohol use that are shared among heterosexual/cisgender and LGBTQ populations (consistent with the Psychological Mediation Framework) and also mediators that may be unique to sexual and gender minority populations (consistent with the Minority Stress Model). Intervention components were drawn from both prevention-based substance use approaches and LGBTQ-specific interventions shown to reduce substance use. These intervention components were included in the model due to their potential to act as moderators to disrupt the relationship between risk factors for LGBTQ substance use and higher alcohol use. The findings from this systematic review and theoretical model are presented below. Three different avenues of disparate but related research (motivational

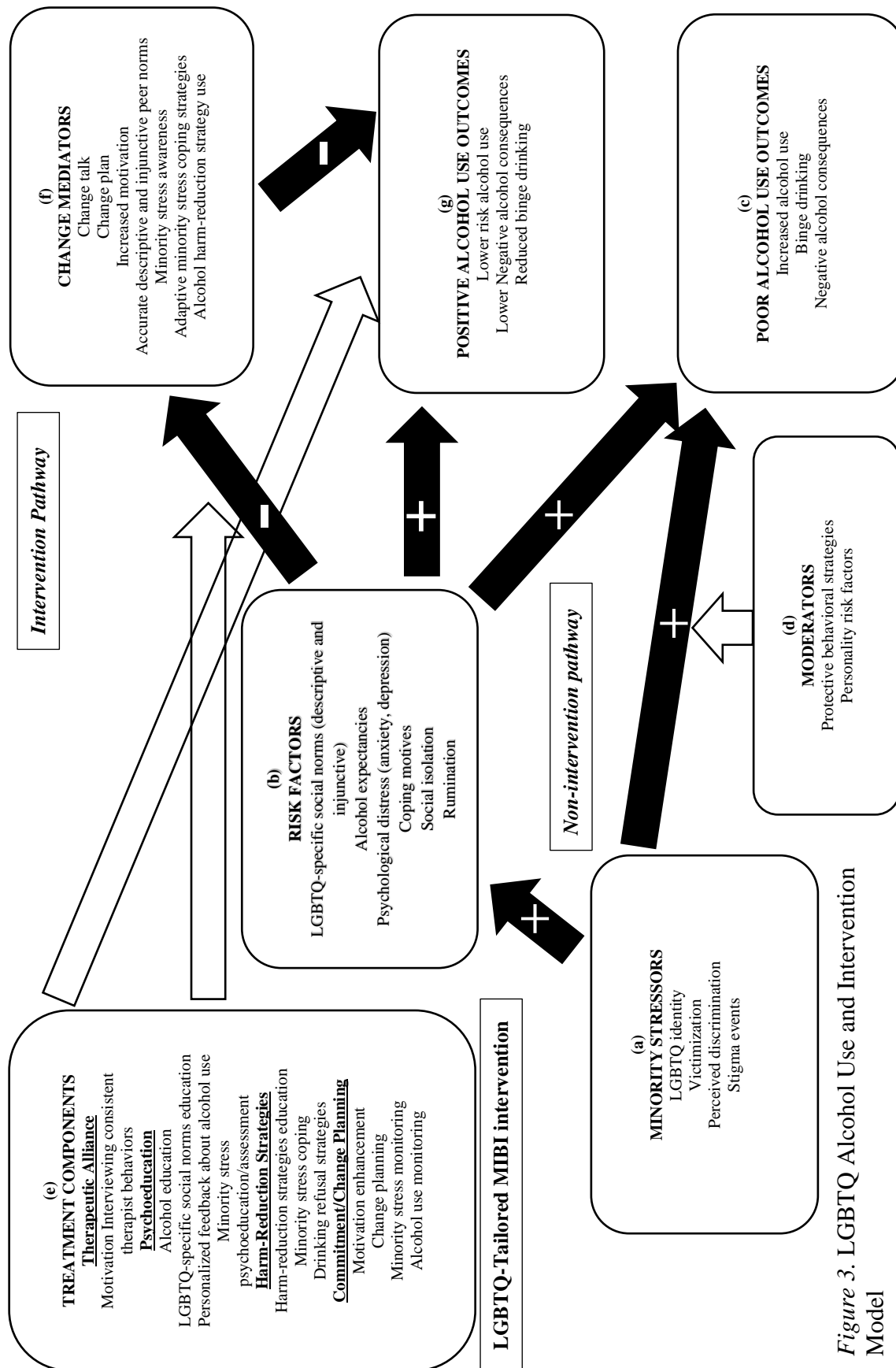


Figure 3. LGBTQ Alcohol Use and Intervention Model

interviewing-based interventions, LGBTQ disparities research, and LGBTQ-tailored interventions) were identified to inform the theoretical model, and findings from each are presented below in support of it.

Motivational Interviewing-Based Interventions

In all of the studies examined, MIBIs were researched with either general outpatient populations not meeting criteria for active substance use disorders or college students. Generally, findings showed little support for specific MICOs (e.g. Guame, Longabaugh, Magill, Berholt, Gmel, & Daepfen, 2016). Some research also showed a lack of support for mediators of treatment outcome that are theoretically moderated by MICOs. While MI-based treatments focus on building a strong working alliance (Miller & Rollnick, 2013), Kan, Henderson, von Sternberg, and Wang (2014) found no evidence that working alliance mediated the relationship between a MIBI and treatment outcomes. However, they noted that working alliance in the MIBI condition was consistently rated higher than in other tested interventions and did not change significantly over the study period. While no specific evidence for individual MICOs was identified, some research suggested that higher levels of MICOs reduce drinking behavior through moderating client change talk (Moyers, Martin, Houck, Christopher, & Tonigan, 2009). Other research showed similar support for the importance of MICOs in moderating client change talk, but only when the therapist was experienced and client drinking severity was high (Guame et al., 2016). While working alliance and specific therapist behaviors within motivational interviewing were not directly shown to mediate outcomes, the importance of working alliance to positive therapy outcomes has been well-documented (Horvath & Symonds, 1991). In addition, strong working alliance and a trusting relationship are

likely important for maintaining LGBTQ client engagement given the historical lack of distrust and high treatment dropout rates (Senreich, 2010).

More support exists for other treatment components of MIBIs. Many contained a component where clients' normative beliefs about peers' drinking were challenged (norms correction) (Carey, Henson, Carey, & Maisto, 2010; Magill, Colby, Orchowski, Murphy, Hoadley, Brazil, & Barnett, 2017; Capone & Wood, 2009; LaChance, Feldstein Ewing, Bryan, & Hutchison, 2009). Two studies found support that perceived drinking norm beliefs mediated the relationship between MIBIs and drinking outcomes (Carey et al., 2010; Magill et al., 2017). Finally, a few interventions found support for introducing strategies/skills to limit drinking and refuse substances (Magill et al., 2017; Lachance et al., 2009). Support for this treatment component was indirect, with these studies finding that drinking refusal self-efficacy and use of strategies to limit drinking mediated the relationship between MIBIs and alcohol outcomes. Additionally, Lee and colleagues (2010) found support for quality of a client's change plan as a mediator between readiness to change and drinking consequences at one-year follow-up in an MIBI efficacy trial, suggesting that the common MIBI treatment component of creating a change plan and increasing commitment/motivation to change mediates outcomes.

Mediators and Moderators of Treatment Outcome for MIBIs.

In the currently reviewed literature, there was some evidence that client change talk mediates the relationship between MICOs and improved outcomes (Guame et al., 2016; Moyers et al., 2009). However, Guame and colleagues (2016) found that client change talk was not correlated with MICOs, so no mediational relationship was found. Still, there *was* evidence for moderated mediation. Therapist experience and client

drinking severity were indicated as moderators. When therapists were experienced, and client alcohol consumption was high, increased client change talk emerged as a mediator of the relationship between MICOs and reduced drinking outcomes. In contrast, when therapist experience and alcohol consumption were low, MICOs were found to actually predict *decreased* change talk and *increased* drinking. Therefore, it appears that consistent training in MI techniques and avoidance of pushing for change with low-risk clients is important for treatment outcomes.

There was also substantial evidence, as discussed above, for increased perceived peer drinking norms as a mediator of the relationship between MIBIs and higher drinking (Carey et al., 2010; Magill et al., 2017). Carey and colleagues (2010) found that descriptive norms (the amount of alcohol individuals believe others in their peer group drink) were an important mediator of the relationship between a MIBI and drinking outcomes. This research also indicated assigned sex as a moderator of this relationship, where changes in more personal (i.e. friend/immediate peer-group) norms were most important for self-identified females, where national/community level norms were effective in reducing drinking for self-identified males. This highlights the importance of relevant, specific norms used in MIBIs. This importance of specific norms is further evidenced by other research failing to show that drinking norms were a mediator of the relationship between a group-delivered motivational enhancement therapy (GMET) and substance use outcomes (LaChance et al., 2009). It is possible that the norms used for the “typical” college student in this study were not specific or relevant enough to significantly influence change in perceived drinking norms. Along this same line, Mastroleo, Murphy, Colby, Monti, and Barnett (2011) found evidence that assigned sex

moderated the effects of specific intervention components. This highlights the importance of considering differences based on sexual orientation and gender identity and suggests that norms used for the “typical college student” or “typical American” may not be seen as relevant enough by LGBTQ clients to change drinking norm beliefs.

Other research did support theorized mediators of the relationship between MIBIs and drinking outcomes. The currently reviewed literature supported increased motivation to change, lower intention to drink, higher cognitive dissonance about drinking (awareness of differences between values and behavior), and higher drinking refusal self-efficacy as mediators of the relationship between a MIBI and lower drinking outcomes in non-college student young adults (Magill et al., 2017). Increased motivation to change was also supported as a mediator between a MIBI and decreased drug/alcohol use for adolescents (Winters, Lee, Botzet, Fahnhorst, & Nicholson, 2014). These mediators are thought to be influenced by MICOs (Miller & Rose, 2009).

Finally, some moderators of the relationship between MIBIs and drinking/drug use outcomes were supported. Pre-treatment readiness to change emerged as a significant moderator of the relationship between treatment and alcohol outcomes (Capone & Wood, 2009). The authors found that, for those already high in readiness to change, challenging alcohol expectancies through a non-MI based intervention was sufficient to result in reduced drinking.

Limitations of the MIBI Literature.

Overall, despite calls for mediational research to uncover the important treatment components of MIBIs (e.g. Apodaca and Longabaugh, 2009), relatively few studies were

found that met this criterion. Of the studies that were found, many did not provide direct evidence that specific MICOs mediated or moderated outcomes. In addition, MICOs were often ill-defined or examined as a group of behaviors rather than individually examined. Furthermore, despite evidence from multiple studies that assigned sex (and, specifically, gender-based norms) is important in determining the outcomes in these interventions, no studies reported effects for sexual orientation or gender identity. This leaves open the possibility that none of these interventions are effective, or may be differentially effective, for LGBTQ individuals. Additionally, MI-based interventions targeting drinking, particularly in college student and young adult populations, used norms for general student populations rather than making norms for specific groups available. Because the research noted above highlights the importance of using specific, personally relevant norms, it is likely that the norms used in these programs would not be perceived as relevant by LGBTQ populations with unique social contexts and developmental histories. Additionally, the group interventions (LaChance et al., 2009) asked students to generate ideas of how they would refuse overconsumption at “typical” college situations. Research has shown that LGBTQ individuals have markedly different experiences in college (Rankin, 2005; Woodford & Kulick, 2015), so intervention components like this could feel alienating and irrelevant for many LGBTQ college students and young adults. This further makes the case for a culturally tailored brief alcohol intervention for LGBTQ clients.

LGBTQ Disparities Research

Both the Minority Stress Theory (Meyer, 2003) and Psychological Mediation Framework (Hatzenbuehler, 2009) discussed above provided researchers a useful

framework for identifying specific mediating factors between LGBTQ identity/minority stress and increased rates of alcohol use. While Hatzenbuehler (2009) noted a lack of research identifying specific pathways to and mediators of SUDs/problematic substance use in LGB populations, (and none for gender minority populations), he proposed that mediators of alcohol use in LGB populations are alcohol expectancies, coping motives, and social norms. Studies supporting mediators of LGBTQ alcohol use outcomes published since Hatzenbuehler (2009) and Meyer (2003) were identified in order to build an evidence-based theoretical model of LGBTQ alcohol use. Identifying evidence-supported mediators of LGBTQ alcohol use is vital for developing the components of a program such as DISCUSS that could disrupt this minority stress-alcohol use pathway.

Overall, identified studies reported that LGB individuals experience higher levels of discrimination compared to nonminority adults, consistent with years of past research (e.g. Hatzenbuehler et al., 2008; Rosario, Corliss, Everett, Russell, Buchting, & Birkett, 2014). Consistent with Meyer (2003), experiencing more sexual-orientation-based discrimination/stigma events (described as distal stressors or victimization in some studies) were shown repeatedly to be a direct mediator of poorer substance use outcomes for LGB adults (Molina, Marquez, Logan, Leeson, Balsam, & Kaysen, 2015; Lewis, Mason, Winstead, Gaskins, & Irons, 2016; Woodford, Krentzman, & Gattis, 2012) and adolescents (under the age of 18) (Rosario et al., 2014). Additionally, some research showed that increased peer violence and victimization mediated substance use outcomes for ethnic/racial minority LGB adolescents (Rosario et al., 2014). Other researchers showed that some forms of structural stigma (increased discrimination built into institutions/laws) mediated the relationship between sexual minority identity and

substance use outcomes. Woodford and colleagues (2012) showed that increased ambient hostility (i.e. perceiving a negative/hostile atmosphere toward LGB individuals) mediated the relationship between sexual minority status and heavier drinking for LGB college students. Everett and colleagues (2016) also showed that structural stigma (in this case, anti-civil union legislation) was directly related to increases in perceived stigma, stigma consciousness, and substance use outcomes (though these results were moderated by ethnicity and socio-economic status).

Pathways to Drinking Through Minority Stress.

While the research summarized above shows that increased distal stressors can partially mediate the relationship between sexual minority identity and poorer alcohol use outcomes, other researchers focused on identifying how minority stress sets off a series of other maladaptive coping strategies that lead to increased risk for SUDs. Livingston, Christianson, and Cochran (2016) found that the relationship between distal minority stressors and problematic alcohol use was partially mediated by psychological distress (defined as depression and anxiety symptoms) for LGBTQ adults. Moreover, these researchers found that personality moderated this relationship so that the pathway was only significant for those more prone to experiencing negative emotionality (termed an “at-risk” personality profile). Consistent with these findings, Marshal, Burton, Chisolm, Sucato, & Friedman (2013) found that the relationship between sexual orientation-related victimization (a distal stressor) and heavy alcohol use/cigarette use was mediated by depression. These results suggest a stress/negative affect pathway to substance use for LGBTQ adults who experience distal minority stressors.

Other research was also supportive of this stress/negative affect pathway. Talley, Tomko, Littlefield, Trull, and Sher (2011) found that identity disturbance was a mediator between sexual minority status and lifetime alcohol/drug dependence. The authors suggest that feelings of identity disturbance related to struggling with sexual identity and discrimination may lead to feelings of emptiness, psychological distress, and coping motives (though they did not directly test coping motives or feelings of emptiness as mediators). McKirnan and Peterson (1989) also found that tension reduction expectancies and bar orientation (the tendency to socialize in bars) moderated the relationship between discrimination and alcohol/drug problems. For sexual minority women, Lewis and colleagues (2016) found significant pathways between minority stress and coping motives for drinking (which is known to increase drinking) through both social isolation and rumination. Uniquely, this research also examined intersectional stress and found that these pathways were significant for Black sexual minority women as well. Similarly, Feinstein and Newcomb (2016) showed that the relationship between distal minority stress and substance use in sexual minority men is mediated by coping motives.

An additional pathway to substance use appeared to be through social factors. Social isolation and feelings of disconnection from peers were found to be mediators of substance use outcomes in LGB populations in a few of the examined studies (Lewis et al., 2016; Lehavot & Simoni, 2011). However, it is still up for debate whether greater connection to the LGB community is a protective or a risk factor. Heffernan (1998) found that the relationship between increased impulsivity and frequency of alcohol use in lesbian women was mediated by increased bar orientation. While this study suffered from methodological flaws, it suggested that greater connection to the lesbian community

resulted in more situational alcohol use (perhaps due to higher norms for use). Dermody, Marshal, Burton, & Chisolm (2016) found that affiliation with substance-using peers (though it was not specified that the peers were LGB) mediated the relationship between sexual minority status and heavy episodic drinking for LGB adolescents. Other research hypothesized (based on Meyer, 2003) that greater connectedness to the LGB community would buffer the effects of discrimination. However, the outcomes suggested that LGB community involvement was associated with greater substance use for bisexual women, but not for lesbian/queer women (Feinstein, Dyar, & London, 2017). In addition, Goldbach, Schrage, Dunlap, and Holloway (2015) found that LGB community connectedness was associated with less internalized homophobia, but more marijuana use for LGB adolescents. Finally, other research failed to show that social support/closeness with other sexual minority individuals mediated the relationship between sexual minority stress and alcohol use (Gilbert, Perreira, Eng, & Rhodes, 2014). It is possible that that higher normative substance or beliefs about higher normative substance use in the sexual minority community is a confounding factor in the relationship between greater community connectedness and substance use, which denies LGB people the protective effects of social support seen in the general population (e.g. Birtel, Wood, & Kempa, 2017), at least when it comes to substance use.

General Population Risk Factors Applied to LGBTQ Populations.

Other studies took the approach of examining whether known mediators of substance use in the general population would be replicated with LGBTQ populations. Consistent with the Psychological Mediation Framework, Hatzenbuehler and colleagues (2008) found that, for sexual minority women, high school drinking was mediated by

both positive alcohol expectancies and injunctive norms (i.e. “what would your friends think?”), while the same factors partially mediated the relationship between sexual orientation and increased drinking over time for sexual minority men. For LGB adolescents, research also showed the importance of both descriptive and injunctive norms in mediating substance use outcomes (Mereish, Goldbach, Burgess, & DiBello, 2017). Consistent with the MIBI literature, researchers found support that protective behavioral strategies were also important determinants of substance use outcomes for sexual minorities. Litt, Lewis, Blayney, and Kaysen (2013) found that, in a sample of lesbian/bisexual women, protective behavioral strategies mediate the relationship between generalized anxiety disorder and alcohol consumption/alcohol consequences. Other research identified protective behavioral strategies as an important moderator of the relationship between amount of drinking and alcohol-related negative consequences for LGB college students (Ebersole et al., 2015). Moreover, this research also suggested that direct harm reduction strategies while drinking alcohol (e.g. avoiding shots, alternating drinks) were most effective.

Finally, Espelage, Aragon, Birkett, and Koenig (2008) found that parental support (and therefore social connection) moderated the relationship between distal minority stress and alcohol/marijuana use, while Needham and Austin (2010) found that, for bisexual women, parental support mediated the relationship between sexual orientation and marijuana/other drug use.

Differences for Bisexual Populations.

Mediators of substance use outcomes tended to be similar for gay men and lesbians. However, bisexual individuals showed some differences. For instance, Molina and colleagues (2015) showed that increased bi-negativity (experiencing distal minority stress/discrimination related to bisexual identity) was a significant mediator of poorer substance use outcomes for bisexual women. However, they also showed that partner assigned sex mediated the amount of experienced bi-negativity and women with male partners experienced less bi-negativity. The authors suggested that bisexual women experience *double discrimination*: from a heterosexist society *and* erasure by the gay/lesbian community. Other research consistent with this showed that the relationship between outness and substance use was mediated by both community connection and perceived discrimination, but only for bisexual women (Feinstein, et al., 2017). The authors suggested that bisexual women are less likely to access supportive resources from the LGB community and may feel excluded, leading to double discrimination and further isolation.

Mediators of Substance use Outcomes for Transgender/Gender Minorities.

Unfortunately, trans and other gender minority populations continue to be understudied. While some researchers offered gender minority options (e.g. Livingston et al., 2016; Woodford et al., 2012), no study measured gender identity-based discrimination specifically. In addition, transgender/gender minority individuals were not considered a separate group or measured differently in these studies. It appears that, at least in some studies, gender minorities were measured and included as sexual minorities.

However, this ignores the potential additive effects of both gender minority discrimination from the majority and LGB community in addition to sexual minority discrimination. Future research is needed to identify mediators and causal pathways of SUDs/problematic substance use for transgender/gender minority individuals.

Limitations of the Reviewed Literature.

While the number of articles examining mediation and moderation of alcohol use in LGBTQ populations has increased since the publication of Hatzenbuehler's (2009) review, the field still suffers from a number of problems. Despite calls for increased research in this area, the biggest research gap was the lack of evidence for mediators/moderators of alcohol use for transgender/gender minority populations. While gender minorities were included in some studies, they were not analyzed separately, or the base rates were extremely low. Moreover, no independently validated measures of gender minority-based discrimination were used.

While results were consistent that unique minority stress and social variables mediate alcohol use for LGB populations, there appears to be no agreed-upon way to measure either distal or proximal minority stress. In addition, measurement of sexual orientation tended to vary greatly. Some authors identified sexual minorities by self-identity, sexual behavior, or attraction. Some studies offered sexual orientation options categorically, while some others offered it on a continuous scale. Finally, some authors identified sexual minorities by using all of the above measures, which seems to be the most feasible solution.

Additionally, many studies still suffer from a lack of appropriate random sampling (for exceptions, see Talley et al., 2011; Hatzenbuehler et al., 2008). This is

problematic due to the reliance of many statistical procedures on random sampling assumptions. Commonly used sampling strategies were convenience samples, special populations of LGBTQ individuals, or snowball sampling.

LGBTQ-Specific and Tailored Interventions

Another area of LGBTQ literature is focused on designing tailored interventions to increase positive minority stress coping strategies and reduce mental health disparities. Evidence-supported components of these interventions should be added to an LGBT-tailored intervention such as DISCUSS. While Hatzenbuehler (2009) noted that very few individual-level interventions exist that are tailored to LGBTQ populations in general, an update to this literature is needed. Some interventions published since 2009 have shown promise in reducing substance misuse in gay men (e.g. Pachankis, Hatzenbuehler, Rendina, Safren, & Parsons, 2015). Treatment components in these interventions could be adapted to a brief intervention format.

In the present review, only nine studies were found that included substance use outcomes. Most of the identified studies focused on reducing substance use and sexual risk-taking behavior in sexual minority men (e.g. Pachankis et al., 2015; Kurtz, Stall, Buttram, Surratt, & Chen, 2013; Parsons, Lelutiu-Weinberger, Botsko, & Golub, 2014; Smith, et al., 2017; Shoptaw et al., 2008). Overall, these interventions were shown to be effective in reducing amphetamine use, drug use problems, and problematic alcohol use. For sexual minority youth, Schwinn, Thom, Schinke, and Hopkins (2015) demonstrated that a web-based intervention could reduce substance use. Two other studies (Eliason, Dibble, Gordon, & Soliz, 2012; Grady et al., 2014) showed that both existing long-term

interventions and LGBTQ-tailored interventions could effectively reduce cigarette smoking in LGBTQ populations.

Some interventions also showed promise for affecting mediators of LGBTQ alcohol use identified in the LGBTQ disparities literature. Schwinn and colleagues (2015) found that a web-based, interactive intervention was effective for changing perceptions of peers' substance use and increasing drink/drug refusal skills. Pachankis and colleagues' (2015) intervention was effective for reducing depression symptoms, which were shown in the above literature to mediate substance use outcomes for LGBTQ populations (e.g. Livingston et al., 2016).

Treatment Components Indicated in Reducing Substance use Outcomes.

While a mediational role of specific intervention components was not identified in any of the studies, many treatment components in the reviewed studies were consistent with an MIBI theoretical perspective and would be feasible to implement in the typical short-term time frame of most MIBIs reviewed (typically 2-4 sessions). Schwinn and colleagues (2015) showed that a brief intervention using LGB-specific norms education could be effective in changing LGB adolescents' perceptions of peer substance use. Pachankis and colleagues' (2015) ESTEEM intervention was effective in reducing problematic substance use and contained treatment components consistent with the MIBI model (motivation enhancement, self-monitoring of minority stress reactions, and psychoeducation about minority stress). Effective smoking interventions for LGBTQ populations included MIBI-consistent treatment components of developing a change plan, psychoeducation about smoking (Eliason et al., 2012), motivation enhancement, and self-monitoring (Grady et al., 2014). Kurtz and colleagues' (2013) intervention for

reducing substance use in sexual minority men contained MIBI-consistent treatment components such as decisional balance, risk reduction strategies, psychoeducation, and developing a change plan. Smith and colleagues' (2017) pilot study of a group intervention to reduce substance use, sexual risk behavior, and minority stress in sexual minority men used MIBI-consistent treatment components such as psychoeducation and goals identification.

Finally, the only MIBI found that was tailored for sexual minority men (Parsons et al., 2014) contained treatment components such as psychoeducation, motivation enhancement, change plan development, values clarification, and personalized feedback.

In summary, effective LGBTQ-tailored interventions contained treatment components of motivation enhancement, self-monitoring, psychoeducation about minority stress and substance use, protective behavioral strategies, personalized feedback about substance use, and change plan development. Future research should investigate which of these treatment components mediate or moderate outcomes and would therefore be considered vital treatment components.

Limitations of the Current Literature.

Notably, none of the reviewed studies examined how treatment components resulted in substance use outcomes. Therefore, while some of the reviewed studies show promise in reducing alcohol use in LGB populations, no identification of the most vital treatment components has taken place. In addition, 5 of the 9 identified interventions were designed specifically for sexual minority men, and two of the remaining interventions were focused on smoking cessation. Therefore, there is little evidence for tailored interventions to reduce alcohol use for lesbian, bisexual, and transgender/gender

non-conforming populations. In addition, while six of the nine studies used randomized trials to demonstrate efficacy, two lacked appropriate control conditions, and others did not compare the tailored intervention to a non-tailored intervention designed to treat the same underlying symptomatology. Finally, while some of the interventions have demonstrated efficacy (Stage II), none have demonstrated real-world efficacy, effectiveness, or implementation (Stages III-V in intervention development; Onken, Carroll, Shoham, Cuthbert, & Riddle, 2014). Future research with these interventions should also focus on how they could be practically disseminated to real-world clinical settings. MIBIs would be most promising for dissemination, given that they can often be implemented in few sessions by any mental health professional (Miller & Rollnick, 2013; Miller & Rose, 2009; Ingersoll, Wagner, & Gharib, 2002; Dimeff, et al., 1999).

Proposed Model

Based on the reviewed literature, a model identifying the path from LGBTQ identity to problematic alcohol use (*non-intervention path*) was proposed. The model also contains an alternate path to positive/less alcohol use outcomes moderated by an LGBTQ-tailored MIBI (*intervention path*). This model was used to design the proposed DISCUSS intervention (Discussing Identity, Substance use, Coping, and Useful Strategies for Sexual/gender minorities). Intervention components were specifically designed to change theoretically supported mediators of LGBTQ alcohol use. See Figure 3 for a depiction of this model.

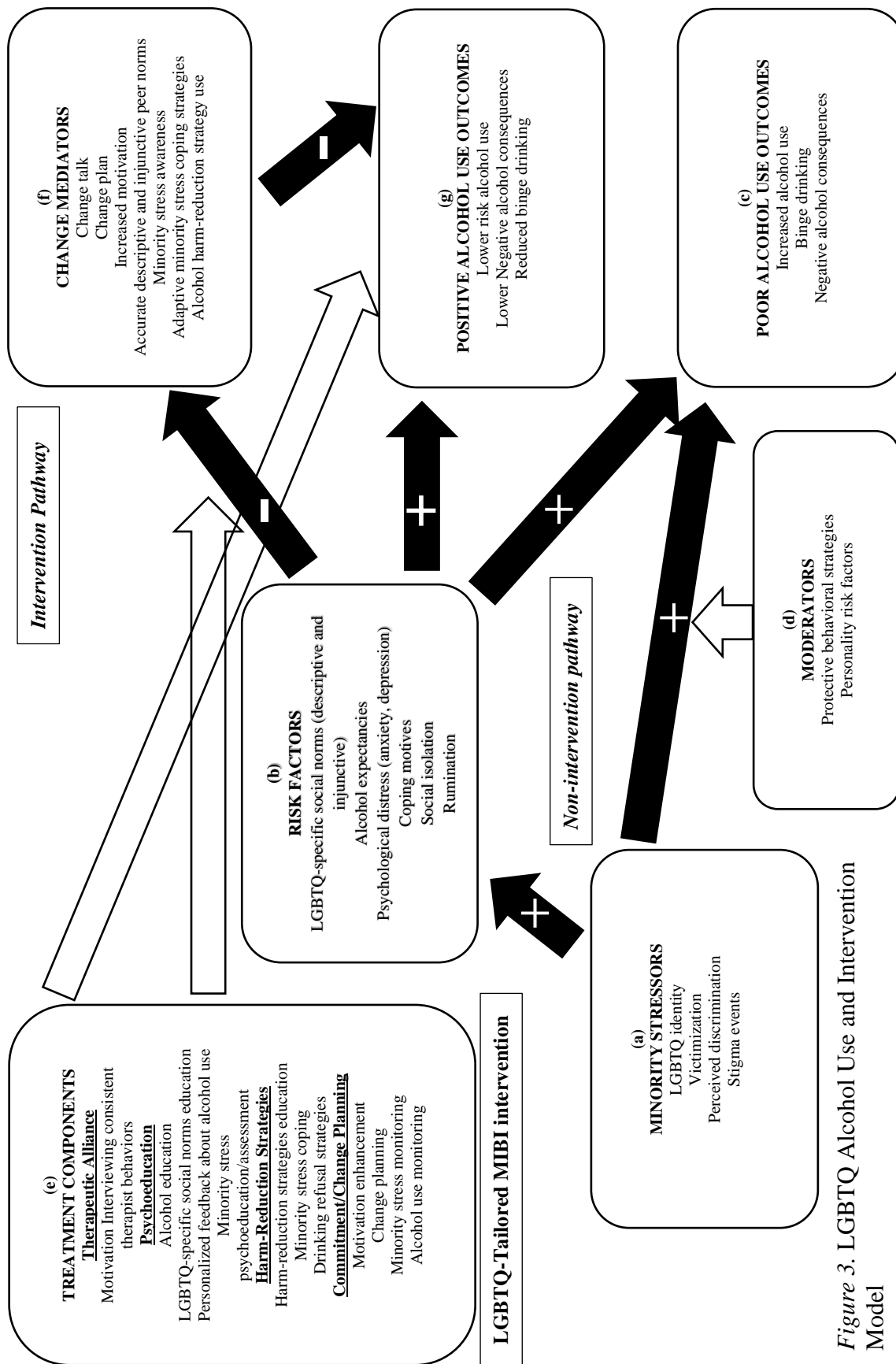


Figure 3. LGBTQ Alcohol Use and Intervention Model

One important assumption of the model is that LGBTQ individuals experience victimization and discrimination as part of their stigmatized identity. Victimization and discrimination are placed in the same independent variable box (a) with LGBTQ identity. There is ample research to document that LGBTQ individuals face higher stigma and discrimination (Meyer, et al., 2008; Corliss et al., 2002; Kann et al., 2015; Fedawa & Ahn, 2011; Hatzenbuehler et al., 2008; Rosario et al., 2014). While some individuals who remain closeted may avoid overt stigma and discrimination events, the reviewed research also showed that ambient hostility toward LGBTQ individuals, even if not personally directed, could impact drinking outcomes (Woodford et al., 2012). While some research indicated that increased stigma/victimization were mediators between LGBTQ status and higher drinking outcomes (e.g. Dermody et al., 2016; Marshal et al., 2013; Mereish et al., 2017; Rosario et al., 2014), the current review was more interested in uncovering specific pathways from minority stressors (identified by Meyer, 2003) to problematic alcohol use (as discussed in Hatzenbuehler, 2009) as these would be more amenable to intervention than minority stress. While minority stressors such as identity concealment/internalized homophobia would also be potential minority stressors in box (a), there was low research support for them as independent variables predictive of alcohol use outcomes (c), and conflicting findings emerged.

Additionally, this model does not contain other, alternative pathways to non-problematic substance use through resilience. Other work has sought to uncover the protective factors against negative mental health outcomes in response to prejudice for LGBTQ individuals (see Kwon, 2013 for a review and theoretical framework). Therefore, another assumption of the currently proposed model is that individuals high in resilience

factors would follow an alternative path from victimization/minority stress (a) to positive alcohol use outcomes (g) and would not be in need of intervention. This assumption is somewhat supported by research indicating that the relationship between LGB identity and problematic alcohol use can be moderated by both personality (Livingston et al., 2016) and protective behavioral strategies/harm-reduction strategy use (Litt et al., 2013). Factors such as these (and others yet to be identified) may attenuate the risk for problematic alcohol use, and the proposed intervention model is intended to be a framework for identifying intervention components that can disrupt the pathway to problematic alcohol use for LGBTQ individuals without these protective factors and behavioral skills. Therefore, a pathway to low risk alcohol use through resiliency is considered beyond the scope of the model.

Non-Intervention Pathway

Overall, the reviewed literature was supportive of both Hatzenbuehler's (2009) Psychological Mediation Framework and Meyer's (2003) Minority Stress Theory. Three studies found evidence that the relationship between increased distal minority stressors (a) and greater alcohol use (c) is partially or fully mediated by increased psychological distress (b) (defined as depression and anxiety symptoms) (Livingston et al., 2016; Marshal et al., 2013; Lewis et al., 2016). Lewis and colleagues (2016), using a path model, demonstrated that increased distal minority stress was related to higher drinking (c) through two independent indirect paths of increased social isolation and rumination (b). Increased social isolation and rumination were then linked to increased psychological distress, which was then predictive of coping motives (b). Similarly, for sexual minority

men, the relationship between increased distal minority stress and higher marijuana/drug use was mediated by higher coping motives.

Social factors proposed by Hatzenbuehler (2009) also emerged. Increased social isolation (b) was shown to mediate the relationship between increased distal minority stress (a) and increased substance use (c) in multiple reviewed studies (Lewis et al., 2016; Lehavot & Simoni, 2011). While Lewis and colleagues (2016) found that increased social isolation in response to minority stress was only the beginning of a chain of maladaptive coping strategies leading to alcohol use, it was also shown to be directly related to increased coping motives to drink (a→c). In addition, Lehavot and Simoni (2011) showed social isolation as a more immediate factor in problematic substance use. Therefore, it is included in the current model. Finally, related to coping motives, increased positive alcohol expectancies (b) were shown to mediate the relationship between sexual orientation (a) and drinking (c) for sexual minority women (Hatzenbuehler et al., 2008). Also consistent with Hatzenbuehler (2009), social norms (b) were indicated as a mediator or partial mediator in the relationship between sexual orientation (a) and drinking outcomes (Hatzenbuehler et al., 2008; Mereish et al., 2017).

Therefore, in the current model, increased positive alcohol expectancies, higher perceived LGBTQ-specific social norms, increased psychological distress, more coping motives, increased social isolation, and increased rumination (b) are supported as mediators of the relationship between LGBTQ identity/distal minority stress (a) and increased alcohol use (c).

Intervention Pathway

The proposed intervention pathway shows how receiving an LGBTQ-tailored brief intervention (treated as a moderated mediation model) could lead LGBTQ individuals away from problematic alcohol use once they have developed risk factors (b) for higher alcohol use (c). While MIBIs were generally not validated or researched with LGBTQ populations (see Parsons et al., 2014 for an exception), several treatment components from this literature and the LGBTQ-specific interventions literature (e) that are likely to moderate the relationship between risk factors (b) and lower-risk alcohol use outcomes (g) were identified. In addition, it is theorized that the relationship between risk factors for increased alcohol use (b) and lower-risk alcohol use outcomes (g) is mediated by variables supported in the MIBI literature (f). Treatment components (e) of the proposed brief intervention are proposed to also moderate the relationship between risk factors (b) and the change variables supported in the MIBI literature (f).

While MICOs were not specifically supported in the MIBI literature as a treatment component, it was shown that the relationship between MICOs (e) and reduced drinking (g) was mediated by client change talk (f) (Moyers et al., 2009; Guame et al., 2016). Moreover, an MIBI found in the LGBTQ-specific interventions literature contained MICOs as a treatment component and was shown to be efficacious (Parsons et al., 2014). To maintain fidelity to the Motivational Interviewing framework, an MIBI must contain MICOs as a treatment component. The current model treats MICOs as a potential moderator and as vital to establishing rapport.

Additionally, motivation to change (f) was found to be a mediator between an MIBI and substance use in adolescents (Winters et al., 2014). Motivation to

change/decreased resistance is theorized to be influenced by MICOs (e) (Miller & Rose, 2009). Interventions from both the MIBI literature (Winters et al., 2014; Magill et al., 2017) and the LGBTQ-specific interventions literature (Pachankis et al., 2015; Grady et al., 2014; Parsons et al., 2014) contained motivational enhancement as a treatment component (e).

In many MIBIs, psychoeducation about alcohol use, personalized feedback about use, and alcohol use monitoring are commonly included treatment components (e) (e.g. Dimeff et al., 1999). While these were not specifically identified as mediators or moderators of outcomes in the review, efficacious MIBIs often contained these components (Carey et al., 2010; Magill et al., 2017; Terlecki, Buckner, Larimer, & Copeland, 2011). In addition, interventions from the LGBTQ-specific interventions literature shown to reduce substance use outcomes often included a psychoeducation and monitoring component (e) (Eliason et al., 2012; Grady et al., 2014; Parsons et al., 2014) or personalized feedback component (Parsons et al., 2014). Because these are seen as a vital treatment component in MIBIs, they are included in the current model.

In the MIBI literature, social norms about alcohol use (f) were shown to mediate the relationship between intervention (e) and alcohol consequences/drinking (g) (Magill et al., 2017; Carey et al., 2010). In the LGBTQ disparities literature, researchers showed that the relationship between sexual orientation and alcohol use could be mediated by social norms (f) (Mereish et al., 2017; Hatzenbuehler et al., 2008). Additionally, one treatment found in the LGBTQ-specific intervention literature that contained the treatment component of LGB-specific norms education (e) was effective for changing perceptions of peer drug use (f) (Schwinn et al., 2015). Both literatures highlighted the

importance of gender or sexual orientation-specific injunctive and descriptive norms (e.g. Reid & Carey, 2015; Mereish et al., 2017; Hatzenbuehler et al., 2008). LGBTQ-specific norms education could be the most vital treatment component in an LGBTQ-tailored MIBI, as research suggests LGBTQ individuals tend to overestimate norms for substance use in the LGBTQ community and would be open to interventions challenging these norms (Boyle, LaBrie, & Witkovic, 2016).

Another supported treatment component (e) was practicing/teaching harm reduction strategies. In the MIBI literature, evidence showed that use of harm-reduction strategies (f) mediated the relationship between intervention and drinking outcomes (LaChance et al., 2009; Magill et al., 2017). Research from the LGBTQ disparities literature suggests that protective behavioral strategies are able to moderate the relationship between stressors/identity and alcohol use in LGB populations (Litt et al., 2013; Ebersole et al., 2015). In addition, harm-reduction strategies (e) were also included in a number of LGBTQ-specific interventions (Litt et al., 2013; Kurtz et al., 2013). This suggests that the specific treatment component of harm reduction strategies would be important to include in an LGBTQ-tailored MIBI. There was also evidence that the quality of a client's change plan can act as a mediator (f) between readiness to change and drinking consequences, suggesting that creating a change plan (e) is a supported treatment component (Lee et al., 2010). LGBTQ-specific interventions showing efficacy in reducing substance use outcomes also frequently contained the treatment component of developing a change plan (Eliason et al., 2012, Kurtz et al., 2013; Parsons et al., 2014)

Finally, the LGBTQ disparities literature identified some mediators of alcohol use outcomes that are unique to LGBTQ populations. These included psychological distress,

coping motives, and rumination. Therefore, evidence shows that, in response to LGBTQ-specific minority stressors (a), LGBTQ individuals develop negative coping strategies and psychological distress (b), which mediate the relationship between minority stress and alcohol use outcomes (c). Therefore, it would be important for any LGBTQ-tailored MIBI to include treatment components designed to interrupt this pathway. These should include psychoeducation about minority stress, identification of minority stressors, monitoring of minority stress events, and development of a minority stress coping plan and skills (Pachankis et al., 2015; Proujansky & Pachankis, 2014). These treatment components could feasibly be added to any LGBTQ-tailored MIBI and still fit within the typical MIBI timeframe of 2-4 sessions. These treatment components (e) are proposed in the current model to directly result in lower alcohol use (g) (Pachankis et al., 2015). This relationship is likely mediated by minority stress awareness and development of more adaptive minority stress coping strategies (f).

A Caveat About Moderation and Mediation

In much of the MIBI literature, change factors (f) were shown to mediate the relationship between the *overall* intervention (components of which are included in box (e) and outcomes (g). The current model treats the intervention as a full moderator variable (e) and assumes that, without the intervention being delivered and containing these vital components, the relationship between LGBTQ-specific risk factors (b) and adaptive coping/regulation strategies (f) and the relationship between LGBTQ-specific risk factors (b) and improved outcomes (g) cannot exist.

Limitations of the Model

The model is limited by not examining resilience factors and alternate pathways toward adaptive coping and low alcohol use for LGBTQ populations. In not examining the resilience literature, it is possible that some facets of resiliency that could be targeted by an LGBTQ-tailored MIBI were missed. In addition, by only including variables that were shown to be mediators, the current review may have missed some articles that identified variables that account for important amounts of variance in LGBTQ alcohol use but have not yet been investigated as mediators or included in path models. Finally, the model is limited in its ability to explain transgender/gender minority alcohol use by the low availability of research. Very few studies included transgender participants, and none examined outcomes for them separately. Therefore, it is unknown based on the currently reviewed literature if the identified mediating variables also mediate alcohol use outcomes for transgender/gender minority populations.

Current Research: Building and Testing the DISCUSS Intervention Based on the Model

Given the evidence-based components of an LGBTQ-tailored MIBI identified in the above model, components of existing evidence-based interventions can be uniquely combined to design an intervention that treats problematic LGBTQ alcohol use and minority stress in a brief, two-session intervention. Below are summaries of Brief Alcohol Screening and Intervention for College Students (BASICS; Dimeff et al., 1999), and Motivational Groups for Community Substance Abuse Programs (Ingersoll et al., 2002), which are the existing interventions that were drawn from/modified to build the DISCUSS intervention. Specific components of these interventions and skills from Dialectical Behavior Therapy (DBT; Linehan, 1993) that were drawn from to fulfill the proposed treatment components in box (e) of the model are also briefly described.

Brief Alcohol Screening and Intervention for College Students

BASICS (Dimeff et al., 1999) is an alcohol skills training program that uses elements of motivational interviewing. The intervention is conducted over the course of two 50-minute interview sessions, with an additional 50 minutes allowed before or after the first session to fill out measures. The first session is focused on assessment of the student's drinking, and the second session is focused on providing psychoeducation and personalized feedback about the student's drinking, including a discussion of negative consequences and advice about health risks. Specific strategies to reduce negative alcohol consequences are also taught after gaining a commitment to moderate drinking (or marijuana use). Research shows that two sessions are enough to initiate substantial changes in drinking patterns and reduction of negative alcohol consequences (Dimeff et

al, 1999). In addition, meta-analytic research has shown that individuals going through the BASICS program show an average reduction of 1.5 standard drinks per week and a significant reduction in alcohol-related problems at 12-month follow-up (Fachini, Aliane, Martinez, & Furtado, 2012).

Motivational Groups for Community Substance Abuse Programs

Motivational Groups for Community Substance Abuse Programs (Ingersoll et al., 2002) is a guide for using motivational interviewing techniques in a group substance abuse outpatient setting to increase motivation for change and for clients to examine what is working and not working about substance use. It provides an overview of how to apply motivational interviewing techniques, and provides a suggested nine session guide for exploring lifestyle choices, introducing the stages of change and getting clients to reflect on what stage they are in about changing substance use, exploring the good and not-so-good things about substance use, thinking about values and future plans (and how substance use fits into them), looking at the pros and cons of changing versus maintaining, building self-efficacy by discussing past successful change attempts and exploring client strengths, planning for change if clients are committed, and exploring/reinforcing motivations and reasons for change. While intended for groups, the guidebook contains individual worksheets and scripts that are useful for introducing topics to clients in an MI-consistent way. While efficacy for this specific protocol has not been established, it is based on Motivational Interviewing principles, which have significant research support (Rubak et al., 2005; Jensen et al., 2011; Kaner, et al., 2009).

Therapeutic Alliance/Rapport-Building

Principles of motivational interviewing are used in the DISCUSS intervention to establish rapport with the participant and are described briefly. General principles include communicating respect for the participant using active listening, helping participants perceive a discrepancy between where they are and where they want to be (by highlighting mismatch between goals and values and current behavior nonjudgmentally and asking genuine, curious questions about discrepancies), avoiding confrontation by rolling with resistance, exploring and validating ambivalence about change, and enhancing self-efficacy (Miller & Rollnick, 1991; 2013; Ingersoll et al., 2002).

Specific techniques to establish rapport and develop a collaborative working relationship include using open-ended questions. These are questions that the facilitator presents as genuinely curious and do not allow for one-word answers (i.e. “yes” or “no”). For example, “how did you first get started drinking” rather than “at what age did you start drinking?” (Ingersoll et al., 2002; Miller & Rollnick, 2013). While closed questions are allowed in an MI approach, they should be limited and used for specific purposes such as redirecting the conversation, ending a topic, or asking if it is okay to give feedback or advice (Ingersoll et al., 2002).

Another important technique to establish rapport is reflective listening, in which the facilitator repeats or paraphrases what participants say. Specific types of reflective statements include simply repeating back what the participant said (surface level), rephrasing (slightly rephrasing what was offered), paraphrasing (summarizing main point while making guesses at unspoken meanings and extending what the participant said), or paraphrasing while reflecting feeling (paraphrasing while emphasizing perceived feeling

of participant or using a metaphor or analogy) (Ingersoll et al., 2002; Miller & Rollnick, 2013).

An additional technique for establishing and maintaining rapport with participants in MIBIs is rolling with resistance. In this technique, argumentative, counter-motivational statements/sustain talk are worked with in a non-confrontational way. The facilitator validates the participant's perspective and reasons for making the statements and avoids falling into the trap of arguing back and forth. The facilitator instead either reflects the participant's sustain talk, supports self-efficacy and choice, highlights a discrepancy using a double-sided reflection (reflecting the current sustain talk and including a previously made change talk statement), shifts focus, or amplifies the participant statement (Ingersoll et al., 2002; Miller & Rollnick, 2013). For example, in response to a participant statement of "but I can't quit drinking, all of my friends do!", a facilitator may state "It may very well be that after this we finish meeting that you'll decide it is too difficult and that it is worth it to keep drinking as you have been, and that is totally up to you (supporting self-efficacy; reflecting feeling) or "you can't imagine how you could not drink with your friends, and at the same time you've been worried about how it's affecting you (highlighting discrepancy using double-sided reflection), or "Oh, I see. So, you really couldn't quit using because then you'd be too different and wouldn't fit in with your friends anymore" (amplifying) (Ingersoll et al., 2002; Miller & Rollnick, 2013).

In DISCUSS, the facilitator also works to develop the therapeutic alliance and reduce resistance by using orienting and commitment strategies. In the initial session, the facilitator explicitly shares the purpose of the meeting (to review the participant's patterns of use, what is working and not working for them, their minority stress

experiences and how they cope with these) and orients the participant to what will be done to achieve this (Dimeff et al., 1999). The facilitator also makes explicit that the facilitator does not view abstinence as the goal and that the purpose of the meeting is *not* to shame, label, or otherwise encourage the person to stop drinking. After explaining these purposes of the meeting and describing what will happen in the first and second session, the facilitator moves to gain an initial commitment from the participant to do these things (Dimeff et al., 1999; Linehan, 1993).

In establishing rapport and commitment to participate in the treatment, it is also important to consider the stage of change that the participant is in and to avoid pushing too hard for change (Dimeff et al., 1999). For example, individuals not interested in moderating their drinking at the beginning of the meetings require a shift in strategy. For these participants, introducing skills training right away in the second session without enhancing motivation or commitment to using the skills would be potentially even counterproductive (Dimeff et al., 1999). When the participant is committed to change and learning new skills, the facilitator may move right into feedback and skills training in the second session. However, with participants that are still in the precontemplative stage of change (not considering making a change), or contemplative (thinking about the possibility of making a change; considering making a change) the facilitator should spend most of the second session using MI techniques such as decisional balance, rolling with resistance, and reflecting change talk while ignoring sustain talk (Miller & Rollnick, 2013). In these instances, change planning and skills training must be minimized and motivational enhancement efforts must be maximized (Dimeff et al., 1999). Research into motivational interviewing does suggest that, for low risk participants, often building the

motivation and commitment to changing can be enough to make changes, even without skills training (Miller & Rollnick, 2013).

At the end of the second session, the facilitator also seeks to gain an explicit commitment to trying out some of the new protective behavioral strategies and coping skills learned (Dimeff et al., 1999). If the participant is unsure or still not sold that the strategies will work, the facilitator asks the participant to try it out as an “experiment” to see if it does or not, leaving open the possibility that it may not work.

Assessment of Alcohol Use and Minority Stress Burden

In the initial session, explicit questions from BASICS (Dimeff et al., 1999) used to assess patterns of typical alcohol use, as well as times when use is higher, are used. The facilitator asks about types of drinks typically consumed. The facilitator also assesses for symptoms of dependence based on questions from BASICS (Dimeff et al., 1999). The facilitator also assesses what is working and not working about alcohol use, asks if there is anything the participant is interested in changing about use, and if the participant has any concerns about use (Dimeff et al., 1999; Ingersoll et al., 2002).

After assessing alcohol use, the facilitator assesses minority stress experiences during the last 30 days using a semi-structured interview format developed by the study author. The facilitator first defines each type of minority stress (based on Herek, Gillis, & Cogan, 2009; Meyer, 2003 and discussed further below) and then assesses for minority stress experiences from each category, and how the participant typically copes with the aftermath of these experiences or manages them in the moment (e.g. “wow, that sounds like a really painful experience. How did you feel afterwards, and how did you manage those feelings?” or “what do you typically do when that happens?”). Here, the facilitator

pays special attention to any connections the participant identifies between minority stress experiences and alcohol use and highlights them. Finally, the facilitator introduces and explains the monitoring cards for both minority stress experiences and alcohol use, and then gains a commitment from the participant to fill them out over the next week to get a better idea of patterns and connections. The facilitator also asks about and works to problem-solve any potential barriers to filling out the monitoring cards (Dimeff et al., 1999).

Psychoeducation and Skills Training

Psychoeducation About Minority Stress and the Effects of Alcohol Use

The facilitator provides specific information about alcohol to the participant. The facilitator also provides basic psychoeducation about what constitutes a standard drink of alcohol, methods to calculate blood alcohol content, the effects experienced at different blood alcohol levels, the effects of tolerance to alcohol on the body, information about how expectancies influence the experience of alcohol use, the effects of alcohol on sleep, and the biphasic response to alcohol (Dimeff et al., 1999).

During the initial session, the facilitator defines minority stress as defined in Meyer (2003) and Herek and colleagues (2009). The facilitator provides definitions and examples of explicit stigma events that fit definitions of macroaggressions (e.g. being called names, being excluded based on identity, identity being invalidated/dismissed) as well as microaggressions (e.g. assumptions about the participant's sexual orientation based on partner gender, number of sexual partners, treating the participant as a "token," being misgendered) (Meyer, 2003; Skerven, Whicker, and LeMaire, 2019; Herek et al.,

2009). The facilitator also provides examples of structural stigma (e.g. religious/political messages condemning different sexual orientations/gender identities, unequal rights and protections), felt stigma/expectations of rejection (e.g. feeling excluded based on sexual orientation or gender identity, expecting that others will reject you based on your sexual orientation or gender identity, concealment of identity due to fears that other will judge or exclude you based on your identity), and hypervigilance about others finding out that you are LGBTQ (e.g. constantly monitoring others reactions to your mannerisms, appearance, or speech; avoiding being out in certain situations; Meyer, 2003). Notably, definitions of internalized stigma are not included and not directly addressed in the current intervention due to a) time constraints during a brief intervention and b) they were not found in the underlying theoretical research to directly mediate substance use.

Protective Behavioral Strategies (Harm Reduction for Alcohol Use)

Several techniques for harm reduction taken from BASICS (Dimeff et al., 1999) are included in the DISCUSS intervention. The first strategy involves setting limits ahead of time when going into a situation in which the participant will use alcohol. For example, if the participant drinks mostly in social situations, the facilitator discusses with the participant how many drinks they would like to have in an evening based on the personalized feedback and motivation for change. This also works if the participant uses alcohol alone (i.e. setting a daily limit for use) (Dimeff et al., 1999). Dimeff and colleagues (1999) also recommend setting a limit for a certain blood-alcohol content achieved in drinking situations. Here, the biphasic response to alcohol (that the “good effects” typically peak at between .06-.08 BAC) can be revisited. It is important that

these limits are set based on the participant's desires rather than pushed for by what the facilitator thinks is best (Dimeff et al., 1999).

Another skill introduced is the skill of monitoring drinking behavior and counting drinks. A number of strategies can be suggested, including counting drinks using coins in the participant's pocket, using mobile phone apps that can track the number of drinks and monitor approximate BAC, or pausing to count drinks before starting a new one (Dimeff et al., 1999).

Other strategies/ideas that can be briefly introduced include switching to drinking lower alcohol content beverages (e.g. liquor to beer), slowing down the pace of drinking (e.g. committing to only taking one sip of a drink per minute, avoiding drinking games, committing to taking 45 minutes to consume each drink), and alternating alcoholic and non-alcoholic beverages (Dimeff et al., 1999).

Minority Stress Coping Skills

In the DISCUSS intervention, a standard set of minority stress coping skills based on Pachankis (2014) and Skerven and colleagues (2019) are introduced. Pachankis (2014) conducted a thorough study that uncovered clinical principles and techniques to develop the ESTEEM intervention to address minority stress and mental health problems in gay and bisexual men. This research included interviews with key stakeholders such as gay and bisexual men with depression/anxiety and expert providers. Skerven and colleagues (2019) developed guidelines for applying Dialectical Behavior Therapy (DBT; Linehan, 1993) skills to help buffer LGBTQ clients in DBT against environmental invalidation and the effects of minority stress.

While both of these interventions/guidelines were developed for clients with diagnosed mental health problems (anxiety and depression, personality disorders) and are not brief interventions, they contain specific skills and therapeutic principles that could feasibly be implemented within a brief intervention to address minority stress experiences.

The concept of acting from Wise Mind (blending “reasonable mind” or rational/evaluative thought processes with “emotion mind” or hot, emotionally reactive cognitions and behavioral urges) to further one’s goals in a situation without long-term negative consequences is core to DBT skills (Linehan, 1993). In DISCUSS, this is taught as the first skill for managing minority stress. Based on the theoretical framework of DBT, minority stress experiences such as micro and macroaggressions, family rejection, and hearing about others’ negative experiences serve as prompting events for strong emotions and negative cognitions both in the moment and after the experience has happened. Wise Mind is included as the first skill to give participants a framework for navigating minority stress experiences while preserving their long-term goals in a situation. The highlighting of reasonable mind as not always the best way of thinking in these situations is important, because discounting negative experiences or believing that these experiences are the participant’s fault may contribute to internalized stigma (Meyer, 2003). Using a purely ‘reasonable mind’ perspective may also lead the participant to discount their emotional reaction to the experience and allow them to continue unaddressed if the person is someone they have an ongoing relationship with (Linehan, 1993). Thinking in Wise Mind gives participants a framework to avoid reacting to their emotions without thinking of the long term, which could lead to harm in relationships and

decreased social support. Using Wise Mind, it is theorized that participants can develop an awareness of their reaction to these experiences and create a space to react in a way that is both furthering their long-term goals and relationships while not ‘rationalizing away’ the experiences.

For gender and sexual minority participants experiencing harassment, discrimination (e.g. not allowed to use restroom of choice, being shamed for gender expression, misgendered, being called derogatory names, people making jokes about their identity, being treated unfairly at stores or restaurants, or being stared at frequently in public), and maladaptive cognitions as a result of these experiences, Pachankis (2014) suggests that participants should learn techniques to rework negative cognitions stemming from ongoing minority stress experiences into more adaptive and fact-based cognitions and be empowered to communicate openly and assertively. The ESTEEM intervention includes cognitive-behavioral skills for this taught over multiple sessions and includes a writing intervention component. Skerven and colleagues (2019) suggest specific DBT skills that could be taught briefly and are consistent with these cognitive-behavioral techniques. Skerven and colleagues (2019) suggest using DEAR MAN (assertiveness training) to try to stop the discrimination or harassment. To manage intense emotions (e.g. shame, anger) and negative cognitions arising from these harassment experiences, Skerven and colleagues (2019) suggest Check the Facts (cognitive restructuring) and Self-Soothe (ideas for tolerating distress and bringing emotions down when the situation is not immediately solvable). To manage shame and invalidation that comes from being stared at in public, Opposite Action (to shame, such as ignoring stares

and acting proud) may be a useful skill. These are used as guidelines for skills teaching in DISCUSS.

The highlighted above are designed to ameliorate theorized mediators of substance use (box e of the model) such as psychological distress, coping motives (by providing skills to address stressors rather than using alcohol to cope), and rumination.

Personalized Feedback About Substance Use and Minority Stress

Therapeutic techniques from BASICS (Dimeff et al., 1999) and Motivational Groups for Community Substance Abuse Programs (MGCSAP; Ingersoll et al., 2002) are used to provide personalized feedback about alcohol use to individuals in the DISCUSS intervention. The overarching framework that both of these interventions use to provide personalized feedback is based on Miller & Rollnick's (1991) FRAMES acronym (Feedback, Rolling with Resistance, Advice, Menu of options, Empathy, Self-Efficacy). Feedback is provided to participants about current health risks that they are facing from their alcohol use (including increased risk for dependence if this is present), risky behaviors that they have engaged in while under the influence (based on their completion of the study measures and on initial session interview data), and normative behavior for others in the individual's peer group (based on LGBTQ-specific norms, described below). If any evidence for tolerance is found in the initial assessment, the participant is also given feedback on the effects of this on their response to alcohol and the risk for dependence.

In giving feedback, responsibility for changing alcohol use behaviors is placed on the participant. Consistent with MI techniques, the facilitator does not try to explicitly tell the participant they must change, or what they "should" do, instead emphasizing that the

participant has the right and autonomy to change (Dimeff et al., 1999). The facilitator also rolls with resistance by validating the participant's resistance to change and the difficulties associated with changing, and by being explicit about what the facilitator's intentions are (to provide information and feedback; it is the participant's decision whether to use any of the discussed strategies or information) (Ingersoll et al., 2002). To aid with reducing resistance, the facilitator may use a decisional balance exercise when discussing the participant's motivations to change and the motivations to keep using alcohol at the current level. The facilitator expresses genuine interest in the reasons the participant expresses for continuing to use alcohol at the current level, but highlights discrepancies where they occur. A decisional balance exercise adapted from MGCSAP is included in the DISCUSS intervention.

In giving feedback, advice is given *with permission* from the participant. The facilitator gives advice either by asking permission from the participant (e.g. "is it okay if I offer a suggestion based on what I see here?") or if it is directly solicited by the participant (Dimeff et al., 1999; Ingersoll et al., 2002). This advice is never presented in absolutes, but instead is always framed as a suggestion.

A Menu of Options is also presented to the participant if they endorse being ready to change based on feedback. In DISCUSS, these take the form of psychoeducation about protective behavioral strategies for moderating drinking (borrowed from BASICS; Dimeff et al., 1999) which are discussed in a later section.

Empathy is also a critical component in providing feedback about alcohol use to the participant. In both BASICS and MGCSAP, the facilitator actively works to see the situation and reasons for use from the participant's perspective, while avoiding

reinforcing any dysfunctional beliefs (e.g. “I must use alcohol to cope with my life as an LGBTQ person!”). The facilitator should empathize and validate but avoid entering the participant’s reality completely (e.g. “I understand it is really difficult to cope with the stressors that come with being LGBTQ and that alcohol can help you feel a little bit of relief from these. I’m wondering if there is anything that you don’t like about the effects of using alcohol?”) (Dimeff et al., 1999). When participants perceive that the facilitator understands their reasons for behavior and is truly interested in understanding their experience, they are more open to gentle challenges and feedback (Ingersoll et al., 2002).

Finally, during personalized feedback, the facilitator supports the participant’s Self-Efficacy. The facilitator makes explicit that the participant is capable of making desired changes and of deciding what is best based on their experience (Dimeff et al., 1999).

Other techniques for providing personalized feedback about use include reviewing the monitoring cards that the participant is given to fill out between sessions 1 and 2 (Dimeff et al., 1999). The facilitator works with the participant to notice patterns in drinking, and also helps the participant to calculate their peak blood-alcohol content (Dimeff et al., 1999). An addition to this component for DISCUSS is a monitoring of minority stress experiences. The facilitator also reviews and integrates the participant’s tracking of minority stress experiences and highlights any association between heavier alcohol use days and minority stressors (e.g. “wow, you heard a few jokes at work about LGBTQ people this day, and it looks like you drank more that day as well. I’m curious if there was any connection here?”). It is important for the facilitator to highlight and draw out these connections, as past research has shown that increased substance use often

follows minority stress experiences (Livingston, Flentje, Heck, Szalda-Petree, & Cochran, 2017). The facilitator also asks curious questions about days when the participant drank more than other days (e.g. “hm, I see here that you drank more than usual this day. What was happening then?”) (Dimeff et al., 1999). This sets the stage for the facilitator providing skills to reduce the amount of drinking through protective behavioral strategies and to discuss skills for coping with minority stressors.

Additionally, participants receive a personalized feedback sheet that summarizes the assessment measure that are gathered after the first session (Dimeff et al., 1999). The facilitator orients the participant to this feedback sheet and explains each item. The feedback sheet compares the participant to others in the normative group, and the facilitator asks for the participant’s reaction to this information and comparison between the participant’s perceived norms and actual norms. In addition, the personalized feedback contains negative consequences associated with drinking that the participant endorsed. The facilitator works to explore these negative consequences with the participant and then to connect them to times when the participant drinks a large amount (Dimeff et al., 1999). The facilitator then gains commitment from the participant to reduce these negative experiences and asks permission to discuss some strategies for moderating drinking.

In DISCUSS, the facilitator also focuses on the participant’s two highest scores from the Daily Heterosexist Experiences Questionnaire and compares these to the tracking of minority stress experiences during the week. The facilitator discusses ways in which the participant copes with these experiences, and the facilitator asks permission to discuss some potentially useful strategies for helping to cope with these experiences (e.g.

“these experiences are really tough, and research shows they can have some really negative impacts on LGBTQ people (validation). I wonder what strategies you usually use to deal with these experiences, and if you’d be open to discussing some additional strategies that other LGBTQ people have found useful for dealing with stigma?” (gain commitment to discussing strategies).

The facilitator also provides feedback on the Alcohol Use Disorders Identification Test (AUDIT; described below), pointing it out if the participant has met cutoffs for risky use. The facilitator discusses these risk factors with the participant, making sure to emphasize that this does not mean the participant is addicted, but only that they have endorsed behaviors that are *associated* with later dependence (Dimeff et al., 1999).

The facilitator also specifically provides feedback on symptoms of tolerance. The facilitator and participant have a discussion about whether the participant has noticed tolerance to alcohol, and what some of the effects of this have been from the participant’s perspective (Dimeff et al., 1999). The facilitator then provides feedback and psychoeducation about the effects of tolerance (e.g. easier to drink more than intended, spending more money, having a higher BAC and not realizing it, having to drink more to achieve the same effect, which puts more strain on the body).

LGBTQ-Specific Norms Education

LGBTQ-specific and tailored norms were determined through a literature search of returned articles from the development of the unified theory of LGBTQ alcohol use. An additional search of articles containing keywords “LGBTQ” and “alcohol” was conducted. Returned articles were examined to extract data on LGBTQ alcohol use norms. Only data for general LGBTQ populations was included; articles examining

special populations (e.g. “LGBTQ people in a residential treatment program for alcohol abuse”) were excluded. Data from returned articles was combined using weighted averages. Norms included are consistent with the BASICS framework for presenting feedback about alcohol use (percentage of abstainers in past month, drinking days per week, average drinks per occasion, drinks per week).

Percentage of Abstainers.

Weighted data indicated that, on average, 22.41% of lesbian women were abstainers from alcohol (Boyle et al., 2016; Drabble et al., 2013; Heffernan, 1998; Coulter, Marzell, Saltz, Stall, & Mair, 2016), while 22.37% of bisexual women abstained (Veldhuis, Talley, Hancock, Wilsnack, & Hughes, 2017; Gillespie & Blackwell, 2009; Drabble et al., 2013; Coulter et al., 2016) and 23.69% of non-heterosexual/queer women abstained (McKirnan & Peterson, 1989; Wilson, Gilmore, Rhew, Hodge, & Kaysen, 2016; Lee, Blayney, Rhew, Lewis, & Kaysen, 2016).

For gay men, specific data was not found, so DISCUSS feedback used the category of non-heterosexual/queer men for participants that identify as gay. Based on available data, 12.74% of non-heterosexual men reported abstaining from alcohol use (Marshall et al., 2015; McKirnan & Peterson, 1989; Wong, Kipke, & Weiss, 2008; Halkitis, Griffin-Tomas, Levy, Greene, & Kapadia, 2017). For bisexual men, weighted means from studies indicated that 31.18% abstained from alcohol use (Coulter et al., 2016; Gillespie & Blackwell, 2009).

While specific norms did not exist for percentages of trans men, trans women, or genderqueer/non-binary abstainers, overall norms for transgender/non-binary individuals

indicated that 45.26% did not drink in the past month (Benotsch, et al., 2013; Blosnich, Lehavot, Glass, & Williams, 2017).

Drinking Days per Week.

For purposes of the current intervention, number of drinking days per week was also investigated for different LGBTQ groups. In the intervention, the average number of drinking days is converted to a range to be more intuitive/easier for participants to understand and compare to. For instance, an average of 1.36 drinking days per week for lesbian women (Amadio, 2006; Coulter et al., 2016; Boyle et al., 2016) is rephrased to say, “lesbian women drink 1-2 days per week on average”. Bisexual women, on average, drank 1.53 days per week (Hatzenbuehler et al., 2008; Coulter et al., 2016; Nawyn, Richman, Rospenda, & Hughes, 2000). While specific norms for non-heterosexual/queer women were not found, the averages for lesbian/bisexual women were combined, for an average number of 1.44 drinking days per week.

Research indicated that gay men drank an average of 1.53 days per week (Coulter et al., 2016; Amadio, 2006), while bisexual men drank an average of 1.65 days per week (Hatzenbuehler et al., 2008; Nawyn et al., 2000; Coulter et al., 2016). While specific norms for non-heterosexual/queer men were not found, the averages for non-heterosexual/queer men were combined, for an average number of 1.59 drinking days per week.

While no specific norms existed for trans men, trans women, or genderqueer/non-binary individuals, overall norms for transgender/non-binary individuals indicated that they drank an average of 1.88 days per week (Staples, Neilson, George, Flaherty, & Davis, 2018; Coulter et al., 2016).

Average Drinks per Occasion.

Weighted data indicated that, on average, lesbian women drank an average of 2.59 drinks per drinking occasion (Boyle et al., 2016; Amadio, 2006; Austin & Erwin, 2009; Coulter et al., 2016; Drabble, Midanik, & Trocki, 2005) while bisexual women drank an average of 2.81 drinks per drinking occasion (Nawyn et al., 2000; Hatzenbuehler et al., 2008; Coulter et al., 2016). Other research indicated that non-heterosexual/queer women drank an average of 5.45 drinks per drinking occasion (Drabble et al., 2005; Dworkin Cadigan, Hughes, Lee, & Kaysen, 2018).

Weighted means indicated that gay men drank an average of 3.08 drinks per drinking occasion (Amadio, 2006; Coulter et al., 2016), bisexual men drank an average of 3.35 drinks per drinking occasion (Coulter et al., 2016; Hatzenbuehler et al., 2008; Nawyn et al., 2000), and non-heterosexual/queer men drank an average of 3.70 drinks per drinking occasion (Wong et al., 2008; Hatzenbuehler et al., 2008).

While no specific norms existed for trans men, trans women, or genderqueer/non-binary individuals, overall norms for transgender/non-binary individuals indicated that they drank an average of 3.41 drinks per drinking occasion (Staples et al., 2018).

Change Planning

The facilitator works explicitly with the participant to develop a plan for coping with minority stress and moderating alcohol use (Dimeff et al., 1999), if this is desired. This begins with a discussion of what the participant wants from drinking and what the participant does not want. A decisional balance of the good things and not-so-good things about using alcohol is conducted based on BASICS and MGCSAP activities/handouts.

The participant is given this handout to take with them to remind them of the reasons for using the strategies to moderate drinking. Based on the discussed strategies for moderating alcohol use and coping with minority stress experiences, the participant and facilitator collaboratively fill in a change plan that includes minority stress coping skills and protective behavioral strategies the participant feels they can commit to (adapted from MGCSAP; Ingersoll et al., 2002).

Session Outline and Summary

In session one, the major tasks are to first establish rapport with the participant, orient the participant to the therapeutic tasks, and to assess alcohol use. Another task is to provide psychoeducation about minority stress and assess the participant's experiences with different minority stressors, and to assess their impact and any connection to increased alcohol use. The participant is then oriented to the tracking cards for minority stress experiences and substance use for the following week. The facilitator then asks the participant to fill out the measures for later feedback.

In session two, the facilitator begins by reorienting the participant to the tasks to be completed, and then asks the participant for the tracking cards. The facilitator discusses what is on the tracking cards with the participant, provides psychoeducation about how to calculate blood alcohol content, and explores any patterns of alcohol use. The facilitator also assesses and explores any connections between minority stress experiences and increased alcohol use. After this, the facilitator moves to discussing the personalized feedback worksheet, providing norms education, discussing effects of tolerance, providing education about the biphasic response/effects felt at different levels of intoxication, exploring how expectancies impact experiences, assessing coping skills

used with minority stress experiences, and highlighting behaviors associated with increased risk of dependence. The facilitator then conducts a decisional balance with the participant, exploring the good and not-so-good things about substance use. The facilitator then gains the participants commitment to discussing some ways to moderate alcohol use (if indicated) and avoid the negative consequences, and also gains commitment to explore some additional techniques for coping with minority stress. Once this commitment is gained, the facilitator shares strategies to moderate use. After this, the facilitator introduces the skills for coping with minority stress experiences. Finally, the facilitator gains a commitment to trying out some of these strategies and develops a change plan for moderating alcohol use and coping with minority stressors using the new skills.

Methods and Analyses

Sample

Eligible participants were anyone between the ages of 18-30 that identifies as non-heterosexual or as a gender minority (i.e. transgender, genderqueer, non-binary). The age limit for this study is based on research indicating that risky/heavy alcohol use tends to decrease by the late 20s for the general population of US adults (Labouvie, 1996) and that young adults are at the greatest risk for developing alcohol problems during their early 20s (Fillmore, 1988). Therefore, prevention efforts would best be suited to this age group. Participants were disqualified for participation if they endorsed active alcohol dependence, active symptoms of psychosis or active suicidal intent or self-harm behaviors. The final sample included $n = 19$ participants that completed time 1 and time 2 surveys. 1 participant did not complete time 2 survey and was excluded from the analyses. Participant average age was 21.2 ($SD = 3.05$). Participants racial/ethnic identity was 52.6% White, 10.5% Black, 21.1% Latinx, 10.5% Asian/Pacific Islander, and 5.3% mixed ethnic/racial identity. In terms of sexual orientation, 3 participants (15.8%) identified as gay, 1 (5.3%) identified as lesbian, 10 (52.6%) as bisexual, and 5 (26.3%) queer/other identity. In terms of gender identity, 8 (42.1%) participants identified as cisgender men, 7 (36.8%) identified as cisgender women, 2 (10.5%) identified as nonbinary/genderqueer, and 2 (10.5%) identified as transgender. Due to low cell counts for these separate categories, participant identity was recoded to two groups: cisgender (including cisgender gay, lesbian, bisexual, and queer/other participants) and transgender/nonbinary/genderqueer (including nonbinary/genderqueer and transgender participants).

Procedure

Potential participants were invited to call the research lab using advertising materials. During the initial phone call, researchers followed a standard screening procedure to determine whether eligibility criteria (between ages of 18-30; identification as a member of the LGBTQ community) was met. After initial screening (participants meeting criteria for an alcohol use disorder would be inappropriate for a brief intervention, as they typically need a much higher level of care) participants were scheduled for an initial session and a follow-up session approximately one week after the initial session,

In the initial session, participants were provided with informed consent and study risks, procedures, and purpose. After signing informed consent, the initial meeting (60 minutes) was conducted and audio recorded. Following the meeting, the participant was asked to fill out an online survey measure (45-60 minutes). Dimeff and colleagues (1999) recommend collecting session one data *after* rapport is established to increase accuracy of the data given the sensitive nature of it. The participant was provided an appointment reminder card for the second session and was asked to give consent for a phone call or email notification of the next appointment as well. The second session took place one week later (60-90 minutes). After completing the second session, the participant was reminded to fill out the post-intervention survey that was sent exactly two weeks following the second meeting.

Two weeks after the conclusion of the second appointment, participants were sent an email with a link to complete the two-week follow-up survey (45-60 minutes). Items

were the same as the initial survey measure filled out after meeting 1 with the addition of feasibility, acceptability, and appropriateness measures discussed below.

Minimization of Risk

The study protocol included a planned procedure for participants expressing suicidal or homicidal ideation. Standard questions to assess risk for harm (e.g. “do you have intent to harm yourself or someone else today,” do you have a plan to harm yourself or anyone else today”, and “do you have any ways to harm yourself or others at home that you are thinking of using?”) Protocol specified that these participants would be further interviewed by a clinical psychology graduate student, develop a safety plan with the clinician, and receive a list of referrals. All participants were provided with a list of resources including mental health providers, hotlines, and local LGBTQ organizations. All researchers, including the study author, have completed CITI training in responsible conduct of human subjects research. Notably, these procedures were not used as no study participants endorsed suicidal or homicidal ideation in the meetings.

Participant Compensation

Participants were paid \$10 cash for completing the first meeting, and \$30 cash for completing the second meeting. Participant name and email information was stored separately from participant de-identified data in order to allow research personnel to send an anonymized Qualtrics survey for 2-week post participation follow-up measures. Upon completing the 2-week post participation follow-up measures, participants were automatically sent a Rewards Genius link for a \$10 gift card of their choice. Total

participant compensation for attending 1st and 2nd meeting and completing 2-week post participation follow-up measures was \$50.

Power Analysis

A power analysis was conducted using G*Power version 3.1.9.2 (Faul, Erdfelder, Lang, & Buchner, 2009). Based on literature supporting BASICS (Fachini, et al., 2012), an expected effect size for alcohol use reduction was calculated as $d = 0.69$. Based on limited data testing past interventions targeting various aspects of minority stress (e.g. Pachankis, Hatzenbuehler, Rendina, Safren, & Parsons, 2015; Pachankis & Goldfried, 2010; Lewis, Derlega, Clarke, Kuang, Jacobs, & McElligott, 2005; Lin & Israel, 2012), an expected effect size for reduction in minority stress was estimated at $d = 0.42$. Power analysis suggested a sample size of at least $n = 48$ to detect changes from time 1 to time 2 for the reduction in minority stress (the smallest a-priori effect size estimate).

Recruitment Strategy

Participants were recruited using strategically placed recruitment fliers. Fliers were distributed and hung with permission on public bulletin boards throughout Milwaukee County (e.g. university campuses, coffee shops, public libraries and private businesses). In addition, direct collaboration with the Froedtert Inclusion Clinic, Infectious Disease Clinic, Diverse & Resilient, and Brady East STD Clinic allowed for direct advertisement to LGBTQ participants who drink alcohol. In addition, the Froedtert Inclusion Clinic and Infectious Disease clinic directly provided study information to patients endorsing any alcohol use during their appointments.

Materials

For the first meeting, materials were the intervention manual, an alcohol and minority stress experiences tracking card, psychoeducation about minority stress handouts, and consent forms (included in appendix).

For the second session, the intervention manual, handouts for change planning and skills training, and a personalized feedback form were used (included in appendix). The personalized feedback form was created using Microsoft Excel and Word and contained the results of the measures filled out in meeting one. For the two-week follow-up survey, participants needed a computer with internet access or a smartphone with internet access. If participants indicated they were unable to access the internet to fill out the survey data, they were invited to come back into the lab to fill out the survey.

Fidelity Measure

Sessions were audio recorded and assigned unique identifying numbers separate from the participant ID numbers to avoid names in the audio recording being connected to participant data. Undergraduate research assistants and the study author coded each session using a checklist for strategies outlined in the DISCUSS manual developed by the study author. This measure was initially developed by the author. The study author and two undergraduate research assistants each coded two of the same meeting one and meeting two recordings, then met to compare ratings. Disagreements between the three coders were marked, and the three coders met to replay sections of the audio where there were disagreements to discuss the reasons for disagreement. The checklist wording and examples of in-session facilitator behavior that met the criteria was refined based on this

feedback to increase inter-rater reliability. Using the refined criteria, the study author and one of the undergraduate researchers coded the remainder of the sessions. To determine inter-rater reliability, the study author and undergraduate researcher coded five of the same sessions independently, and the rating agreement was calculated. Inter-rater agreement was 91.6%.

Measures

Measures included were based on suggested measures from the original BASICS treatment manual (Dimeff et al., 1999). These measures were chosen to assess alcohol use, beliefs about norms of use, alcohol expectancies, negative consequences of use, and motivations for use. In addition, measures of psychological distress and stigma experiences/distress were used to assess minority stress and provide feedback on minority stress to participants and provide useful coping skills. The same measures were used at time 1 (before the intervention) and time 2 (2 weeks post-intervention) with the exception of quantitative and qualitative items to assess the acceptability of the intervention, effectiveness/usefulness of the intervention, and an open-ended question about how the intervention could be improved.

Daily Drinking Questionnaire

The Daily Drinking Questionnaire (Collins, Parks, & Marlatt, 1985) is a brief measure of volume, quantity, and frequency of typical alcohol consumption. Respondents fill in the typical number of drinks consumed on each day of the week for the past month. The adapted measure from BASICS (Dimeff et al., 1999) was used to also ask individuals the typical number of hours spent drinking to allow for a rough estimate of peak blood

alcohol content on each day. In addition, individuals are asked to fill in weight, gender, and height. To modify this measure for the DISCUSS intervention, the question about gender was changed to “biological sex”. Information in BASICS on gender differences is based on biological sex, which conflates sex and gender identity. Educating transgender/non-binary individuals about biological sex differences in alcohol effects may be seen as invalidating, so this component was removed from the DISCUSS intervention. While no reliability and internal consistency measures were available, Daily Drinking Questionnaire showed good convergent validity with other longer measures of typical drinking (Collins et al., 1985). This measure was used to provide feedback for participants in the study as well as for assessing outcomes such as typical drinks per week and average number of drinking days per week.

Rutgers Alcohol Problems Inventory

The Rutgers Alcohol Problem Index (White & Labouvie, 1989) is a 23-item measure of alcohol problems and consequences intended for adolescents and young adults. Its five-factor structure that has been validated with young adults (Dimeff, Baer, & Marlatt, 1994). Scales measure negative consequences such as concerns about drinking, irresponsibility and neglect, symptoms of dependence, interpersonal conflict, and family conflict as a result of drinking that have occurred within the past year. Internal consistency in the original research was 0.92 for the total scale. It has also been shown to be reliable with LGB students (Cronbach’s $\alpha = .93$; Reed, Prado, Matsumoto, & Amaro, 2010). Respondents endorse negative consequences on a five-point Likert scale ranging from 0 (none) to 3 (more than 5 times). This scale was used both in the intervention and as an outcome measure.

Alcohol Use Disorders Identification Test

The Alcohol Use Disorders Identification Test (AUDIT; Babor, Higgins-Biddle, Saunders, & Monteiro, 2001) is a 10-item measure developed by researchers at the World Health Organization to screen patients for hazardous and harmful alcohol consumption. Participants are asked a series of questions that related to hazardous drinking behaviors (e.g. “how often during the past year have you found that you were not able to stop drinking once you had started?”) and asked to indicate their answer from a range of options. Options differ based on the question, but each item choice receives a numeric score. Scores are added up, and a recommended cutoff of 8 or more is used to indicate hazardous/risky drinking. The measure has been shown to have adequate internal consistency across cultures and groups (Cronbach’s $\alpha = 0.75$ for US samples in the original research; Saunders, Aasland, Babor, de la Fuente, & Grant, 1993) and high test-retest reliability ($r = 0.86$). This measure was used in the intervention and as an outcome measure.

Drinking Norms Rating Form (Modified)

The Drinking Norms Rating Form (DNRF; Baer, Stacy, & Larimer, 1991) is a measure of perceived drinking norms for specific groups. Participants are asked to rate both how often and how much members of specific groups drink. For “how often they drink” response options range from 1 (less than once a month) to 7 (once a day). For “how much they drink” response options range from 1 (0 drinks) to 6 (more than 8 drinks). The measure has typically been used with college students, but the form was modified to assess perceived norms for different groups (an average person who

identifies as gay, an average person who identifies as lesbian, an average person that identifies as a bisexual man, an average person who identifies as a bisexual woman, a person who identifies as transgender, a person who identifies as non-binary/genderqueer). This measure was used in the intervention and as an outcome measure.

Brief Comprehensive Effects of Alcohol

The Brief Comprehensive Effects of Alcohol questionnaire (Ham, Stewart, Norton, & Hope, 2005) is a 15-item version of the Comprehensive Effects of Alcohol Scale (Fromme, Stroot, & Kaplan, 1993) that assesses an individual's expectations about alcohol consumption using a 4-factor structure as well as their valuations of these expectancies (how good/bad do they think the effects are). The four expectancy factors are Liquid Courage/Sociability/Risk & Aggression, Self-Perception/Cognitive & Behavioral Impairment, Sexuality, and Tension Reduction, respectively. The three valuation factors are Tension Reduction/Sexuality/Sociability, Liquid Courage/Risk & Aggression/Self-Perception, and Cognitive & Behavioral Impairment, respectively. To assess the expectancy factors, participants are asked how much they expect the effect to happen using a 4-point Likert scale ranging from 1 (disagree) to 4 (agree). To assess the valuation factors, participants are also asked to rate the desirability of the effect on a 5-point Likert scale ranging from 1 (bad) to 5 (good). Scale scores are calculated as the sum of respective items. The measure showed high temporal stability, and correlations between first and second administrations ranged from $r = 0.66-.72$ for positive expectancies and $r = 0.75-0.81$ for negative expectancies. It also showed adequate internal consistency (Cronbach's $\alpha = 0.60-0.81$ for the expectancy factors; Ham et al., 2005). This scale was used in the intervention and as an outcome measure.

Modified Drinking Motives Questionnaire- Revised

The Modified Drinking Motives Questionnaire- Revised (Modified DMQ-R; Grant, Stewart, O’Conner, Blackwell, & Conrod, 2007) is a 28-item measure of motives for using alcohol. Participants are asked to indicate how often they consume alcohol for the listed reasons (e.g. “to fit in”). Response options are on a five-point Likert scale ranging from 1 (almost never or never) to 5 (almost always/always). There are five subscales: social, enhancement (e.g. “makes me feel good”), conformity, coping for depression, and coping for anxiety. The scale has been validated with college students, and past research has found cronbach’s alpha to be $\alpha = .92$ for LGBTQ college students (Ebersole, Noble, & Madson, 2012). This scale was included as a measure in the intervention and not included in data analysis for outcomes.

Depression Anxiety and Stress Scales-21

The Depression Anxiety and Stress Scales- 21 (Lovibond & Lovibond, 1995) is a 21-item version of the Depression Anxiety and Stress scale containing three subscales: Stress (e.g. “I felt I was rather touchy”), Depression (“I felt that life was meaningless) and Anxiety (“I experienced breathing difficulty”). Participants are asked to endorse a number of symptoms using a Likert scale ranging from 0 (“did not apply to me at all”) to 3 (“applied to me very much or most of the time”). Item endorsements for each scale are added and then multiplied by two to get a total severity score for each subscale. The 21-item version has shown good internal consistency (Cronbach’s $\alpha = 0.87-0.94$) (Antony, Cox, Enns, Bieling, & Swinson, 1998). This scale was included as an outcome measure

The Daily Heterosexist Experiences Questionnaire

The Daily Heterosexist Experiences Questionnaire (DHEQ) (Balsam, Beadnell, & Molina, 2013) is a 50-item measure with nine subscales measuring various facets of minority stress, including stress related to gender expression, hypervigilance, parenting (for LGBTQ individuals who are parents), harassment and discrimination, vicarious trauma, family rejection, fear about HIV/AIDS, victimization, and social isolation. A mean score can be computed for each subscale, indicating both how often and how much stress the items on the subscale cause. The response scale is a 6-point Likert scale with response options ranging from “0 = did not happen/not applicable to me” to “5 = it happened, and it bothered me *EXTREMELY*.” Overall Cronbach’s alpha for the subscales was $\alpha = 0.92$. The scale also showed good reliability across gender and sexual orientation identities and was significantly correlated with other measures of psychological distress. Items were generated based on Meyer (2003) and feedback from community members and focus groups. While the scale notably does not contain a measure of internalized homophobia, there was not strong evidence of internalized homophobia as a mediator of substance use outcomes, and it is not directly targeted in the current intervention. This measure was used both in the intervention to assess sources of minority stress and as an outcome measure.

Acceptability of Intervention Measure

The Acceptability of Intervention Measure (AIM) (Weiner, Lewis, Stanick, Powell, Dorsey, Clary, Boynton, and Halko, 2017) is a four-item measure of intervention acceptability for key stakeholders (i.e. LGBTQ participants) that was included at time 2

to assess acceptability quantitatively and compare acceptability across different sexual minority and gender identity groups. Items are on a 5-point Likert scale and range from “1 = completely disagree to “5 = completely agree.” Cronbach’s alpha for AIM was $\alpha = 0.85$ for structural validity and $\alpha = 0.83$ for test-retest reliability.

Intervention Appropriateness Measure

The Intervention Appropriateness Measure (IAM) (Weiner et al., 2017) is a four-item measure of intervention appropriateness for key stakeholders (i.e. LGBTQ participants) that was included at time 2 to assess appropriateness quantitatively and compare across different sexual minority and gender identity groups. Items are on a 5-point Likert scale and range from “1 = completely disagree to “5 = completely agree.” Cronbach’s alpha for IAM was $\alpha = 0.91$ for structural validity and $\alpha = 0.87$ for test-retest reliability.

Feasibility of Intervention Measure

The Feasibility of Intervention Measure (FIM) (Weiner et al., 2017) is a four-item measure of intervention feasibility for key stakeholders (i.e. LGBTQ participants) that was included at time 2 to assess feasibility quantitatively and compare across different sexual minority and gender identity groups. Items are on a 5-point Likert scale and range from “1 = completely disagree to “5 = completely agree.” Cronbach’s alpha for FIM was $\alpha = 0.89$ for structural validity and $\alpha = 0.88$ for test-retest reliability.

Other Feedback on Intervention (Qualitative)

In addition to the quantitative measures, feedback was sought on how the intervention could be improved for future LGBTQ community members. Open-ended

items such as “what suggestions do you have for improving the intervention?”, “what did you like about the intervention?”, and “how could the intervention be more effective for others with your sexual orientation or gender identity?” were included to gain qualitative suggestions for future improvements and modifications to the program.

Data Handling

Because the intervention collected sensitive data such as sexual orientation and gender identity, substance use history, and audio recordings of sessions, participants were assigned a unique participant ID number that was used to identify survey data and link pre-post data. A separate ID number was assigned to session audio recordings to ensure that participant ID numbers were not connected to names. Participant contact information was stored with ID numbers for the data for compensation purposes but was deleted when the participant completed the study and completed time 2 measures. This data was kept in a locked and secured paper file in the lab at Marquette University. Audio recordings were stored in locked cabinets in a restricted access laboratory at Marquette University.

Hypotheses

It was hypothesized that the intervention would result in a significant change in average number of drinks per week (DDQ), alcohol problems (RAPI, AUDIT), perceived drinking norms (DNRF), positive alcohol expectancies (B-CEOA), minority stress (DHEQ), and psychological distress (DASS-21).

An exploratory analysis to determine whether the intervention results in significantly different outcomes for lesbian, gay, bisexual, or transgender/nonbinary individuals was proposed. However, due to smaller than expected sample size due to

COVID-19 pandemic, too few participants were in each of these groups to analyze. Instead, participant identity was collapsed into cisgender (including lesbian, gay, bisexual, and queer/questioning) and transgender/non-binary/genderqueer identities. In addition, analyses explored whether the intervention resulted in different acceptability, feasibility, or appropriateness ratings for cisgender versus transgender/non-binary/genderqueer individuals (scores on the AIM, IAM, and FIM scales).

Analyses

Change scores between pre and post intervention were calculated for the measures discussed above (with the exception of AIM, IAM, and FIM scales, which are taken only at two-week follow-up). Change scores from pre-post intervention for all time 1 and time 2 outcome measures, along with participant identity (cisgender or transgender/non-binary/genderqueer) were entered into a mixed-design MANOVA and analyzed using SPSS version 24 to test for an omnibus multivariate effect of the intervention on the above measures, and to determine if the intervention was differentially effective for different identity groups. Follow-ups on each independent variable were planned if a significant multivariate effect was found. In addition, one-way ANOVA analyses were conducted on the AIM, IAM, and FIM scales to determine if feasibility, acceptability, and appropriateness differed based on sexual orientation/gender identity groups.

A qualitative data analysis was conducted for the open-ended questions. Open-ended responses were initially coded using MAXQDA, a qualitative analysis software using a combination of deductive and inductive coding to categorize the data (Saldana, 2016). Codes were identified by the first author, trained in qualitative methods using a three-stage analytic coding strategy including open, axial, and selective coding (Corbin &

Strauss, 2015). First, a list of codes was developed for the data by the study author and an advanced graduate student. Codes were independently created by noting overlapping themes in the responses and developing code definitions that represented the data. Coded responses were then analyzed using thematic content analysis (Braun & Clarke, 2006) to highlight patterns in the data and identify meaningful overall themes. The author and advanced graduate student then met to reconcile codes and develop agreed-upon overall themes using selective coding. The qualitative responses were then coded and reviewed separately to ensure adequate application of codes.

Impact of COVID-19 Pandemic on Data Collection

Data collection was suspended March 16, 2020 due to COVID-19 pandemic. Data collection was resumed March 25, 2020 after obtaining IRB approval to conduct study meetings remotely and post study advertisements on social media. However, data collection was suspended April 24, 2020 after obtaining first and second session data from $n = 3$ participants collected remotely. Only one of these participants reported drinking during the past two weeks, and all endorsed significant reductions in alcohol use due to the pandemic. In addition, study recruitment was significantly reduced due to safer at home order closing public spaces with study advertisements.

Results

Fidelity of Intervention

Coding of session audiotapes revealed average fidelity to the manualized protocol was 78.11%, with a range of 52.17% in one session and as high as 91.3%.

Quantitative Data Analysis

Mixed-design MANOVA was calculated using identity (Cisgender and Transgender/Nonbinary/Genderqueer) and time. Because of low cell count for transgender/nonbinary/genderqueer category, Type 1 Sum of Squares was chosen. It was expected that there would be a smaller number of transgender/nonbinary/genderqueer compared to cisgender participants due to lower base rates in the general population (most current estimate of US population range from 0.3%-2.7% in younger/college samples; Meerwijk & Sevelius, 2017; American College Health Association, 2020).

Assumption of multivariate normality was checked using histograms of dependent variables. Results showed all variables were approximately normally distributed. The assumption of linearity was checked using scatterplots; results showed likely linear relationships between all time 1 and time 2 data points of dependent variables.

Multicollinearity was checked using a bivariate correlation matrix; dependent variable correlations that were significant ranged from $r = 0.47$ (AUDIT Time 1 and Alcohol Expectancies Time 1) to $r = 0.87$ (AUDIT Time 1 and Alcohol Problems Time 2).

Significant correlations were within recommended levels for MANOVA; however, the majority of variables were not significantly correlated. For this reason, individual univariate ANOVA analyses were also examined when MANOVA was not significant.

Homogeneity of Covariance Matrices (Box's M) was not computed due to <2 nonsingular cell covariance matrices.

Results of MANOVA for within-subjects variables were not significant, Wilks' $\lambda = 0.15$, $F(1, 17) = 3.85$, $p = 0.38$. Results of MANOVA for between-subjects variable (identity) was not significant, Wilks' $\lambda = 0.07$, $F(1, 17) = 0.77$, $p = 0.73$. Results of MANOVA for the interaction between identity and the intervention was not significant, Wilks' $\lambda = 0.004$, $F(1, 17) = 14.64$, $p = 0.20$. These results indicate there was no evidence for a multivariate effect of the intervention on the dependent variables, no evidence for a multivariate effect of the identity variable on the dependent variables, and no evidence for a multivariate effect of the interaction between intervention and identity variable on the dependent variables.

Due to the small sample sizes and lack of moderate correlation among dependent variables, univariate mixed-design ANOVA results were examined. Significant results are shown below with relevant means and standard deviations reported. See Table 1 for full means and standard deviations by group for time 1 and time 2.

A significant effect of the intervention was found for anxiety (DASS Anxiety), $F(1, 17) = 4.91$, $p = 0.04$, partial $\eta^2 = 0.22$, $1-\beta = 0.55$. Results showed anxiety reduced from Time 1 ($M = 5.05$, $SD = 3.52$) to Time 2 ($M = 3.26$, $SD = 2.10$). A significant effect of the intervention was found for generalized stress (DASS Stress), $F(1, 17) = 11.36$, $p = 0.004$, partial $\eta^2 = 0.40$, $1-\beta = 0.89$. Results showed generalized stress reduced from Time 1 ($M = 9.0$, $SD = 4.24$) to Time 2 ($M = 5.58$, $SD = 3.61$). A significant effect of the intervention was found for perceived drinking norms (DNRF), $F(1, 17) = 6.21$, $p = 0.02$, partial $\eta^2 = 0.27$, $1-\beta = 0.65$. Results showed reductions in perceived weekly number of

Table 1.

Dependent Variable Means and Standard Deviations by Identity Group

Measure	Cisgender Participant (<i>N</i> = 15)	Transgender/Non-binary/Genderqueer Participant (<i>N</i> = 4)	Overall (<i>N</i> = 19)
Drinks Per Week (DNRF)			
Time 1 (<i>N</i> = 19)	8.33 (6.49)	8.75 (5.38)	8.42 (6.13)
Time 2 (<i>N</i> = 19)	5.87 (4.81)	7.25 (4.50)	6.16 (4.66)
Problem Drinking (AUDIT)			
Time 1 (<i>N</i> = 19)	7.13 (4.67)	8.75 (3.50)	7.47 (4.41)
Time 2 (<i>N</i> = 19)	5.67 (3.62)	7.25 (5.91)	6.00 (4.06)
Alcohol Expectancies (BCEOA)			
Time 1 (<i>N</i> = 19)	2.78 (0.34)	2.98 (0.28)	2.83 (0.33)
Time 2 (<i>N</i> = 19)	2.82 (0.49)	2.57 (1.06)	2.77 (0.62)
Depression (DASS-D)			
Time 1 (<i>N</i> = 19)	4.93 (3.26)	7.00 (3.74)	5.37 (3.37)
Time 2 (<i>N</i> = 19)	3.20 (3.10)	7.00 (2.71)	4.00 (3.35)
Anxiety (DASS-A)*			
Time 1 (<i>N</i> = 19)	4.73 (3.75)	6.25 (2.50)	5.05 (3.52)
Time 2 (<i>N</i> = 19)	2.87 (2.07)	4.75 (1.71)	3.26 (2.10)
Stress (DASS-S)**			
Time 1 (<i>N</i> = 19)	8.27 (3.88)	11.75 (4.99)	9.00 (4.24)
Time 2 (<i>N</i> = 19)	5.13 (3.74)	7.25 (2.87)	5.58 (3.61)
Alcohol Problems (RAPI)			
Time 1 (<i>N</i> = 19)	5.07 (4.07)	4.50 (2.52)	4.95 (3.73)
Time 2 (<i>N</i> = 19)	2.53 (3.40)	4.25 (3.30)	2.89 (3.36)
Drinking Norms (Drinks Per Week)*			
Time 1 (<i>N</i> = 19)	8.27 (5.20)	7.00 (4.08)	8.00 (4.91)
Time 2 (<i>N</i> = 19)	6.60 (3.50)	2.75 (2.63)	5.79 (3.65)

Measure	Cisgender Participant (<i>N</i> = 15)	Transgender/Non-binary/Genderqueer Participant (<i>N</i> = 4)	Overall (<i>N</i> = 19)
Vigilance (DHEQ)			
Time 1 (<i>N</i> = 19)	2.07 (0.78)	1.83 (0.33)	2.02 (0.71)
Time 2 (<i>N</i> = 19)	1.96 (0.79)	1.79 (0.63)	1.92 (0.74)
Harassment/Discrimination (DHEQ)+			
Time 1 (<i>N</i> = 19)	1.71 (0.89)	2.95 (1.62)	1.97 (1.15)
Time 2 (<i>N</i> = 19)	1.79 (0.89)	2.00 (1.34)	1.82 (0.96)
Gender Expression (DHEQ)			
Time 1 (<i>N</i> = 19)	1.34 (0.42)	3.08 (1.66)	1.71 (1.06)
Time 2 (<i>N</i> = 19)	1.17 (0.30)	2.92 (1.38)	1.54 (0.96)
Parenting (DHEQ)			
Time 1 (<i>N</i> = 19)	1.08 (0.19)	1.04 (0.08)	1.07 (0.17)
Time 2 (<i>N</i> = 19)	1.02 (0.09)	1.00 (0.00)	1.02 (0.08)
Victimization (DHEQ)			
Time 1 (<i>N</i> = 19)	1.05 (0.19)	1.06 (0.13)	1.05 (0.18)
Time 2 (<i>N</i> = 19)	1.05 (0.19)	2.00 (2.00)	1.25 (0.92)
Family of Origin (DHEQ)			
Time 1 (<i>N</i> = 19)	1.58 (1.00)	1.25 (0.32)	1.51 (0.90)
Time 2 (<i>N</i> = 19)	1.64 (1.22)	1.92 (1.14)	1.70 (1.18)
Vicarious Trauma (DHEQ)+			
Time 1 (<i>N</i> = 19)	3.64 (0.96)	4.67 (0.56)	3.89 (0.96)
Time 2 (<i>N</i> = 19)	3.29 (1.09)	4.54 (0.92)	3.55 (1.16)
Isolation (DHEQ)			
Time 1 (<i>N</i> = 19)	2.42 (1.37)	2.63 (1.60)	2.46 (1.38)
Time 2 (<i>N</i> = 19)	2.52 (1.21)	3.06 (1.60)	2.63 (1.28)
HIV/AIDS (DHEQ)			
Time 1 (<i>N</i> = 19)	1.41 (0.59)	1.08 (0.17)	1.34 (0.54)
Time 2 (<i>N</i> = 19)	1.22 (0.31)	1.13 (0.25)	1.20 (0.29)
Acceptability of Intervention (AIM)*	4.03 (0.52)	4.75 (0.50)	4.18 (0.58)
Feasibility of Intervention (FIM)	4.13 (0.58)	4.50 (0.46)	4.21 (0.57)
Appropriateness of Intervention (IAM)	3.90 (0.65)	4.44 (0.43)	4.01 (0.64)

Note: Main effect: * $p < .05$, ** $p < .01$

Interaction: + $p < .05$, ++ $p < .01$

drinks for relevant LGBT groups from Time 1 ($M = 8.00$, $SD = 4.91$) to Time 2 ($M = 5.79$, $SD = 3.65$) A significant effect was found for the interaction between time and identity for perceived harassment/discrimination (DHEQ Harassment/Discrimination), $F(1, 17) = 4.92$, $p = 0.04$, partial $\eta^2 = 0.23$, $1-\beta = 0.55$. Results indicated little change for cisgender participants ($M = 1.71$ to $M = 1.78$), but a decrease for transgender/non-binary/genderqueer participants ($M = 2.96$ to $M = 2.00$). A significant effect was found for the interaction between time and identity for victimization (DHEQ Victimization), $F(1, 17) = 4.47$, $p = 0.05$, partial $\eta^2 = 0.21$, $1-\beta = 0.51$. Results indicated no change for cisgender participants ($M = 1.05$ to $M = 1.05$) but an increase for transgender/non-binary/genderqueer participants ($M = 1.06$ to $M = 2.00$).

Finally, for the acceptability, appropriateness, and feasibility measures, a significant main effect of identity was found for intervention acceptability (AIM), $F(1, 17) = 6.15$, $p = 0.02$. Results indicated greater acceptability ratings for transgender/nonbinary/genderqueer participants ($M = 4.75$, $SD = 0.50$) compared to cisgender participants ($M = 4.03$, $SD = 0.52$).

Qualitative Data Analysis

Three major themes in the responses emerged and were agreed upon by the two coders. They were 1) Create a more inclusive environment in the DISCUSS program, 2) Create additional opportunities to discuss other stressors/include discussions about other relationships, and 3) Include additional avenues for support/provide LGBTQ mentorship. See Table 2 for full thematic analysis and responses for each theme.

Table 2

Qualitative Data Major Themes, Codes, and Associated Participant Responses

Theme	Code	Participant Responses
Create a more inclusive environment in the DISCUSS program	More inclusive language	<ul style="list-style-type: none"> • I suppose implementing language that includes those with questioning identities, if at all possible. • Diversifying the participants of the group to get a better investigation • There's a significant correlation between being LGBTQ and being neurodivergent (i.e., autism spectrum, ADHD) and I think the program should take this into account or more research should be done on this, because this definitely influences rejection sensitivity, sensory processing, and other social and miscellaneous issues that are connected to drinking behavior and its consequences
Create additional opportunities to discuss other stressors/include discussions about other relationships	Include discussion of relationships	<ul style="list-style-type: none"> • Maybe have the program be more designed in a way for those in a relationship versus those who are not.
	Discuss intersectional stress	<ul style="list-style-type: none"> • Having an intersectional lens to also understand racial minorities.
	Discuss other sexual and gender minority stressors	<ul style="list-style-type: none"> • Go further in depth with the skills to cope with stress. • They could learn more about how we struggle as a community and how we can better ourselves to improve as a whole. They can learn how to cope with and manage societal stresses that an LGBTQ+ person might encounter it daily. • Trans folks face different challenges than LGB folks, so maybe some focus on trans experience.

Theme	Code	Participant Responses
	Talk about other substance use	<ul style="list-style-type: none"> • Implement the use of other intoxicants such as drugs • Instead of just talking about drink you might want to talk about marijuana
Include additional avenues for support/provide LGBTQ mentorship	Provide LGBTQ mentorship	<ul style="list-style-type: none"> • If possible, being paired up with someone like a mentor from the LGBTQ community that could help guide you or counsel you on certain issues you're facing.
	Build rapport	<ul style="list-style-type: none"> • Spend some more time and Interacting and ask more questions to gather more personal views that encompass the LGBTQ+ community.
	Provide additional resources	<ul style="list-style-type: none"> • I think at the end of the program you could talk about resources that could help those dealing with minority stressors/drinking issues.
	Use groups	<ul style="list-style-type: none"> • Perhaps offer a group session as an option for anyone who thinks they'll be more welcome to talk with someone else that they know.

Discussion

Problematic alcohol and substance use are substantial public health concerns in the United States, costing over \$740 billion annually in health care, criminal justice costs, and lost productivity (National Institute on Drug Abuse, 2017). The negative effects of problematic alcohol use are disproportionately borne by the LGBTQ community (Meyer, 2003; Kecojevic, et al., 2012; McCabe et al., 2013; Mereish & Bradford, 2014; Hatzenbuehler, 2009; Clements-Nolle et al., 2008). LGB college students show even higher rates of heavy episodic drinking and consequences such as increased alcohol tolerance (a risk factor for later alcohol problems) (Ebersole, Moorer, Noble, & Madson, 2015; Reed, Prado, Matsumoto, & Amaro, 2010). Additionally, LGB individuals report higher severity of SUD symptoms (Allen & Mowbray, 2016). While there is a plethora of evidence-based interventions for alcohol and substance use disorders, this evidence-base has consistently failed to report outcomes for LGBTQ populations. The current study aimed to fill this gap in evidence-based alcohol use treatment by piloting a theoretically driven, culturally adapted preventative alcohol intervention for LGBTQ young adults.

The alcohol intervention component of DISCUSS was based on the evidence-based BASICS intervention (Dimeff et al., 1999) and MGCSAP (Ingersoll et al., 2002). These interventions were culturally adapted for LGBTQ young adults based on the theoretical frameworks of Meyer (2003) and Hatzenbuehler (2009), which identified possible mediators of alcohol use unique to LGBTQ populations. Research published since these frameworks was also examined to better understand mediators that have emerged as evidence-supported since their publications. The LGBTQ Alcohol Use and Intervention Model (see Figure 3) organized the evidence to build a new, updated

theoretical model of LGBTQ alcohol use (non-intervention pathway). Two other areas of literature were also examined to identify components of the DISCUSS program that would be supported to alter the minority stress-alcohol use pathway. The existing literature on MIBIs and LGBTQ-specific and tailored interventions for reducing substance use identified important components (see box e of Figure 3) that should be incorporated in a culturally tailored alcohol use prevention program such as DISCUSS. The DISCUSS program was built and piloted with a diverse sample of $n = 19$ LGBTQ young adults.

Results showed significant reductions were achieved in perceived drinking norms and measures of generalized distress and anxiety. The reduction in perceived drinking norms is particularly important, because there is significant evidence that perceived drinking norms are a mediator of drinking outcomes for both general and LGBTQ populations (Hatzenbuehler, Corbin, & Fromme, 2008; McKirnan & Peterson, 1989, Tobin et al., 2014). The inclusion in this intervention of relevant LGBTQ peer norms is likely the reason this outcome measure was impacted. Research has shown that school-wide social norms for substance use (based typically on general student populations' drinking habits) are not predictive of LGBTQ students' substance use (Eisenberg & Wechsler, 2003) and would therefore be less relevant or believable for LGBTQ participants.

The reductions in generalized distress and anxiety are also important, because evidence has shown links between negative drinking consequences and generalized distress in general populations of young adults (Geisner, Larimer, & Neighbors, 2004;

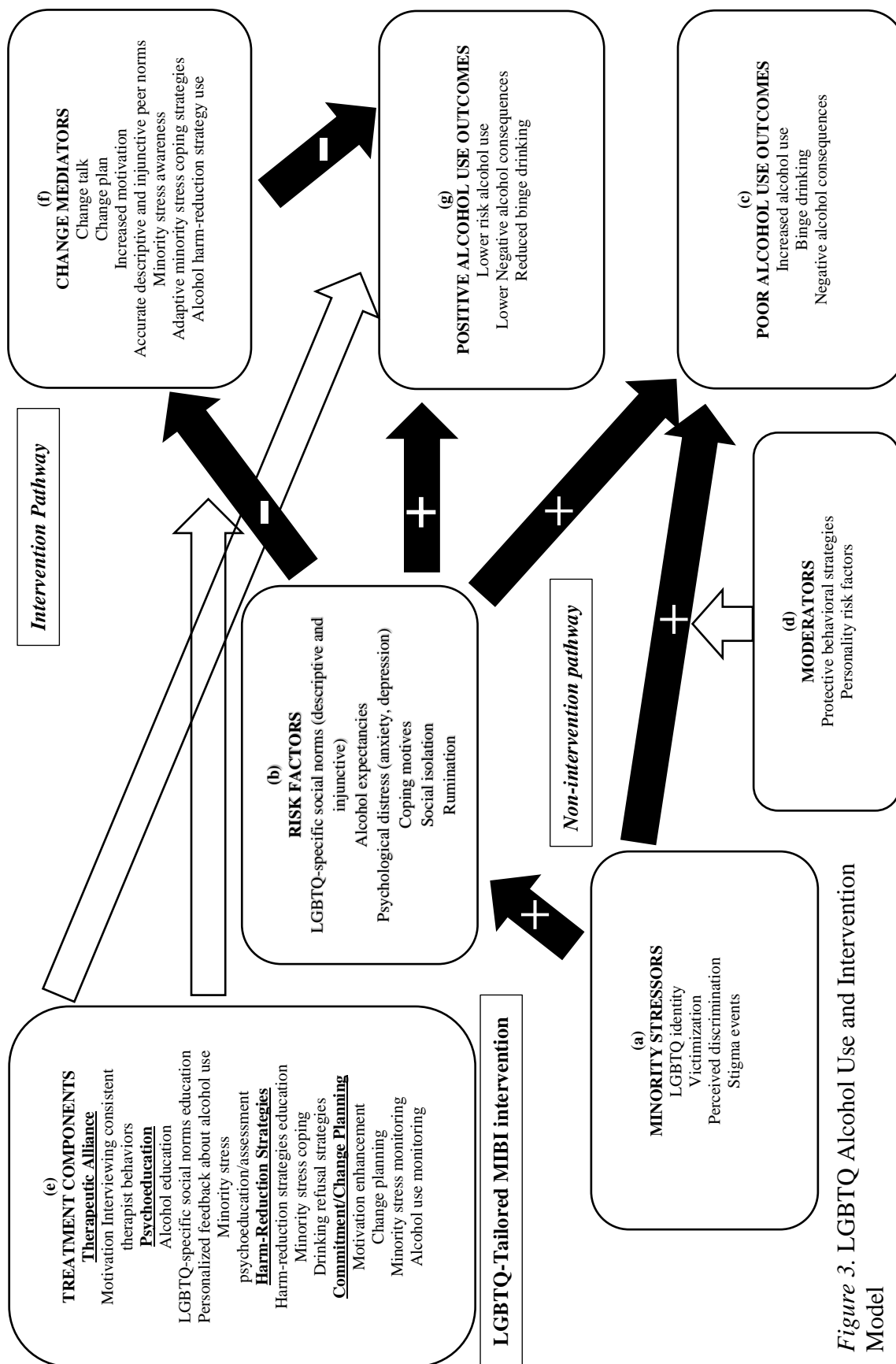


Figure 3. LGBTQ Alcohol Use and Intervention Model

Keyes, Hatzenbuehler, Grant, & Hasin, 2012; Livingston et al., 2016). In LGBTQ populations, evidence shows greater alcohol use is partially or fully mediated by increased psychological distress (defined as depression and anxiety symptoms) (Livingston et al., 2016; Marshal et al., 2013; Lewis et al., 2016). Lewis and colleagues (2016), using a path model, demonstrated that increased distal minority stress was related to higher drinking through two independent indirect paths of increased social isolation and rumination. Increased social isolation and rumination were then linked to increased psychological distress, which was then predictive of coping motives.

It is important that the intervention seems to reduce anxiety and generalized distress, as the research above shows that these are important mediators of alcohol use outcomes. Importantly, interventions such as BASICS (Dimeff et al., 1999) do not contain a component that targets generalized distress. The addition of DBT skills in DISCUSS may have aided participants in coping with generalized distress and therefore resulted in this change.

Unfortunately, outcome measures of average number of drinks per week, alcohol problems (as measured by the RAPI, AUDIT), positive alcohol expectancies, and minority stress measures were not reduced by a statistically significant level, though these measures trended downward. Though not statistically significant, trends were toward reductions in alcohol-related problems (Centers for Disease Control and Prevention, 2021) and average number of drinks per week (see Table 1 for outcome measure averages by group membership and overall). There are many possible reasons why these trends failed to reach statistical significance. The most obvious is the smaller-than-expected sample size ($n = 19$ compared to expected sample size of $n = 48$ based on

Table 1.

Dependent Variable Means and Standard Deviations by Identity Group

Measure	Cisgender Participant (<i>N</i> = 15)	Transgender/Non-binary/Genderqueer Participant (<i>N</i> = 4)	Overall (<i>N</i> = 19)
Drinks Per Week (DNRF)			
Time 1 (<i>N</i> = 19)	8.33 (6.49)	8.75 (5.38)	8.42 (6.13)
Time 2 (<i>N</i> = 19)	5.87 (4.81)	7.25 (4.50)	6.16 (4.66)
Problem Drinking (AUDIT)			
Time 1 (<i>N</i> = 19)	7.13 (4.67)	8.75 (3.50)	7.47 (4.41)
Time 2 (<i>N</i> = 19)	5.67 (3.62)	7.25 (5.91)	6.00 (4.06)
Alcohol Expectancies (BCEOA)			
Time 1 (<i>N</i> = 19)	2.78 (0.34)	2.98 (0.28)	2.83 (0.33)
Time 2 (<i>N</i> = 19)	2.82 (0.49)	2.57 (1.06)	2.77 (0.62)
Depression (DASS-D)			
Time 1 (<i>N</i> = 19)	4.93 (3.26)	7.00 (3.74)	5.37 (3.37)
Time 2 (<i>N</i> = 19)	3.20 (3.10)	7.00 (2.71)	4.00 (3.35)
Anxiety (DASS-A)*			
Time 1 (<i>N</i> = 19)	4.73 (3.75)	6.25 (2.50)	5.05 (3.52)
Time 2 (<i>N</i> = 19)	2.87 (2.07)	4.75 (1.71)	3.26 (2.10)
Stress (DASS-S)**			
Time 1 (<i>N</i> = 19)	8.27 (3.88)	11.75 (4.99)	9.00 (4.24)
Time 2 (<i>N</i> = 19)	5.13 (3.74)	7.25 (2.87)	5.58 (3.61)
Alcohol Problems (RAPI)			
Time 1 (<i>N</i> = 19)	5.07 (4.07)	4.50 (2.52)	4.95 (3.73)
Time 2 (<i>N</i> = 19)	2.53 (3.40)	4.25 (3.30)	2.89 (3.36)
Drinking Norms (Drinks Per Week)*			
Time 1 (<i>N</i> = 19)	8.27 (5.20)	7.00 (4.08)	8.00 (4.91)
Time 2 (<i>N</i> = 19)	6.60 (3.50)	2.75 (2.63)	5.79 (3.65)

Measure	Cisgender Participant (<i>N</i> = 15)	Transgender/Non-binary/Genderqueer Participant (<i>N</i> = 4)	Overall (<i>N</i> = 19)
Vigilance (DHEQ)			
Time 1 (<i>N</i> = 19)	2.07 (0.78)	1.83 (0.33)	2.02 (0.71)
Time 2 (<i>N</i> = 19)	1.96 (0.79)	1.79 (0.63)	1.92 (0.74)
Harassment/Discrimination (DHEQ)+			
Time 1 (<i>N</i> = 19)	1.71 (0.89)	2.95 (1.62)	1.97 (1.15)
Time 2 (<i>N</i> = 19)	1.79 (0.89)	2.00 (1.34)	1.82 (0.96)
Gender Expression (DHEQ)			
Time 1 (<i>N</i> = 19)	1.34 (0.42)	3.08 (1.66)	1.71 (1.06)
Time 2 (<i>N</i> = 19)	1.17 (0.30)	2.92 (1.38)	1.54 (0.96)
Parenting (DHEQ)			
Time 1 (<i>N</i> = 19)	1.08 (0.19)	1.04 (0.08)	1.07 (0.17)
Time 2 (<i>N</i> = 19)	1.02 (0.09)	1.00 (0.00)	1.02 (0.08)
Victimization (DHEQ)			
Time 1 (<i>N</i> = 19)	1.05 (0.19)	1.06 (0.13)	1.05 (0.18)
Time 2 (<i>N</i> = 19)	1.05 (0.19)	2.00 (2.00)	1.25 (0.92)
Family of Origin (DHEQ)			
Time 1 (<i>N</i> = 19)	1.58 (1.00)	1.25 (0.32)	1.51 (0.90)
Time 2 (<i>N</i> = 19)	1.64 (1.22)	1.92 (1.14)	1.70 (1.18)
Vicarious Trauma (DHEQ)+			
Time 1 (<i>N</i> = 19)	3.64 (0.96)	4.67 (0.56)	3.89 (0.96)
Time 2 (<i>N</i> = 19)	3.29 (1.09)	4.54 (0.92)	3.55 (1.16)
Isolation (DHEQ)			
Time 1 (<i>N</i> = 19)	2.42 (1.37)	2.63 (1.60)	2.46 (1.38)
Time 2 (<i>N</i> = 19)	2.52 (1.21)	3.06 (1.60)	2.63 (1.28)
HIV/AIDS (DHEQ)			
Time 1 (<i>N</i> = 19)	1.41 (0.59)	1.08 (0.17)	1.34 (0.54)
Time 2 (<i>N</i> = 19)	1.22 (0.31)	1.13 (0.25)	1.20 (0.29)
Acceptability of Intervention (AIM)*	4.03 (0.52)	4.75 (0.50)	4.18 (0.58)
Feasibility of Intervention (FIM)	4.13 (0.58)	4.50 (0.46)	4.21 (0.57)
Appropriateness of Intervention (IAM)	3.90 (0.65)	4.44 (0.43)	4.01 (0.64)

Note: Main effect: * $p < .05$, ** $p < .01$

Interaction: + $p < .05$, ++ $p < .01$

a-priori power analyses). The smaller than expected sample size was due to premature suspension of data collection due to COVID-19 pandemic as described above.

Another possible reason for the lack of significant reduction in drinking behavior and drinking problems/consequences is that the intervention was missing intervention components that are key to influencing mediators of drinking behavior in LGBTQ populations. Though the intervention design made every effort to include intervention components likely to affect change in drinking behavior, it should be noted that strong evidence of the necessary components of a motivational interviewing-based intervention is currently lacking (see the above review of the MIBI literature on pp. 21-25). In addition, even less research was found to identify the necessary treatment components of an intervention that reduces minority stress and substance use in LGBTQ populations (see the above review of the LGBTQ-specific and tailored interventions literature on pp. 33-36). Future research should focus on examining both the necessary components MIBIs as well as LGBTQ-tailored interventions for reducing alcohol use.

Significant interactions emerged for perceived harassment/discrimination and victimization experiences, with transgender/non-binary/genderqueer participants showing significantly greater reductions in perceived harassment/discrimination but increases in victimization-related distress compared to cisgender participants. A likely reason for this observed outcome is spurious effects due to low sample size in the transgender/non-binary/genderqueer group, with sample size too small for meaningful and powerful comparisons. However, it is also possible that the cisgender study sample included a high number of individuals identifying as bisexual ($n = 8$). In Balsam and colleagues (2013) original DHEQ research, bisexual individuals reported significantly lower perceived

harassment/discrimination experiences compared to gay and lesbian participants, though transgender group norms were not reported due to low *Ns*. Research has, however, documented high rates of self-reported discrimination and victimization of transgender individuals (Clements-Nolle et al., 2006; Kenagy & Bostwick, 2005, Beemyn & Rankin, 2011). Consistent with this, transgender/non-binary/genderqueer participants in this study reported a much higher level of distress from harassment/discrimination compared to cisgender individuals. Transgender/non-binary/genderqueer participants may have had more opportunities to use skills learned in DISCUSS to reduce these experiences or their impact. These results are important, because few interventions have targeted reductions in minority stress for this group. This shows that there is promise for the ability of interventions such as DISCUSS to reduce minority stress burden from harassment and discrimination for this population.

Increases in victimization-related distress for transgender/non-binary/genderqueer participants may have been driven again by spurious effects. Another possible explanation, however, is the higher self-reported victimization experiences in this group. Given that all of the items on the DHEQ Victimization subscale meet the threshold for a Criterion A trauma (American Psychiatric Association, 2013), a two-session intervention such as DISCUSS may have been insufficient to reduce distress related to these experiences.

Overall, acceptability, feasibility, and appropriateness ratings were high (AIM, FIM, IAM all averaged 'Agree'). This indicates that participants agreed the intervention was acceptable, was seen as feasible to implement in everyday settings, and was seen as appropriate. A significant interaction effect did emerge for acceptability, indicated greater

acceptability ratings for transgender/nonbinary/genderqueer participants. This is also important, as few interventions have targeted drinking and minority stress burden in these populations. These ratings indicate that the DISCUSS intervention can be built upon to further address the burden of minority stress and drinking in these populations. Future iterations of the intervention should also consider the major themes that emerged in the qualitative analysis; participants would generally appreciate more inclusive language, discussions of managing other types of stress that may contribute to increased alcohol use, and LGBTQ mentorship opportunities. Indeed, these themes may be important to address given that research shows general psychological distress affects drinking outcomes (Geisner et al., 2004; Keyes et al., 2012; Livingston et al., 2016). Both Hatzenbuehler (2009) and Meyer (2003) also highlight the importance of generalized distress in affecting mental health outcomes. Future iterations of DISCUSS could therefore present the minority stress coping skills as generalized coping skills that can be applied to multiple types of stress and ask participants for their most important stressors. The skills could then be taught using these stressors most relevant to the participant as examples. In addition, social isolation has emerged as a predictor of drinking outcomes in LGBTQ populations (Lewis et al. 2016, Lehavot & Simoni, 2011). Future iterations of the DISCUSS program should also include discussion of local resources to connect with LGBTQ mentorship and find other LGBTQ people in a non-substance focused environment (Birtel, et al., 2017; Heffernan, 1998).

Another important aspect of the findings is how easily this manualized treatment was administered with fidelity by graduate student researchers. The high adherence ratings reflect the ease of use of the manual, which is promising for its adoption in real-

world settings. During coding of the audiotapes, it was evident that deviations from the protocol were overwhelmingly due to variability in the presentation of applicants. For instance, some sessions focused more on alcohol education, feedback, and increasing motivation for change due to participants' high alcohol use. For other participants, alcohol use was low, and sessions primarily focused on discussing and teaching skills for managing minority stress. The flexibility of the protocol is important for settings in which participants' alcohol use and minority stress burdens may vary significantly. It is possible that a unified protocol could be developed for a general population, retaining the DBT stress coping skills and including language for applying these skills to minority stress for sexual and gender minority individuals.

Strengths, Limitations, and Future Directions

The main strength of this study is the use of a culturally tailored approach. Evidence tends to support culturally tailored approaches over research seeking to extend existing interventions as-is to minority populations (Benish, et al., 2011; Griner & Smith, 2006; Sundell et al., 2016). The high acceptability, feasibility, and appropriateness ratings, as well as the qualitative feedback from participants, demonstrates that interventions such as DISCUSS may be better able to address the unique needs of LGBTQ populations and engage these target populations more than approaches that are not culturally tailored. The solicitation of qualitative feedback was also valuable and gives the DISCUSS intervention feedback for the next iteration of this protocol.

The main limitations of the study were the smaller-than-expected sample size, as well as a lack of evidence for mediators and moderators of LGBTQ substance use. Future research should first seek to validate the LGBTQ Alcohol Use and Intervention Model on

which the DISCUSS intervention is based using a large, population-based sample. Stronger evidence for the mediators and moderators of LGBTQ alcohol use would allow modifications to the DISCUSS intervention to be truly evidence-based. Advances in LGBTQ-tailored minority stress reduction interventions will also allow for refinement of the minority stress reduction component of DISCUSS (e.g. Cohen, Norona, Yadavia, & Borsari, 2020). When a truly evidence-based theoretical framework is identified, the next step in this research would be a larger pilot of the modified DISCUSS intervention.

Key Implications and Conclusions

This pilot study indicates that the DISCUSS intervention shows promise for reducing generalized distress and correcting distorted norms of alcohol use in the LGBTQ community (an important mediator of alcohol use). While this is promising, the fact that the intervention did not significantly reduce overall alcohol use and alcohol-related consequences indicates that the DISCUSS protocol should be amended. Modifications should include a stronger focus on evidence-based components of existing MIBIs such as drinking refusal strategies and motivation enhancement for reducing alcohol use. In addition, qualitative feedback from participants also indicates that the intervention should also include feedback and discussion about marijuana use. The intervention's approach of combining targeted, culturally adapted alcohol reduction components with targeted strategies to reduce minority stress burden, is a unique approach and should be further refined to better target these outcomes based on the available evidence. The results from this study also highlight the continuing need for research to identify the mediators and moderators of alcohol and other substance use in LGBTQ populations, and the intervention components that can target these important links between LGBTQ identity and higher rates of alcohol and other substance use.

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