# EXPLORING ONLINE HETEROSEXIST DISCRIMINATION USING MEYER'S MINORITY STRESS MODEL

by

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**A Thesis**

*Submitted to the Faculty of Purdue University*

*In Partial Fulfillment of the Requirements for the degree of*

**Master of Science**

Department of Psychology at IUPUI

Indianapolis, Indiana

December 2022

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*Dedicated to my parents, Paige and Tom, as well as my late brother, Tristan. I love you.*

## ACKNOWLEDGEMENTS

I would like to express my deepest gratitude for my mentor, Dr. Tamika Zapolski, for her assistance in developing a project that I am proud of and that accurately reflects my abilities.

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# ABSTRACT

**AIM** People with marginalized sexual orientations experience mental health and substance use problems at a higher rate compared to heterosexuals. Experiences of discrimination have been identified as a significant factor in explaining such disparities, and a growing body of literature has developed seeking to explore the contexts in which discrimination occurs. However, one context that is understudied is the online environment. Based on Meyer's (2003) Minority Stress Model (MSM), it is postulated that specific proximal group-specific processes mediate the relationship between discrimination and health outcomes, with other social factors providing protective effects. However, research is sparse empirically investigating different mechanisms, consequences, and potential modifying factors for sexual minority young adults experiencing online heterosexist discrimination (OHD). Thus, the current study aims to explore experiences of OHD among young adults. **METHODS** Using the MSM as a guiding framework, the study examined proximal factors of internalized heterosexism, online concealment, and rejection sensitivity as mechanisms underlying the effect of OHD on health outcomes and online social support as a moderating factor. 383 young adults (18-35) with marginalized sexual orientations were recruited from an introductory psychology subject pool, two online crowdsourcing platforms (Prolific, MTurk), and the community. They completed measures of OHD, online social support, online concealment, rejection sensitivity, internalized heterosexism, psychological distress, and substance use. **RESULTS** Path analyses in Mplus revealed that two proximal stressors (rejection sensitivity, sexual orientation concealment) were positively related to psychological distress as a result of OHD. Sexual orientation concealment was associated with increased risk for cannabis use due to OHD. Online social support from LGBTQ+ peers did not buffer these relationships. **CONCLUSION** The MSM is a viable guiding framework in exploring OHD. Rejection sensitivity and online sexual orientation concealment are important constructs to consider for future research and may be ideal treatment targets for individuals experiencing psychological distress or engaging in cannabis use due to OHD.

# INTRODUCTION

Discrimination based on sexual orientation, similar to other marginalized identities such as race (e.g., (Carter et al., 2017), is associated with a several consequences, especially regarding mental illness and substance misuse (Bostwick et al., 2014; Huebner et al., 2004; McCabe, 2003; McCabe et al., 2010). Further, heterosexist discrimination is a pervasive problem. It occurs across a variety of contexts, from the workplace to the therapy office (Badgett et al., 2009; Pollitt et al., 2018; Shelton & Delgado-Romero, 2013). For example, adolescents with marginalized sexual orientations often report experiencing harassment and bullying because of their sexual orientation both inside and outside of school (Pollitt et al., 2018). It has also been documented that adults with marginalized sexual identities report experiencing both verbal and behavioral (e.g., being excluded/ignored, receiving poor service, and hostile gestures) discrimination at least twice per week, from multiple sources including teachers, neighbors, acquaintances, strangers, and employers (Swim et al., 2007). These are only a few of the ways in which those with marginalized sexual identities experience discrimination.

However, a context that has been unexplored, particularly among young adults, but has the potential to be a high-risk setting for harassment and discrimination in the online environment (Näsi et al., 2016). This context is especially concerning for young adults with marginalized sexual orientations, given that this group, in general, is online and uses social media more often than heterosexual young adults (Seidenberg et al., 2017). As a result of this gap in the literature, the current study aims to examine online heterosexist discrimination (OHD) among sexual minority young adults and the process by which this form of discrimination impacts health outcomes among sexual minority individuals to develop a more comprehensive understanding of the risk process within this specific context. The study examined the potential protective effect of social support to better understand what may buffer the risk posed by discrimination experienced within the online context. In the next section, I provide broader context on the current literature on heterosexist discrimination and health outcomes among sexual minority individuals, research to date on online discrimination and health outcomes, and discuss a theoretical framework for understanding the risk process for OHD, as well as potential protective factors, on health outcomes among sexual minority individuals.

## Heterosexist Discrimination and Mental Health/Substance Use Outcomes

Those with marginalized sexual orientations experience mental illness and substance use at a higher rate compared to their non-marginalized, heterosexual counterparts (McCabe et al., 2010; Meyer, 2003). Research seeking to delineate potential causes for such disparities has focused on experiences of discrimination as a possible causal mechanism by which those with marginalized sexual identities experience elevated rates of mental illness. For example, a study by Mays and Cochran (2001) using data collected from the MacArthur Foundation National Survey of Midlife Development in the United States (MIDUS) demonstrated that gay and bisexual adults reported more experiences of discrimination than heterosexual adults and that such reports of discrimination were associated with increased likelihood of psychiatric diagnosis and poorer quality of life. Further, extant research has established associations between experiences of discrimination and greater risk for psychological distress among those with marginalized sexual identities (Bränström & Pachankis, 2018; Chae et al., 2010). For example, a study of 1,248 gay and bisexual men from 1996 to 1997 revealed that verbal harassment and institutional discrimination were associated with poorer self-esteem and that discrimination and physical violence were associated with increased suicidal ideation among this group of male participants (Huebner et al., 2004).

The negative consequences of heterosexist discrimination extend to substance use as well. For example, a study by Slater et al. (2017) analyzed data from 1,351 participants with marginalized sexual orientations as a part of the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) Wave 3 study between 2012 and 2013. The authors found that experiences of heterosexist discrimination were associated with increased odds of meeting the criteria for any substance use disorder as well as alcohol use disorder in the past twelve months. Further, the authors found that discrimination was associated with increased odds of exceeding weekly drinking limits (according to the Alcohol Use Disorder and Associated Disabilities Interview Schedule—DSM-5 Version [AUDADIS-5] criteria) among bisexuals, and increased odds of meeting criteria for nicotine use disorder among Hispanic participants with marginalized sexual orientations. Similarly, a study by McCabe et al. (2019) found that those with marginalized sexual orientations were at an increased risk of meeting the criteria for severe alcohol use disorder, and that this risk increased in proportion to the chronicity of discrimination experienced. Lastly, a study by Bränström and Pachankis (2018) found that, among a sample of 1,673 lesbian, gay, and bisexual Swedish participants in the cross-sectional Swedish National Public Health Survey, discrimination at least partially explained elevated risk for substance use, psychological distress, and co-occurring substance use and psychological distress. In particular, gay men and lesbians were at an elevated risk for risky alcohol and cannabis use, as well as daily tobacco use compared to heterosexuals. In summary, heterosexist discrimination has been widely implicated in the mental health disparities that those with marginalized sexual orientations face. As such, it is necessary to understand the specific contexts in which heterosexist discrimination impacts health outcomes for sexual minority individuals, in addition to the process by which this risk occurs.

## Heterosexist Discrimination in the Online Context

Previous research on heterosexist discrimination has explored its effects in a variety of contexts. For example, one standard measure of heterosexist discrimination asks participants to indicate whether they experienced discrimination in a particular setting, such as within a family, at school, at work, at home, in accessing medical care, in getting a job, or on the street or other public setting (Krieger & Sidney, 1997). Indeed, some research indicates that the form and type of heterosexist discrimination are essential when assessing its effects, such as distinguishing between incivility to outright hostility (Woodford et al., 2013). Further, the Internet may serve as a particularly problematic context in which those with marginalized sexual orientations are at risk because young adults with marginalized sexual orientations use the Internet more often than their peers, which could increase risk for exposure to OHD (Seidenberg et al., 2017). Participating in anonymous online spaces appears to differentially increase risk for negative cybervictimization-related outcomes as well as cybervictimization and OHD in general (Kowalski et al., 2014; Nick et al., 2018).

Online experiences of victimization, regardless of the discriminatory nature of the experience, have been associated with negative outcomes, such as increased depression symptoms and low self-esteem (Nick et al., 2018). Further, there is a limited but growing body of research attempting to establish the relationship between OHD and adverse outcomes (Abreu & Kenny, 2018; Chan, 2021; Gámez-Guadix & Incera, 2021; Lam et al., 2019). However, it is difficult to draw strong conclusions regarding OHD because of the many ways in which such experiences are conceptualized, disparity among measurement methodologies, and a primary focus on adolescents.

First, there is a lack of a standard conceptualization of what OHD encompasses. For example, some have focused on specific types of discrimination, such as "cyber-violence" (Mkhize et al., 2020) or “online stalking” (Katz-Wise & Hyde, 2012). While others have attempted to capture a somewhat broader set of experiences by examining "cyberbullying" based on sexual orientation (Lam et al., 2019), this conceptualization is also limiting because cyberbullying has been explored solely in relation to bullying that occurs offline (Gradinger et al., 2012). For example, some have conceptualized cyberbullying as any traditionally offline bullying behavior taking place in an online context without considering the novel ways in which the online context may enable victimization (Kahle, 2020). Further, some researchers examine cyberbullying without explicitly specifying a heterosexist basis, further limiting the ability of researchers to draw conclusions about the specific nature of the cyberbullying experiences among those with marginalized sexual orientations (Ash-Houchen & Lo, 2018; Desmet et al., 2018; Kahle, 2020). Lastly, some researchers have used the label "online heterosexist discrimination" (OHD) to more broadly capture the type of discrimination experienced (Chan, 2021). Thus, this lack of standard conceptualization of many different forms of sexual orientation victimization is a problem as it has been speculated to lead to limiting the strength of findings in at least one meta-analysis of experiences of victimization among those with marginalized sexual orientations (Katz-Wise & Hyde, 2012).

There is also variability in the measurement of OHD. Some studies rely on the ad-hoc creation of measures of online discrimination (Gámez-Guadix & Incera 2021), which is problematic because it limits the ability of researchers to use a standardized measure, which is crucial to draw consistent conclusions across the literature (e.g., Katz-Wise & Hyde, 2012). Additionally, such scales are not subject to the usual rigorous process of scale development and collection of evidence of reliability and validity (e.g., Boateng et al., 2018). Others have assessed discrimination with a single question about whether any experience of discrimination has occurred (Ash-Houchen & Lo, 2018; Kahle, 2020; Lam et al., 2019). For example, in a study by Gámez-Guadix and Incera (2021) results were dichotomized (no experiences of online discrimination in the past year versus at least one experience of online discrimination in the past year), which limits the ability to examine more nuanced differences in experiences of OHD. Yet, others have adapted existing measures of online discrimination for race (e.g., Chan, 2021) to measure discrimination based on sexual orientation. This method offers advantages compared to ad hoc or single-item measures, as there is at least some established validity and reliability evidence and a more comprehensive method to assess a given construct than a single item. Although, this method still has its limitations because there is often not significant validity and reliability evidence for the adapted measure or the population.

Lastly, most research has focused on examining OHD among adolescents between the ages of 12 and 18 (Ash-Houchen & Lo, 2018, Gámez-Guadix & Incera 2021, Kahle, 2020). Although some research has included young adults, it is generally limited when compared to research that has included only children (Abreu & Kenny, 2018; Hatchel, 2021; Lam et al., 2019). For instance, a PsycInfo search for the terms cybervictimization, cyberbullying, and online heterosexist discrimination paired with the terms LGBTQ, lesbian, gay, bisexual, homosexual, queer, sexual minority, and marginalized sexual orientation yielded 44 results when limiting the search to "adolescents, teenagers, and children" but only 16 results when limiting the search to "young adults, emerging adults, and college students." Thus, it is important to examine OHD specifically among young adults because the dearth of research in the context of the well-established negative outcomes of online victimization among children and adolescents (e.g., Aboujaoude et al., 2015; Nick et al., 2018). One study that included both young adults between the ages of 18 and 24 and adults over the age of 25 found that age significantly moderated the effect of OHD on mental health outcomes, such that young adults were more susceptible to negative effects of such experiences compared to adults (Chan, 2021). As a result of these limitations, more research is necessary to understand the impact of OHD on adverse health outcomes among young adults using measures of OHD with more validity evidence, the mechanisms that may explain the relationship, and potential risk and protective factors within this pathway.

## Minority Stress Model: A Theoretical Framework

One of the most comprehensive and frequently cited models that seek to explain the ostensive mental health disparities between those with and without marginalized sexual orientations is the Minority Stress Model (MSM) developed by Meyer (2003). In proposing the model, Meyer distinguishes between what he calls "distal" and "proximal" minority-related stress processes. Distal stress processes (box d in Figure 1) include perceived prejudice events, which can consist of online discriminatory experiences. In contrast, the proximal stress processes (box f in Figure 1) include stigma-related processes, such as expectations of rejection, concealing one's sexual identity, and internalized self-stigma regarding one's sexual orientation. Meyer (2003) attributed his conceptualization of proximal stressors to work by Lazarus and Folkman (1984), noting the importance of conceptualizing "proximal, subjective appraisal as a manifestation of distal, objective environmental conditions" (pp. 5). Meyer further argues that, in the MSM, distal stressors, when appraised by the individual, become proximal concepts that further impact the individual. The interrelated nature of distal and proximal stressors is highlighted in the fact that the boxes overlap within the MSM. Moreover, work by Hatzenbuehler (2009) integrates group-specific, proximal stress factors and universal, psychological factors as mediators between distal stressors and mental health outcomes. Thus, it is plausible that proximal stress processes may serve as mediators between distal stress processes and health outcomes among sexual minority individuals.

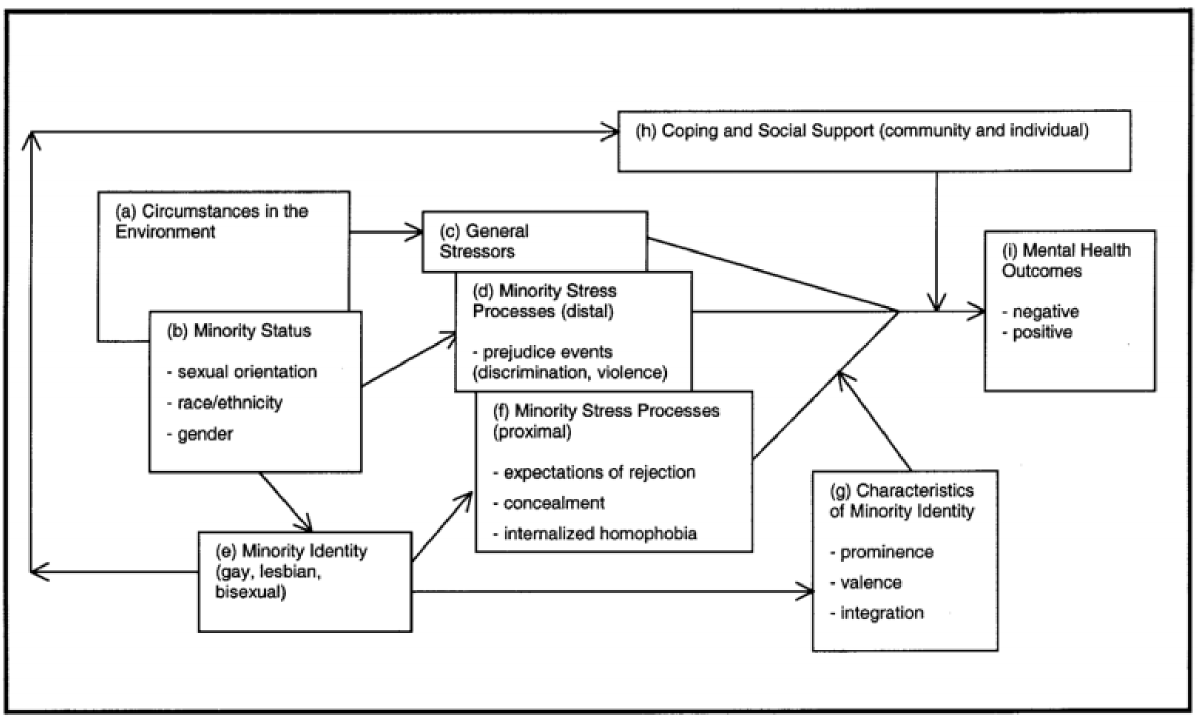


Figure 1. Meyer's Minority Stress Model.

Another key component is that the MSM considers protective factors (box h in Figure 1), such as coping strategies and social support, which could influence the effect that stressors have on mental health outcomes (box i in Figure 1). For example, recent research has investigated the potential impact of social connectedness within the LGBTQ+ community as a protective factor in this process (e.g., Feinstein et al., 2017). Concerning OHD, some research has also explored the potential for online communities to serve as protective factors against adverse mental health outcomes among those with marginalized sexual orientations (e.g., Homan et al., 2014; Saha et al., 2019). In fact, in a study of Dutch youth between the ages of 16 and 24, Baams et al. (2011) found that LGBTQ participants sought out digital media as a way to receive social support. Moreover, a study by Homan et al. (2014) investigated how involvement in TrevorSpace, a social networking site aimed to provide space for LGBTQ+ youth, was related to lower depression symptomatology among a sample of 195 users aged 18-24. Homan et al. (2014) found that greater engagement with the website—as evidenced by a greater number of social connections— was related to lower depressive symptomatology (Homan et al., 2014; Kroenke et al., 2001). This finding has also been supported by other studies suggesting a protective effect of LGBTQ-focused online platforms for LGBTQ+ users (Marciano & Antebi-Gruszka, 2020; Saha et al., 2019). At the same time, at least one study documented that one way in which users with marginalized sexual orientations experienced heterosexist discrimination was when outside users infiltrated online LGBTQ+-affiliated groups and harassed the users (Mkhize et al., 2020). Taken together, these studies indicate that participation in online LGBTQ-focused spaces may serve as a resilience factor within Meyer's MSM but under some circumstances, may pose some risk for experiencing minority stress. Overall, Meyer's MSM provides a comprehensive lens through which one may view types of minority-related stressors that can result in disparate health outcomes among sexual minority individuals, in addition to accounting for the importance of protective factors and relevant environmental factors.

Previous research has pointed to a need to implement the MSM framework in examining OHD because of how it allows researchers to systematically investigate potential mediational pathways, risk factors, and protective factors (Hatchel et al., 2020). Furthermore, researchers can expand on Meyer's MSM by exploring risk and protective factors that are exclusive to the online context. To my knowledge, only one study has examined experiences of OHD among adults utilizing Meyer's MSM (Chan, 2021). In Chan's study, among a sample of 941 participants in Hong Kong, China, who completed a cross-sectional survey, OHD was found to be related to adverse mental, and physical health outcomes beyond offline heterosexist discriminatory experiences and that rejection sensitivity (proximal stressor) and negative affect mediated the relationship. However, the study has several limitations. First, the researchers did not explore risk or protective factors, opening the door for further exploration of potential risk and resilience factors. Second, the researchers only examined one potential proximal stressor in the MSM pathway. Third, the study population was limited to cisgender people with marginalized sexual orientations who resided in China. As sexual orientation and gender are separate constructs, limiting samples by gender makes drawing generalizable conclusions regarding people with marginalized sexual orientations more difficult.

## The Current Study

In light of the pervasiveness of heterosexist discrimination (e.g., Badgett et al., 2009; Pollitt et al., 2018; Rice et al., 2021; Shelton & Delgado-Romero, 2013) and its deleterious effects (e.g., Huebner et al., 2004; McCabe et al., 2019; Meyer, 2003), it becomes clear that research that seeks to elucidate the environments in which discrimination occurs is needed. Although there is a body of research that has thoroughly explored the negative effects of online victimization among children and adolescents (Aboujaoude et al., 2015), less is known about the impacts on young adults, and even less still is known concerning online experiences of discrimination. Given the dearth of research available on the impact and process by which OHD may impact mental health outcomes for young adults with marginalized sexual orientations, research that seeks to address this knowledge gap is paramount. Moreover, from a prevention perspective, it is also necessary to understand what factors may serve as resilience factors to aid in addressing the adverse effects of online discrimination on mental health and other adverse outcomes. Thus, the aim of the current study is to empirically investigate the association between experiences of OHD and mental health outcomes among sexual minority young adults. The MSM guided this study by examining both the direct association of online sexual orientation discrimination (a distal stressor) with mental health and substance use outcomes, as well as proximal stressors (i.e., rejection sensitivity, online sexual orientation concealment, and internalized heterosexism) as potential mechanisms within the pathway. The current study expands upon previous research not only by investigating multiple proximal as possible mechanisms within the risk pathway, but also by investigating online social support as a potential protective factor within the model.

Given the previous literature assessing the relationship between discrimination and negative mental health outcomes, my first hypothesis posited that greater experiences of OHD would be associated with elevated psychological distress (1a), alcohol use (1b), cannabis use (1c), and other drug use (1d).

My second and third hypotheses sought to integrate the MSM by examining the indirect effect of proximal stress factors in the relationship between online discrimination experienced and mental health and substance use outcomes. More specifically, I hypothesized that there would be a significant indirect effect between online discrimination and the outcome variables via two proximal stressors: internalized heterosexism (2a-2d) and rejection sensitivity (3a-3d).

My fourth hypothesis examined online concealment, or behavioral attempts to conceal one's sexual orientation, as an additional mechanism in the pathway (4a-4d). Research on concealment has revealed mixed effects on mental health and substance use outcomes, likely because concealment may protect from exposure to discriminatory experiences while at the same time depriving those with marginalized sexual orientations from social support (Pachankis et al., 2020). As a result, I made no a priori prediction concerning the association concealment would have within the relationship between online discrimination and the health outcomes.

In accordance with Meyer's (2003) MSM and previous research exploring interaction in online LGBTQ+ communities, social support, particularly within online LGBTQ+ communities, could also serve as a key protective factor. As such, my fifth hypothesis proposed that online social support from LGBTQ+ communities would moderate the relationship between online experiences of discrimination and negative mental health and substance use outcomes (5a-5d), such that the effect of discrimination on negative mental health and substance use outcomes directly and through the proposed mediators would be significantly lower with greater social support from online LGBTQ+ communities.

# METHOD

## Participant Characteristics

For the current study, I aimed to recruit 400 young adults between the ages of 18 and 35 identifying as having a marginalized sexual orientation (i.e., lesbian, gay, or homosexual; bisexual or pansexual; asexual; queer; or other). Participants were recruited with flyers in key areas around the Indiana University-Purdue University Indianapolis campus, such as the LGBTQ+ Student Center, as well as from the Psychology Department's student subject pool for the introductory psychology course. Participants were also recruited from Prolific, an online crowdsource site designed for research participation, as well as Amazon's Mechanical Turk (Mturk), an online crowdsource site designed for multiple purposes, including research participation (Palan & Schitter, 2018). Data collection occurred between October 2021 and April 2022.

## Design and Procedure

The study utilized a cross-sectional design to explore experiences of OHD and its relationship with health outcomes among LGBTQ+ young adults. Participants were asked to complete an online questionnaire including measures of OHD, online social support, online concealment, rejection sensitivity, internalized heterosexism, psychological distress, and substance use. After obtaining IRB approval, an online questionnaire was created through Qualtrics that included the study variables. Recruitment occurred through the introductory psychology course at IUPUI. Additionally, flyers were posted throughout campus, allowing eligible participants to access the online questionnaire. The online questionnaire included a validity check, asking participants to list their sexual orientation at the beginning of the survey. If a participant indicated that they were exclusively heterosexual, they were not permitted to continue with the study. Validity checks were included during the data collection process to increase confidence that participants enrolled in the study identified with a marginalized sexual orientation. A screening validity check consisted of asking participants to disclose their sexual orientation and age in a screener before beginning the survey. Participants were requested to enter the same information as a component of the demographic section of the survey. If the answers were discrepant, then the participant was excluded from analysis. In addition to these validity checks, there were also items included to ensure data integrity and consisted of two attention checks throughout the survey where participants were asked to select a specific response within a Likert scale (e.g., “Please select disagree for this question.”), as well as a free-response question at the end of the survey which requested feedback related to the participant’s experience completing the survey. Participants were excluded from the present study’s analysis if they failed both attention checks by selecting an incorrect response option. If responses to the feedback question were off topic, pasted from an Internet source, or otherwise unintelligible, the participant was excluded from the current study’s analysis.

Participants enrolled in the introductory psychology course received course research credit for completing the online questionnaire. Participants not enrolled in the introductory psychology course were entered into a drawing to win one of two $50 (UDS) Amazon gift cards as compensation for their participation. Given that 23 participants were in the community sample who completed the survey and passed validity checks, there was a 2 in 23 chance of winning a gift card. Participants recruited from the Prolific and MTurk samples earned a fixed rate, $4 and $3.50 respectively, as compensation for participating in the study.

A total of 691 survey attempts were submitted to Qualtrics. 310 attempted responses were from the psychology department subject pool, 185 from Mturk, 159 from Prolific, and 37 from the community. Of those response attempts, 429 passed the screening questionnaire and attempted to complete the survey. Of the 429 eligible participants, one response was determined using Qualtrics RelevantID technology to have a high likelihood of being a non-human (i.e., “bot”) response. When comparing survey responses to the screening questionnaire, 41 responses provided inconsistent age and/or sexual orientation information. Lastly, 4 participants failed both attention checks. No free response answers indicated copied or otherwise incomprehensible language. As a result, a final sample of 383 participants were included for study analyses.

## Measures

### Demographics

Participants provided information about themselves, including their age, sex assigned at birth, gender, transgender status, race, ethnicity, sexual orientation, education status, yearly personal income and nationality.

### Experiences of Online Heterosexist Discrimination

Experiences of OHD was measured from an adapted form of the Perceived Online Racism Scale (PORS; Keum & Miller, 2017). The PORS consists of 30 items assessing the frequency of experiences of racial discrimination online using a 5-point Likert scale ranging from 1 (*never*) to 5 (*all the time*). The PORS includes items such as, "Been kicked out of an online group because I talked about race/ethnicity" and "Received posts with racist comments." To adapt the scale, instances where race or racism is referred to was replaced with "sexual orientation" or "heterosexist discrimination." Because the term "heterosexist discrimination" may be misinterpreted, a definition from Merriam Webster's website was provided and the following explanation was added, "The term [heterosexism] is inclusive of discrimination against all non-heterosexual orientations (rather than just homophobia or biphobia)." The internal reliability of the PORS among a sample of people of color was good (Cronbach's alpha = .88). Chan (2021) used three items adapted from the PORS for sexual orientation discrimination and demonstrated acceptable internal validity (Cronbach's alpha = .71). For the current study which implemented a fully adapted version of the measure, there was excellent internal consistency (Cronbach's alpha = .95).

### Online Social Support

Online social support from LGBTQ+ communities were measured using an adapted form of the Online Social Support Scale (OSSS; Nick et al., 2018). The OSSS is a 40-item scale with four subscales assessing different forms of online social support, including esteem/emotional support, social companionship, informational support, and instrumental support. Items are rated using a 5-point Likert scale ranging from 0 (*never*) to 4 (*a lot*) to assess how often a specified event occurred online. The OSSS includes items such as "When I'm online, people give me useful advice." and "People relate to me through things I say or do online." To adapt the scale, instructions were modified to specify that the participant should only consider online interactions with those in the LGBTQ+ community. Subscales on the OSSS indicated excellent internal reliability across two samples, including college students and community (Cronbach's alpha = .95 for esteem/emotional support, .94 for social companionship, .95 for informational support, and .95 for instrumental support members; Nick et al., 2018). However, there is no information on the psychometric properties of the adapted OSSS specifically for LGBTQ+ communities, as the scale has not previously been adapted in such a way. For the current study which implemented a fully adapted version of the measure, there was excellent internal consistency (Cronbach's alpha = .98).

**Online Sexual Orientation Concealment**

Concealment, or active attempts to hide one's sexual orientation, was measured using an adapted form of the Sexual Orientation Concealment Scale (SOCS; Jackson & Mohr, 2016). The SOCS is a six-item measure of how often those with marginalized sexual orientation engage in behavioral attempts to conceal their sexual orientation. Participants rate the six items using a 5-point Likert scale ranging from 1 (*not at all*) to 5 (*all the time*). A total score is derived by averaging individual item responses. The SOCS includes items such as "… concealed my sexual orientation by telling someone that I was straight or denying that I was LGB." and "… avoided the subjects of sex, love, attraction, or relationships to conceal my sexual orientation." To ensure the measure assesses only instances of online concealment of participants sexual orientation, instructions were adapted to indicate to the participant that they should only consider online interactions. Internal reliability was acceptable among two samples of graduate and undergraduate students with marginalized sexual orientations from multiple regions in the United States and Canada (Cronbach's alpha = .79 for the EFA sample, .77 for the CFA sample; Jackson & Mohr, 2016). However, there is no information on the psychometric properties of an adapted SOCS specifically assessing for online concealment of sexual orientation, as the scale has not previously been adapted in such a way. For the current study which implemented a fully adapted version of the measure, there was good internal consistency (Cronbach's alpha = .84).

**Rejection Sensitivity and Internalized Heterosexism**

Rejection sensitivity, or one's fear of potential rejection because of one's sexual orientation, and internalized heterosexism, a form of self-stigma, were measured using the Lesbian, Gay, and Bisexual Identity Scale (LGBIS; Mohr & Kendra, 2011). The LGBIS is a 27-item measure assessing multiple aspects of identity development among those with marginalized sexual orientations. Items are rated using a Likert scale from 1 (*disagree strongly*) to 6 (*agree strongly*). The measure consists of eight subscales: concealment motivation (privacy concerns regarding disclosure of one's sexual identity), identity uncertainty (lack of certainty regarding one's sexual identity), internalized heterosexism (self-stigma surrounding same-sex attraction), difficult process (perceived difficulty of one's sexual identity development), acceptance concerns (fear of potential stigma related to one's sexual identity), identity superiority (view that those with marginalized sexual orientations are superior to heterosexuals), identity centrality (view of one's sexual identity as being a major component of one's overall identity), and identity affirmation (pride surrounding one's sexual identity). A total score is derived by averaging individual item responses for each subscale. For the purposes of this study, the acceptance concerns, and internalized heterosexism subscales of the LGBIS were used to assess rejection sensitivity and internalized heterosexism, respectively. The remaining subscales were excluded from analysis because they are not relevant to the constructs of rejection sensitivity and internalized heterosexism. The two scales include items such as "I can't feel comfortable knowing that others judge me negatively for my sexual orientation" and "I believe it is unfair that I am attracted to people of the same sex." Internal reliability for the acceptance concerns subscale was acceptable among a sample of university students with marginalized sexual orientations from multiple regions in North America (Cronbach's alpha = .77 for the EFA sample, .76 for the CFA sample; Mohr & Kendra, 2011). Internal reliability for the internalized heterosexism subscale was good among the same sample (Cronbach's alpha = .87 for the EFA sample, .86 for the CFA sample; Mohr & Kendra, 2011). For the present study, the acceptance concerns subscale demonstrated good internal reliability (Cronbach's alpha = .81) and the internalized heterosexism subscale demonstrated excellent internal reliability (Cronbach's alpha = .90).

## Psychological Distress

Psychological distress was measured using the shortened form of the Depression Anxiety Stress Scales (DASS-21; Lovibond & Lovibond, 1995). The scale is composed of three subscales assessing depression, anxiety, and stress over the past week. Each subscale is composed of seven questions on a 4-point Likert scale ranging from 0 (*Never*) to 3 (*Almost Always*). The measure includes items such as, “I found it hard to wind down.” and “I couldn’t seem to experience any positive feelings at all.” A total score is derived by summing the items of individual subscales, multiplying the score by 2, and then summing the subscale totals. This allows one to compare the short form DASS-21 scores to the full DASS-42 scores (Lovibond & Lovibond, 1995). The subscales of the DASS-21 show good to excellent internal reliability (Cronbach’s alpha = .88 for the depression scale, .82, for the anxiety scale, and .90 for the stress scale; Henry & Crawford, 2005) as well as the total scale (Cronbach’s alpha = .93; Henry & Crawford, 2005). For the present study, the full scale had excellent internal reliability (Cronbach’s alpha = .95).

## Substance Use

To capture a broad range of substances, use of alcohol, cannabis, and other drugs were assessed. Alcohol Use was assessed using the Alcohol Use Disorders Identification Test (AUDIT; Saunders et al., 1993). The AUDIT is a 10-item measure designed to assess hazardous and harmful alcohol use. It includes items that ask about quantity of use as well consequences of alcohol misuse, such as blackouts or withdrawal symptoms. Its internal reliability is excellent according to its initial validation study (Cronbach’s alpha = .93; Saunders et al., 1993). For the present study, the AUDIT had good internal reliability (Cronbach’s alpha = .88). Cannabis Use was assessed using the Cannabis Use Disorders Identification Test-Revised (CUDIT-R; Adamson & Sellman, 2003). The CUDIT-R is an 8-item measure designed to assess hazardous and harmful cannabis use. It includes items that ask about quantity of use, as well as consequences of misuse, such as problems with concentration and withdrawal symptoms. Its internal reliability is excellent according to its initial validation study (Cronbach’s alpha = .91; Adamson & Sellman, 2003). For the present study, the CUDIT-R had good internal reliability (Cronbach’s alpha = .87). Other Drug Use was assessed using the Drug Use Disorders Identification Test (DUDIT; Berman et al., 2005). The DUDIT is an 11-item measure of harmful and hazardous substance use that includes all drugs aside from alcohol. The indication that cannabis is included as an eligible substance in the measure were removed for the current study because such was already be assessed with the CUDIT-R. It includes items that measure the quantity of other drug use, as well as consequences of misuse of other drugs, such as harm to oneself or others and withdrawal symptoms. Its internal reliability is good according to its initial validation study (Cronbach's alpha = .80; Berman et al., 2005). A recent review of evidence surrounding the psychometric properties of the DUDIT showed that its internal consistency is often better than in its validation study, with most reporting a Cronbach's alpha greater than .90 (Hildebrand, 2015). For the present study, the DUDIT demonstrated excellent internal reliability (Cronbach's alpha = .93).

## Data Analyses

### Data Diagnostics

The distribution for study variables was assessed grossly by viewing scatterplot and histogram representations of the data as well as by reviewing skewness and excess kurtosis values. The AUDIT variable had a positive skewness of 2.457 and an excess kurtosis value of 8.597. The DUDIT variable had a positive skew of 5.973 and an excess kurtosis value of 42.662. The DUDIT variable was zero-inflated, with 83.24% of participants scoring 0 (i.e., endorsing no other drug use). All other variables had acceptable skewness and kurtosis values and appeared normally distributed graphically.

There are multiple options available to address non-normal distributions of data, including logarithmic transformation, bootstrapping, and robust maximum likelihood estimation, the latter of which avoids making assumptions about the distribution of the data (Hancock & Liu, 2012). Although commonplace, logarithmic transformation can detrimentally affect one's ability to draw meaningful conclusions from the data (Feng et al., 2014). Further, it is plausible that the distribution obtained concerning drug use among the participants in the current study is accurate, and important information could be lost by attempting to artificially change its distribution.

Compared to the maximum likelihood estimation approach, bootstrapping can be more robust to non-normality of continuous data in the generation of standard errors (Nevitt & Hancock, 2001). Although some research has shown that smaller, non-representative samples can result in inflated standard errors when using a bootstrapping approach, this has not been shown to be the case in samples of at least 300 (Hancock & Liu, 2012; Ichikawa & Konishi, 1995). As a result, an approach incorporating maximum likelihood estimation and bootstrapping for standard error estimation was chosen to handle the non-normal distributions in the present study.

**Path Analysis**

To examine the five study hypotheses, a path analysis approach was used. Data were analyzed in Mplus (Mplus Base Program, Version 8.8). I created a path analysis model examining 1) the direct and total effect of OHD on the four outcome variables (alcohol use, cannabis use, other drug use, and psychological distress), 2) the mediating role of internalized heterosexism, rejection sensitivity, and online concealment in parallel, and 3) online social support as a moderator in the model, operating on the a-path between the predictor variable and the mediators, the b-path between the mediators and the outcome variables, and the c-path between the predictor and the outcome variables. Six common fit indices were used to examine the fit of the data to the model: chi-square index with a degrees of freedom ratio (Kline, 2015; Ullman, 1996); the comparative fit index (CFI; Bentler, 1990); the Tucker-Lewis Index (TLI; Tucker & Lewis, 1973); the root mean squared error of approximation (RMSEA; Browne & Cudeck, 1992; Steiger, 1980); and the standard root mean squared residuals (SRMR; Bentler, 2006; Jöreskog & Sörbom, 1981). Based on the recommendations of Hu and Bentler (1999) the size of my model, and using a maximum likelihood estimating procedure, a chi-square to degrees of freedom ratio less than 2.0, a CFI of at least .90, a TLI of at least .90, a RMSEA less than .06, and SMSR less than .08 together would indicate a good fit between my hypothesized model and the data.

A path analysis was conducted to explore the relationships between the variables in the study. Intervariable correlations can be found in Table 5 in the Appendix. A parallel mediation model was constructed wherein OHD (independent variable) predicted psychological distress, alcohol use, cannabis use, and other drug use (focal outcomes). Rejection sensitivity, online sexual orientation concealment, and internalized heterosexism were included as parallel mediators within the pathway between the independent variable and the focal outcomes. Standard error estimates for parameter values were obtained based on 10,000 bootstrap resamples. Significance of target parameter estimates was established based on p-values of < .05. Indirect effect estimates were tested using bootstrapped 95% confidence intervals. Significance of indirect effects was established if the confidence interval did not include 0. I also constructed a moderated mediation model wherein online social support from those within the LGBTQ+ community was explored as a moderator acting on all pathways in the parallel mediation model. All models included recruitment source and age as covariates.

**Power Considerations**

An a priori analysis was carried out using G*Power 3.1 (Faul et al., 2007) examining the effect of five predictor variables (OHD, online concealment, rejection sensitivity, internalized heterosexism, and online social support) in the multiple linear regression analyses model (alpha=.05 and power=.80). The projected sample sized needed to detect a medium effect ($f^2 = .15$) is N=55 and for a small effect is ($f^2= .02$), the sample size needed is N=395. Cohen's (1992) guidelines for small and medium effect sizes were used. However, due to limitations inherent in the G*Power program, it is not possible to include the effect of the indirect, mediational pathways in the analysis, rendering the analysis inaccurate. One preferred method for carrying out a power analysis for mediation models is to employ a Monte Carlo-based approach (Muthén & Muthén, 2002; Thoemmes et al., 2010). However, such an approach, as described by Muthén and Muthén (2002) requires an estimation of population characteristics based off previous research or pilot data. As research examining the associations outlined earlier is sparse and pilot data has not been collected, adopting the Monte Carlo estimation approach is not viable for the current study. However, the study by Chan (2021) which utilized the MSM framework to explore OHD, obtained a sample size of 941. As a result, we aimed to obtain a minimum sample size of 400 to have sufficient power to detect a small effect.

After completing data collection, a post-hoc power analysis was conducted to determine my ability to detect significant indirect effects. Schoemann et al. (2017) developed a utility which, when integrated with R, can facilitate estimation of power for indirect effects when data regarding sample size and standardized estimates/variable inter-correlations are provided. Their tool implements a Monte Carlo estimation approach with normally distributed simulation data to generate power estimates for indirect effects (Muthén & Muthén, 2002; Thoemmes et al., 2010). These results must be interpreted with caution, however, because non-normal distributions of variables can produce inaccurate power estimates when normally distributed data is used for simulation (Zhang, 2014). After entering standardized coefficient data, I used Schoemann et al.'s (2017) tool to conduct a Monte Carlo simulation study with 1,000 replications and 20,000 Monte Carlo draws per replication. Results of the power analysis indicated sufficient power (i.e., $1 - \beta \geq .80$) to detect an indirect effect for the psychological distress outcome via rejection sensitivity and online sexual orientation concealment, but not internalized heterosexism. All other estimated power values were below .80, although for the cannabis use outcome, the indirect pathway including online sexual orientation concealment had an estimated power of .80. Full results of the power analysis are displayed in Table 6 in the Appendix.

# RESULTS

## Participant Characteristics

Of the 383 participants in the analytical sample, a majority were from the online participant crowdsourcing platforms Prolific (n = 138) and MTurk (n = 139). The remaining participants were recruited from IUPUI's psychology department subject pool (n = 83) and from community recruitment sources described earlier (n = 23). In terms of sexual orientation, participants predominantly identified as bisexual/pansexual (57%), followed by gay/lesbian/homosexual (19%), multiple or other (15%), asexual (4%), queer (4%), and unsure (2%). Participants were primarily cisgender (75%) and women (64%). The sample was racially homogenous, with 79% of participants identifying as white and 87% indicating that they are not Hispanic, Latino, Latina, or Latinx. Participants had a mean age of 25.4 (*SD* = 5.2). Further participant characteristics are described in Table 1.

Participants used a variety of internet-based platforms to engage with the LGBTQ+ community. On a measure assessing time spent on different platforms communicating with LGBTQ+ people, possible options ranged from 0 (*Never*) to 4 (*A Lot*). They primarily endorsed texting (M = 2.0, *SD* = 1.4) and social media platforms such as Instagram (M = 1.6, *SD* = 1.4), TikTok (M = 1.6, *SD* = 1.6), and YouTube (M = 1.4, *SD* = 1.3) as mediums where they communicated with fellow LGBTQ+ peers. Fewer participants endorsed using gaming platforms, such as online role-playing games (M = 0.5, *SD* = 1.0) or first-person shooter games (M = 0.4, *SD* = 0.9) to interact with the LGBTQ+ community. Further details regarding internet platform use are available in Table 7.

Participants reported experiencing OHD (range: 30-133), with a mean score of 61.3 (*SD* = 21.8) and a median score of 57. The mean in the present study broadly aligns with those from the samples in the initial validation study ($M_{EFA}$: 62.7 [*SD* = 21.1], $M_{CFA}$: 62.9 [*SD* = 21.2]; Keum & Miller, 2017). The three subscale scores, which are calculated by summing responses to their corresponding items and subtracting the mean of total scale score, explored vicarious discrimination, online-mediated exposure to a heterosexist reality, and direct discrimination. Scores on the vicarious subscale ranged from 3.6 to 22.6 and had a mean score of 11 (*SD* = 10.3). Scores on the online-mediated exposure subscale ranged from 9.6 to 50.1 and had a mean score of

24 (*SD* = 9.3). Scores on the direct discrimination measure ranged from 11.7 to 54.1 and had a mean score of 19.8 (*SD* = 8.4). As the measure of OHD has yet to be fully adapted for the present study's population, drawing specific determinations regarding the meaning of scores are difficult, but higher scores generally indicate increased frequency of OHD.

Participants similarly reported receiving support from online LGBTQ+ peers (range: 0-160), with a mean score of 75.9 (*SD* = 31.5) and a median score of 76. The mean in the present study broadly aligns with those of the samples from the initial validation study ($M_{EFA}$: 77.6 [*SD* = 25.6], $M_{CFA}$: 83.4 [*SD* = 27.7]; Nick et al., 2018). There are four subscales assessing different domains of social support that are calculated by summing their corresponding items. The subscales range from 0-40 and include measures of social companionship, informational support, instrumental support, and esteem/emotional support. Means across all four subscales were broadly comparable, though the instrumental support subscale, which includes concepts such as help with homework/projects, financial s The social companionship subscale had a mean of 21.8 (*SD* = 9.3). The informational subscale had a mean of 22.3 (*SD* = 8.8). The instrumental support subscale had a mean of 11 (*SD* = 8.9). And lastly, the esteem/emotional support subscale had a mean of 20.9 (*SD* = 8.9).

Regarding outcome variables, the mean score on the AUDIT was 4.7 (*SD* = 5.8), the mean score on the CUDIT-R was 4.6 (*SD* = 6.6), and the mean score on the DUDIT was 1.2 (*SD* = 4.4)—all of which are below clinical cutoffs and indicate an overall lower level of self-disclosed problematic substance use (Cutoffs: AUDIT = 8, CUDIT-R = 13, DUDIT = 8; Adamson & Sellman, 2003; Berman et al., 2005; Saunders et al., 1993). Further, median values were 3, 1, and 0, respectively. Responses on the DASS-21 measure indicated overall elevated levels of psychological distress (range: 0-62, M = 49.6, *SD* = 28.3, median = 48).

In terms of mediators, participants' scores on a rejection sensitivity measure ranged from 1 to 6, with a mean score of 3.4 (*SD* = 1.3) and a median score of 3.7. The mean in the present study broadly aligns with those of the samples from the initial validation study ($M_{EFA}$ = 3.4 [*SD* = 1.3], $M_{CFA}$ = 3.4 [*SD* = 1.2]; Mohr & Kendra, 2011). Participant reports of internalized heterosexism ranged from 1 to 5.7 (M = 1.8, *SD* = 1.1, median = 1.3) and online sexual orientation concealment scores ranged from 0 to 4 (M = 0.9, *SD* = 0.9, median = 0.7). The mean in the present study broadly aligns with those of the samples from their respective initial validation study (Internalized

Heterosexism: $M_{EFA} = 1.9$ [*SD* = 1.2], $M_{CFA} = 1.2$ [*SD* = 1.2]; Sexual Orientation Concealment: M = 1.5 [*SD* = 0.6]; Mohr & Kendra, 2011; Jackson & Mohr, 2016).

Table 1. Participant Characteristics.

| | |
|---|---|
| **Gender[1], *n* (%) (*n* Answered = 383)** | |
| Woman | 245 (64.0) |
| Man | 73 (19.1) |
| Genderqueer | 9 (2.3) |
| Genderfluid | 9 (2.3) |
| Two-Spirit | 1 (0.3) |
| Agender | 4 (1.0) |
| Unsure | 11 (2.9) |
| Multiple or Other | 31 (8.1) |
| **Sexual Orientation[2], *n* (%) (*n* Answered = 383)** | |
| Bisexual or Pansexual | 217 (56.7) |
| Gay, Lesbian, or Homosexual | 72 (18.8) |
| Asexual | 16 (4.2) |
| Queer | 14 (3.7) |
| Unsure | 7 (1.8) |
| Multiple or Other | 57 (14.9) |
| **Race[3], *n* (%) (*n* Answered = 358)** | |
| White | 282 (78.8) |
| Black | 33 (9.2) |
| Multiracial | 23 (6.4) |
| Asian | 17 (4.7) |
| Native American | 1 (0.3) |
| Middle Eastern/North African | 1 (0.3) |
| Other | 1 (0.3) |
| **Recruitment Source, *n* (%) (*n* Data Available = 383)** | |
| Prolific | 138 (36.0) |
| MTurk | 139 (36.3) |
| Psychology Department Subject Pool | 83 (21.7) |
| Community | 26 (6.0) |

*Note*. All values are rounded to the tenth decimal place. Percentages calculated based on total available responses.
[1]Responses with "other" or >1 Gender category were coded in the "Multiple or Other" category. Those selecting "unsure" were coded as "unsure" regardless of other selection options.
[2]Responses with "other" or >1 Sexual Orientation category were combined in the "Multiple or Other" category. Those selecting "unsure" were coded as "unsure" regardless of other selection options.
[3]Responses with >1 race category were combined in the "Multiracial" category.

## Path Analysis

### Parallel Mediation Model

A parallel mediation model including rejection sensitivity, online sexual orientation concealment, and internalized heterosexism as mediators in the online discrimination to focal outcomes pathway demonstrated perfect fit ($\chi^2(0) = 0$, p = 1; *CFI* = 1.000; TLI = 1.000; *RMSEA* = 0.000; *SRMR* = 0.000. In fact, the model was just-identified, rendering traditional model fit indices uninterpretable. Nonetheless, it is still recommended to explore individual path relationships and reconcile results within a theoretical context when conducting path analyses in MPlus (Ullman & Bentler, 2003). All paths controlled for participant age and recruitment source.

To evaluate my first hypothesis, that there would be a significant, positive total effect between OHD and the outcome variables, I examined the total effect pathways in the model. There was a significant positive total effect of OHD on psychological distress such that reporting a greater number of online heterosexist experiences was associated with reporting higher levels of depression, anxiety, and stress (B = 0.439, SE = 0.068, $p < .001$). However, there was no significant total effect for any of the substance use outcomes (alcohol, cannabis, or other drug use).

To evaluate my second hypothesis, that there would be a significant, positive indirect effect between online discrimination and the outcome variables via internalized heterosexism when controlling for rejection sensitivity and online concealment, I examined path model results and indirect effects. There was not a significant relationship between online heterosexist discrimination and internalized heterosexism, indicating that the a-path between the predictor and mediator was not significant. Further, internalized heterosexism did not have a significant association with any outcome variables. And lastly, there was not a significant indirect effect via internalized heterosexism for any of the outcome variables.

To evaluate my third hypothesis, that there would be a significant, positive indirect effect between online discrimination and the outcome variables via rejection sensitivity when controlling for online concealment and internalized heterosexism, I examined path model results and indirect effects. There was a significant association between OHD and rejection sensitivity (B = 0.017, SE = 0.003, $p < .001$) such that participants reporting higher OHD also reported higher levels of rejection sensitivity. Further, rejection sensitivity had a statistically significant and positive association with psychological distress (B = 4.402, SE = 1.119, $p < .001$), but not with any substance use outcome. Moreover, there was a significant, positive indirect effect via rejection sensitivity on psychological distress (0.073; 95% CI: [0.039, 0.112]). No other significant indirect effects were observed for rejection sensitivity.

To evaluate my fourth hypothesis, that there would be a significant indirect effect between online discrimination and the outcome variables via online sexual orientation concealment when controlling for rejection sensitivity and internalized heterosexism, I also examined path model results and indirect effects. There was a significant association between OHD and rejection sensitivity ($B = 0.007$, $SE = 0.002$, $p = .001$) such that participants reporting higher OHD also reported higher levels of online sexual orientation concealment. Further, there was also a significant association between online concealment and psychological distress, as well as cannabis use ($B = 5.019$, $SE = 1.789$, $p = .005$; $B = 1.468$, $SE = 0.511$, $p = .004$, respectively). No other significant path relationships were found for other substance use variables. Moreover, there was a significant, positive indirect effect via rejection sensitivity on psychological distress (0.037; 95% CI: [0.012, 0.071]) and cannabis use (0.011; 95% CI: [0.003, 0.021]). No other significant indirect effects for online concealment were detected. Remaining unstandardized and standardized indirect effect results are displayed in Table 2. Both unstandardized and standardized path coefficients are displayed in Table 3.

Table 2. Mediation Model: Indirect Effects.

| Effect Pathway | 95% Confidence Interval<br>Estimate | 95% Confidence Interval<br>Standardized Estimate |
|---|---|---|
| **Psychological Distress** | | |
| Total Indirect Effect | **[0.064, 0.159]<br>0.109** | **[0.050, 0.121]<br>0.084** |
| Specific: Rejection Sensitivity | **[0.039, 0.112]<br>0.073** | **[0.030, 0.086]<br>0.056** |
| Specific: Sexual Orientation Concealment | **[0.012, 0.071]<br>0.037** | **[0.009, 0.054]<br>0.028** |
| Specific: Internalized Heterosexism | [-0.008, 0.006]<br>-0.001 | [-0.007, 0.005]<br>-0.001 |
| **Alcohol Use** | | |
| Total Indirect Effect | [-0.016, 0.003]<br>-0.006 | [-0.058, 0.011]<br>-0.024 |
| Specific: Rejection Sensitivity | [-0.017, 0.000]<br>-0.008 | [-0.063, 0.001]<br>-0.030 |
| Specific: Sexual Orientation Concealment | [-0.003, 0.007]<br>0.002 | [-0.011, 0.028]<br>0.008 |
| Specific: Internalized Heterosexism | [-0.003, 0.001]<br>0.000 | [-0.011, 0.005]<br>-0.002 |
| **Cannabis Use** | | |
| Total Indirect Effect | [-0.006, 0.019]<br>0.006 | [-0.018, 0.061]<br>0.020 |
| Specific: Rejection Sensitivity | [-0.014, 0.003]<br>-0.006 | [-0.047, 0.008]<br>-0.018 |
| Specific: Sexual Orientation Concealment | **[0.003, 0.021]<br>0.011** | **[0.011, 0.067]<br>0.035** |
| Specific: Internalized Heterosexism | [-0.002, 0.004]<br>0.001 | [-0.005, 0.014]<br>0.003 |
| **Other Drug Use** | | |
| Total Indirect Effect | [-0.010, 0.003]<br>-0.003 | [-0.045, 0.015]<br>-0.016 |
| Specific: Rejection Sensitivity | [-0.010, 0.002]<br>-0.004 | [-0.046, 0.009]<br>-0.020 |
| Specific: Sexual Orientation Concealment | [-0.001, 0.004]<br>0.001 | [-0.007, 0.019]<br>0.005 |
| Specific: Internalized Heterosexism | [-0.002, 0.001]<br>0.000 | [-0.008, 0.003]<br>-0.001 |

*Note*. Confidence intervals generated with 10,000 bootstrap resamples. Significant results bolded.

Table 3. Mediation Model: Path Coefficients.

| **Outcome**<br>Predictor | *B* | *SE* (*B*) | β | *p* |
|---|---|---|---|---|
| **Psychological Distress** | | | | |
| Online Heterosexist Discrimination (Direct Effect) | **0.330** | **0.071** | **0.255** | **<0.001** |
| Online Heterosexist Discrimination (Total Effect) | **0.439** | **0.068** | **0.339** | **<0.001** |
| Rejection Sensitivity | **4.402** | **1.119** | **0.199** | **<0.001** |
| Internalized Heterosexism | 0.564 | 1.405 | 0.022 | 0.688 |
| Online Sexual Orientation Concealment | **5.019** | **1.789** | **0.153** | **0.005** |
| **Alcohol Use** | | | | |
| Online Heterosexist Discrimination (Direct Effect) | 0.008 | 0.014 | 0.029 | 0.577 |
| Online Heterosexist Discrimination (Total Effect) | 0.002 | 0.013 | 0.006 | 0.906 |
| Rejection Sensitivity | -0.417 | 0.302 | -0.105 | 0.260 |
| Internalized Heterosexism | 0.254 | 0.332 | 0.048 | 0.445 |
| Online Sexual Orientation Concealment | 0.279 | 0.398 | 0.042 | 0.483 |
| **Cannabis Use** | | | | |
| Online Heterosexist Discrimination (Direct Effect) | 0.028 | 0.018 | 0.093 | 0.108 |
| Online Heterosexist Discrimination (Total Effect) | **0.034** | **0.017** | **0.113** | **0.049** |
| Rejection Sensitivity | -0.334 | 0.297 | -0.064 | 0.260 |
| Internalized Heterosexism | -0.515 | 0.394 | -0.084 | 0.190 |
| Online Sexual Orientation Concealment | **1.468** | **0.511** | **0.190** | **0.004** |
| **Other Drug Use** | | | | |
| Online Heterosexist Discrimination (Direct Effect) | 0.022 | 0.014 | 0.111 | 0.129 |
| Online Heterosexist Discrimination (Total Effect) | 0.019 | 0.014 | 0.095 | 0.167 |
| Rejection Sensitivity | -0.236 | 0.206 | -0.070 | 0.252 |
| Internalized Heterosexism | 0.131 | 0.185 | 0.033 | 0.480 |
| Online Sexual Orientation Concealment | 0.143 | 0.208 | 0.028 | 0.492 |
| **Rejection Sensitivity** | | | | |
| Online Heterosexist Discrimination | **0.017** | **0.003** | **0.283** | **<0.001** |
| **Internalized Heterosexism** | | | | |
| Online Heterosexist Discrimination | -0.002 | 0.003 | -0.038 | 0.483 |
| **Online Sexual Orientation Concealment** | | | | |
| Online Heterosexist Discrimination | **0.007** | **0.002** | **0.186** | **0.001** |

**Moderated Mediation**

The moderated mediation model, which examined all interaction terms simultaneously, demonstrated good fit ($\chi^2(9) = 11.006$, p = .275; *CFI* = 0.994; *TLI* = 0.947; *RMSEA* = 0.026; *SRMR* = 0.020). To facilitate interpretation of results as well as the ability of Mplus to conduct the moderated mediation analysis (i.e., avoid out-of-bounds errors due to the large values obtained by generating the interaction terms), age, OHD, online social support, online sexual orientation concealment, rejection sensitivity, and internalized heterosexism were standardized prior to analysis. There was no significant result across any of the indices. Further, there was no significant relationship of any interaction terms on the model variables. Taken together, these results demonstrate that the current study failed to detect a moderation effect. See Table 4 for information regarding the parameter estimates of the interaction terms in the moderated mediation model.

Table 4. Moderated Mediation: Interaction Effects.

| **Model Parameter** Interaction Term | *B* | *SE* | *p* |
|---|---|---|---|
| **Psychological Distress** | | | |
| Online Concealment X Social Support | 0.011 | 0.069 | 0.869 |
| Rejection Sensitivity X Social Support | 0.028 | 0.057 | 0.626 |
| Internalized Heterosexism X Social Support | -0.024 | 0.059 | 0.679 |
| OHD X Social Support | -0.026 | 0.055 | 0.636 |
| **Alcohol Use** | | | |
| Online Concealment X Social Support | 0.030 | 0.057 | 0.606 |
| Rejection Sensitivity X Social Support | 0.024 | 0.051 | 0.632 |
| Internalized Heterosexism X Social Support | -0.007 | 0.045 | 0.868 |
| OHD X Social Support | -0.036 | 0.053 | 0.497 |
| **Cannabis Use** | | | |
| Online Concealment X Social Support | 0.091 | 0.058 | 0.120 |
| Rejection Sensitivity X Social Support | -0.025 | 0.052 | 0.633 |
| Internalized Heterosexism X Social Support | -0.102 | 0.066 | 0.123 |
| OHD X Social Support | -0.025 | 0.050 | 0.615 |
| **Other Drug Use** | | | |
| Online Concealment X Social Support | 0.017 | 0.055 | 0.756 |
| Rejection Sensitivity X Social Support | -0.041 | 0.052 | 0.432 |
| Internalized Heterosexism X Social Support | -0.003 | 0.037 | 0.939 |
| OHD X Social Support | 0.044 | 0.066 | 0.502 |
| **Mediators** | | | |
| Online Concealment: OHD X Social Support | -0.022 | 0.060 | 0.716 |
| Rejection Sensitivity: OHD X Social Support | -0.010 | 0.048 | 0.841 |
| Internalized Heterosexism: OHD X Social Support | 0.025 | 0.056 | 0.649 |

*Note*. Age, Online Heterosexist Discrimination, Online Social Support, Online Sexual Orientation Concealment, Rejection Sensitivity, and Internalized Heterosexism were all standardized prior to analysis.

# DISCUSSION

The current study aimed to generate a better understanding of online experiences of sexual orientation-based discrimination. I sought to better understand the risk pathway between online heterosexist discrimination (OHD) and negative mental health and substance use based on Meyer's (2003) minority stress model (MSM), as well the potential protective factor of social support within the pathway. I expected that OHD would correlate positively with psychological distress and substance use outcomes. I also investigated the role of three mediators– rejection sensitivity, internalized heterosexism, and online concealment – based upon the MSM. I expected that rejection sensitivity and internalized heterosexism would positively mediate the relationship between online sexual orientation discrimination and mental health and substance use outcomes. I further expected that online concealment would mediate the same pathway but made no a priori prediction concerning is directionality. Lastly, I proposed that online social support from others in the LGBTQ+ community would buffer the effect that online sexual orientation discrimination had on psychological distress and substance use outcomes directly and through the proposed mediators.

To investigate my hypotheses, I constructed a parallel mediation model in Mplus using data from a one-time, cross-sectional survey of young adults aged 18-35 with marginalized sexual orientations. I examined the effect of OHD on psychological distress, alcohol use, cannabis use, and other drug use. Second, I explored the role of rejection sensitivity, internalized heterosexism, and online sexual orientation concealment as mediators within the proposed pathway. Lastly, I examined the role of online social support from LGBTQ+ peers as a moderator operating on the a-, b-, and c-paths within the parallel mediation model. See Figure 2 for the complete parallel mediation model. Of note, all paths were analyzed with age and recruitment source included as covariates.

## Mediation Model

My first hypothesis, that OHD would be associated with negative mental health and substance use outcomes while controlling for the mediator variables, was partially supported. More specifically, my results indicated that greater OHD was related to greater psychological distress. This is consistent with previous research establishing a relationship between exposure to discrimination and subsequent mental health difficulties (e.g., Bränström & Pachankis, 2018; Chae et al., 2010; Huebner et al., 2004; Mays & Cochran, 2001). This finding provides support for the claim that the online context is a significant source of discrimination among people with marginalized sexual orientations that is associated with mental health difficulties, which may help in understanding mental health disparities between people with marginalized sexual orientations and heterosexual people. Moreover, the current study builds off previous literature on OHD, such as work by Chan et al. (2021) by demonstrating that OHD impacts those with marginalized sexual orientations when gender diverse individuals are not excluded from such study populations. As a result, the results of the present study are more representative of the demographic makeup of young adults with marginalized sexual orientations, as gender identity and sexual orientation are distinct yet intersectional constructs.

However, inconsistent with previous research on the relationship between sexual orientation discrimination and substance use (e.g., McCabe et al., 2019; Slater et al., 2017), I failed to find a significant direct effect of OHD on any substance use outcome. It is highly likely that I was unable to detect such an effect due to substantially low power for the substance use outcomes (see Table 6). Notably, there was an indirect effect of OHD on cannabis use via online sexual orientation concealment, indicating that there may be some effect of such discrimination on substance use, albeit solely in the context of that mediator given the lack of a direct effect. However, such an interpretation must be made with caution because the pathway described was the only indirect effect amongst the substance use outcome variables for which I had sufficient power (i.e., $\geq 0.8$) to detect an effect. This suggests that power likely influenced my ability to detect an effect for most of the substance use outcomes, aside from one specific pathway for the cannabis use outcome. Further complicating the issue of power is the nonnormal distribution of the alcohol and cannabis use variables. Although a bootstrapping approach has been demonstrated to adequately address nonnormality (Nevitt & Hancock, 2001), there is no way to eliminate uncertainty when interpreting results in the context of nonnormally distributed data.

It is also important to consider the context of the present study when interpreting the lack of significant substance use outcomes. Of special importance is the sample's low rate of self-reported substance use. As discussed earlier, all substance use measure means were below clinical cutoff scores established in their respective validation studies. More specifically, 79.2% of participants scored below the clinical cutoff of 8 on the AUDIT, 87.8% scored below 13 on the CUDIT-R, and

96% scored below 8 on the DUDIT. This low level of problematic substance use means that I may not have been able to detect an effect of OHD or the mediators on the substance use outcomes. Moreover, when examining self-reported quantity of use, responses in the current study revealed consistently low levels of substance use consumption and frequency. For instance, the AUDIT-C, a measure consisting of scores from the first three items of the full AUDIT summed, can be used to create a general index of alcohol consumption (Bush et al., 1998). Bush et al. (1998) suggested a cutoff score of 4 or greater on the AUDIT-C as optimal for identifying people in need of more thorough assessment for harmful substance use. In the current study, when examining the AUDIT-C and similar consumption indexes across substance use measures, consumption was low for the AUDIT (M = 2.97 *SD* = 2.69), CUDIT-R (M = 2.26 *SD* = 2.86), and DUDIT (M = 0.345 *SD* = 1.26). Future research may benefit from exploring these variables among a larger sample or in a sample with higher levels of substance use to determine the mediational impact of the minority stress factors (i.e., rejection sensitivity, sexual orientation concealment, and internalized heterosexism).

Third, the nature of the substance use measures selected could have influenced the present study's findings. Although the AUDIT, CUDIT-R, and DUDIT are commonly used substance use screeners that have been associated with risk for problematic substance use and meeting substance use disorder criteria, they do not capture all the ways in which someone may be impacted by substance use. Although measures like the AUDIT capture some aspects of contextual impact (e.g., work-related problems, harming others), measures such as the Young Adult Alcohol Consequences Questionnaire (YAACQ; Read et al., 2006), Drinker Inventory of Consequences (DrInC; Miller et al., 1995), and the Short Inventory of Problems (SIP; Forcehimes et al., 2007) are sensitive to a much broader spectrum of contextual consequences of alcohol use. For example, the DrInC questionnaire captures the domains of physical (physical symptoms), intrapersonal (mood symptoms), social responsibility (failing others' expectations), interpersonal (relationship harm or loss), and impulse control (impulsive risk-taking behaviors)-related consequences of drinking. It is possible that participants in the present study exhibited low use overall but may experience consequences of use that were not adequately captured by the screeners I used. For instance, nearly 38% of participants reported at least one episode of binge drinking on the AUDIT questionnaire. Research has consistently demonstrated that binge drinking is associated with negative consequences, such as increased risk for physical and sexual assault (Wechsler et al., 1994), both of which are assessed by the DrInC and the YAACQ but not by any of the substance use measures included in the present study.

Put simply, the substance use results derived from the present study must be interpreted with strong caution given the substantially limited power, the relatively low use rates across substances, and the measurement methodology implemented. However, as will be discussed within the mediation findings, there was significant effect observed between OHC, cannabis use, and sexual orientation concealment, which suggests there may be some important paths through which OHC impacts substance use risk among sexual minority young adults.

My second through fourth hypotheses that 1) rejection sensitivity, 2) online sexual orientation concealment, and 3) internalized heterosexism would mediate the relationship between OHD and my focal outcomes were partially supported. First, I found evidence in support of rejection sensitivity—anticipatory fear about potential social rejection related to one's sexual orientation—as a mediator within the proposed risk pathway. Higher reports of OHD were related to elevated reports of rejection sensitivity, and greater reports of rejection sensitivity were related to elevated reports of psychological distress. Further, there was a significant indirect effect such that elevated reports of OHD were related to elevated rejection sensitivity which, in turn, was related to elevated psychological distress.

The above results align with previous research. For instance, experiences of sexual orientation discrimination have been associated with increased rejection sensitivity (Dyar et al., 2018; Feinstein et al., 2012). Another study not focused on heterosexist discrimination specifically found that rejection sensitivity increased as a result of rejection from both parents and peers (Feinstein, 2020). Regarding the impact of rejection sensitivity on various outcomes, one study found that rejection sensitivity was directly associated with increased depression symptoms among gay men (Slimowicz et al., 2020). Another found that possessing multiple concealable, marginalized identities negatively impacted quality of life via anticipated stigma and rumination, demonstrating the far-reaching impacts of rejection sensitivity among a diverse sample of marginalized people (Reinka et al., 2020). Further, a literature review revealed support for the notion that rejection sensitivity is related to increased psychological problems but noted mixed findings when it came to the specific constructs it affects (Garthe et al., 2020). For instance, they described inconsistent findings related to the impact of rejection sensitivity on panic symptoms but noted that it broadly related to increased internalizing disorders, such as depression and anxiety. Interestingly, aside from the limited power in the current study, the finding that rejection sensitivity tends to relate specifically to risk for internalizing disorders may explain why I failed to detect a significant effect related to substance use problems. Substance use disorders are generally conceptualized as externalizing disorders— those evidenced primarily by disruptive, impulsive, and harmful behaviors— which share common biological and genetic underpinnings (Arcos-Burgos et al., 2012). Thus, given that rejection sensitivity appears to primarily result in internalizing symptoms, it could be the case that it simply does not influence substance use or other externalizing disorders; however, some researchers have posited that internalizing symptoms can result in subsequent substance use (e.g., Hussong et al., 2011).

In any case, the finding that rejection sensitivity is related to psychological distress highlights the utility of exploring OHD using Meyer's Minority Stress model as a guiding framework, given that it broadly aligns with what one would expect within the MSM. Further, mental health practitioners may benefit from considering the construct as a treatment target for young adults with marginalized sexual orientations reporting psychological distress, especially if they describe experiences of OHD. For example, a practitioner implementing a cognitive behavioral therapy (CBT) approach with such a client may consider explicitly enquiring about automatic thoughts related to rejection sensitivity, as it could prove to be an impactful target for treatment. Previous research investigating treatments using the MSM as a guiding framework by incorporating psychoeducation about the model and coping strategies related to model-specific constructs have shown some promise in addressing substance use outcomes, at least among gay men (Pachankis et al., 2015).

I also found evidence in support of online sexual orientation concealment—behavioral attempts to conceal one's sexual orientation— as a mediator within the proposed risk pathway. Higher reports of OHD were related to elevated reports of online sexual orientation concealment, and greater reports of online sexual orientation concealment were related to elevated reports of psychological distress. Further, there was a significant indirect effect such that elevated reports of OHD were related to elevated online sexual orientation concealment which, in turn, was related to elevated psychological distress. As discussed earlier, similar results were found for concealment and cannabis use.

Sexual orientation concealment has been associated with impacts on both psychological and physical health beyond effects caused by discrimination alone. Experiences of sexual orientation discrimination have been associated with increased attempts to conceal one's sexual orientation (Dyar et al., 2018). Regarding the impact of sexual orientation concealment on various outcomes, one study of 157 young adults with marginalized sexual orientations found that concealment was related to increased symptoms of Social Anxiety Disorder (Cohen, 2016). Other research has established relationships between concealment and increased depression symptoms (Riggle, 2017), negative affect (Newheiser, 2017), psychological well-being (Huang, 2022; Quinn 2017; Riggle, 2017), as well as physical well-being (Quinn, 2017). Ramos et al. (2021) found that concealment was related to decreased HIV knowledge, decreased health literacy, and deference of HIV-specific healthcare among a sample of men of color with marginalized sexual orientations. Thus, concealment has far-reaching negative impacts on people with marginalized sexual orientations.

Given the results of the present study, it appears that concealment in the online context also contributes to similar adverse outcomes, consistent with previous research on sexual orientation concealment more generally. Within Meyer's (2003) MSM, it is plausible that someone may engage in concealment behavior as a consequence of directly experiencing, witnessing, or anticipating discrimination, in an attempt to avoid further exposure. Interestingly, although people with marginalized sexual orientations may engage in concealment to protect against further potential discrimination, it does not necessarily reduce risk for such experiences (Goh et al., 2019). From a behavioral perspective, concealment functions as an attempt to avoid an aversive stimulus (i.e., discrimination), but as has been documented with anxiety disorders, avoidance of such stimuli may unintentionally increase worry about experiencing similar stimuli in the future (Forsyth et al., 2006). Further, given the prolific nature of OHD and heterosexist discrimination in general, concealment does not necessarily protect against vicarious exposure to discrimination, which has been associated with negative outcomes among college students with marginalized sexual orientations (Woodford et al., 2013). Notably, Pachankis (2007) posited that numerous cognitive (e.g., increased vigilance for potential discriminatory experiences), affective (e.g., anxiety, demoralization, shame), and behavioral (e.g., avoidance) processes explain adverse outcomes associated with sexual orientation concealment. Future research may benefit from exploring in greater depth whether online concealment specifically exerts its effect via similar processes to those proposed by Pachankis (2007), as establishing a greater understanding of its potential mechanisms can generate targets for intervention. For example, some research demonstrated that loneliness positively mediates the relationship between concealment and negative psychological well-being (Cohen, 2016), suggesting that building social support could serve as an ideal protective factor against the negative effects of concealment.

In summary, both rejection sensitivity and online sexual orientation concealment exhibited significant, positive indirect effects on psychological distress, which is also consistent with previous research and aligns with the MSM. These findings provide support for the use of Meyer's (2003) MSM when exploring processes to understand discrimination in the online context among people with marginalized sexual orientations. As such, it seems that many of the processes are similar for OHD as in-person discrimination, though it may be appropriate to adapt some measures to assess for online manifestations of analogous constructs, such as online sexual orientation concealment, and not offline concealment alone. Further, both reveal important targets for interventions within this population. Although substance use outcomes mainly demonstrated null results, it appeared to be primarily an issue of power.

I failed to find an association between internalized heterosexism and OHD for any outcome variable, as well as indirect effects between OHD, internalized heterosexism, and my outcome variables. As with other constructs within the MSM, experiences of sexual orientation discrimination have been associated with increased internalized heterosexism (Feinstein et al., 2012). Further, internalized heterosexism is associated with a litany of negative psychological consequences, especially depression and anxiety (Newcomb & Mustanski, 2010). The most probable explanation for these results is limited power, as indirect pathways involving the internalized heterosexism mediator had the least power of all the mediators. In fact, the estimated power for all the outcomes ranged from 0.00 to 0.03 for internalized heterosexism, rendering it highly unlikely that I would be able to detect any effect, should one truly exist.

A separate problem concerns the language used in the study recruitment materials and the study questionnaire. First, all study recruitment materials included language that referred to the LGBTQ+ community and participants had to disclose belonging to a marginalized sexual orientation to participate in the study. This approach could have resulted in increased self-selection bias for the present study sample in that participants had to feel comfortable adopting the language I used in thinking about themselves to participate in the study. For instance, someone may not consider themself a member of the LGBTQ+ community but may have a marginalized sexual orientation. Further, it is likely that participants exhibited some level of self-acceptance in order to be comfortable enough to interact with LGBTQ+-focused recruitment materials and disclose their orientation in a questionnaire. Thus, self-selection bias may have reduced the likelihood that participants in the present sample exhibited significant internalized heterosexism. Future research may benefit from adopting a wide variety of recruitment strategies adopting a diverse array of labels in recruiting people with marginalized sexual orientations.

Second, the very nature of my measure of internalized heterosexism could have further influenced my findings in that it was face-valid and likely only assessed explicit self-stigma. For instance, one item on the measure read “I believe it is unfair that I am attracted to people of the same sex.” It is likely that such a method of assessing internalized self-stigma when participants must have already felt comfortable enough to interact with study recruitment materials including LGBTQ+-related language and to disclose their marginalized sexual orientation in the study screener only captured explicit manifestations of internalized self-stigma. Drawing parallels to findings from a systematic review of internalized racism, it is likely that internalized self-stigma manifests in many different forms (e.g., interpersonally, intrapersonally, systemically) and my measure only captured a more explicit intrapersonal manifestation of self-stigma (David et al., 2019). To address this shortcoming, measures such as the Implicit Association Task (IAT; Greenwald et al., 1998) have been used with LGBTQ+ samples to assess implicit self-stigma. For example, one study comparing explicit self-stigma to implicit self-stigma (as measured by the IAT) found that the two constructs were distinct and that implicit self-stigma carried greater risk for rumination and other negative psychological outcomes (Hatzenbuehler et al., 2009). As such, future research may benefit from exploring more implicit forms of internalized heterosexism, especially when recruitment strategies make it unlikely that participants would disclose internalized heterosexism on explicit measures.

## Moderated Mediation Model

My fifth and final hypothesis posited that online social support from members of the LGBTQ+ community would buffer the effect of OHD in my mediation model. Research that includes potential protective factors is necessary to address health disparities caused by discrimination and the MSM includes a focus on protective factors such as social support as a buffering factor within the model (Meyer, 2003). My hypothesis was primarily grounded in research establishing the role of in-group social support in mitigating the deleterious effects of discrimination (Baams et al., 2011). Further, researchers have noted that sexuality-specific social support may be most efficacious in buffering negative effects of discrimination (Doty et al., 2010; Kaufman & Baams, 2017; Kwon, 2013). People with marginalized sexual orientations may be especially suited to provide such specific support because of their lived experiences, though research comparing different types of social support and its potential effects on discrimination among LGBTQ+ people is limited.

In general, evidence had been somewhat mixed regarding the effect of social support on heterosexist discrimination. More specifically, a review by Hall (2018) found that evidence that social support both buffered against depression and increased risk for depression among LGBTQ+ youth. Hall (2018) noted that the way in which social support was assessed varied significantly from study to study, with some measuring general support and others measuring support within specific contexts—no clear pattern in outcomes emerged by the way in which support was assessed. On the other hand, a review by McDonald (2018) found that social support protected against depression and symptoms of borderline personality disorder, a condition associated with significant difficulty with emotion regulation. Further, a review of qualitative studies found that LGBTQ+ youth identify social support as a significant need to combat feelings of isolation associated with having a marginalized sexual orientation and/or gender identity (Wilson & Cariola, 2020). Further, a study by Chang et al. (2021) found that social support was significantly protective against negative outcomes associated with discrimination.

My results did not support my hypothesis in that online social support from LGBTQ+ peers did not significantly moderate any pathway in my mediation model. However, there are key limitations that must be considered when interpreting this result. First, the measure of online social support in the present study was adapted to focus solely on support received from members of the LGBTQ+ community. The original measure was designed to capture online social support more broadly, and it could be the case that simply adapting instructions for the participant to only consider interactions with LGBTQ+ peers online was not enough to capture the unique forms that social support from the online LGBTQ+ community may take. Further, given that previous research has highlighted that sexual orientation-specific social support may be most efficacious, it is possible that the measure in the present study did not capture such support. Although support from LGBTQ+ peers may be more likely to include sexual orientation-specific support, given the measure did not assess such support in the present study, it is not possible to know if such support was provided. Future research may benefit from exploring different forms social support may take to see if they differ and, if so, how researchers may best measure such support. For example, research comparing different sources of social support (e.g., from LGBTQ+ and non-LGBTQ people) as well as the nature of such support (e.g., more "general" support vs. sexual orientation-specific support) would be particularly helpful in filling this gap in knowledge.

It is also possible that the specific online context in which social support is provided could result in differential effects for those with marginalized sexual orientations. One study found that time spent online increases exposure to both online victimization and online social support, finding that the context in which the participants spent the most time to have a strong impact on their self-reported victimization and social support (Nick et al., 2015). They further argued that researchers should consider the impact that different platforms have in contributing to each outcome. This may be especially important for LGBTQ+ young adults who use the Internet, as they may engage in strategies such as concealment differently depending on the context (e.g., they may be "out" on a more LGBTQ+-friendly platform but conceal their sexual orientation on another— Duguay, 2014; Talbot et al., 2022). As a result of this emerging research and the results of the present study, clarifying the role context may play in exposure to OHD and social support is a key goal for future research.

## Limitations

The present study provides key guidance for future research by establishing the feasibility of implementing the MSM in the online context, elucidating potential avenues for future research, and providing initial evidence of the validity of the adapted measures, given their association with psychological distress and good internal reliability coefficients. While the study has many strengths, including integration of Meyer's (2003) MSM, unique exploration of online context, and an inclusive recruitment approach for those with marginalized sexual orientations—especially in terms of gender identity, it also has some limitations. First, although the sample was heterogenous in terms of sexual orientation, we did not examine whether study outcomes differed by sexual orientation. This could have offered additional information as some research has highlighted unique differences in exposure to discrimination based on sexual orientation. For instance, bisexual people (who comprised a majority of the current study sample) are at risk of discrimination both within and outside the LGBTQ+ community (Doan Van et al., 2019; Friedman et al., 2014).

Second, the study utilized a convenience sample of college students in a single geographical area as well as an online, crowdsourced convenience sample. As a result, the findings of this study may not generalize to other populations with marginalized sexual orientations across the United States or who do not participate in such online platforms. Additionally, the study utilized a cross-sectional design, which limits my ability to draw definitive causal inferences regarding the relationships within the proposed model. However, the goal of the study is to establish a general association between the variables, as little research has been carried out on this subject previously.

Third, although the measures included in the study were validated, I did adapt many of the measures to address the online context or the LGBTQ+ community. Although the measures broadly demonstrated relationships consistent with previous research and with what the MSM would predict, they were not validated with the modifications made. However, given their good internal reliability coefficients, there is support for their use in the present study. Additionally, as discussed previously, my measures of internalized self-stigma and online social support are limited in that they may not have fully captured their intended constructs due both to their design and my recruitment strategy. Although this limited my ability to support all components of my model, many components of my model (e.g., rejection sensitivity, online sexual orientation concealment) were still supported by my results. Fourth, I was also somewhat limited in that my ability to detect small effects due to my sample size, although the sample size was only 12 participants below the required sample size of 395 to have sufficient power to detect such effects. Lastly, the sample's relatively low substance use rate diminished my ability to detect differences in my substance use outcomes. Future research may benefit from adopting a broader recruitment approach to capture more varied ranges of substance use. Despite these limitations, the present study can serve as a guidepost for future research seeking to explore the effects of OHD as well as potential mediators and moderators within the MSM framework.

## Future Directions and Conclusions

As discussed previously, the current study is primarily exploratory in nature. As a result, it sets the stage for future research on online experiences of sexual orientation-based discrimination.

Findings from the current study could be used to further contextualize and refine models of OHD to gain a greater understanding of the pathways through which OHD impacts health of sexual and gender minority individuals. For instance, given the knowledge that at least rejection sensitivity and online sexual orientation concealment play a role in negative consequences related to OHD, future research could explore processes related to the constructs to further clarify their mechanisms (e.g., avoidance or increased vigilance in the case of concealment). As noted above in the limitation of the current study, it is also important for these studies to utilize prospective designs to confirm the proposed causal relationships. It is important that future research explores the potential moderating role that different online contexts may play in conferring risk for OHD and its negative outcomes. For instance, Nick et al. (2015) demonstrated that anonymous online environments increased risk for exposure to online victimization. It is likely that such environments also confer increased risk for OHD. From an intervention standpoint, it would also be helpful to know which contexts provide the greatest exposure to protective factors, such as online social support. Previous research has highlighted the beneficial effects of establishing closed LGBTQ+ spaces online, and it is likely that facilitating such in-group social support could prove to be beneficial (Homan et al., 2014).

Further, future work can also build from this study to develop and validate a measure of online experiences of sexual orientation discrimination. Given the excellent internal reliability of the OHD measure in the present study, the PORS (Keum & Miller, 2017) measure may serve as a beneficial starting point for the creation of such a measure, which would help standardize quantitative research assessing the effects of this understudied context in which discrimination may occur. As Keum & Miller (2017) noted, the Internet provides a unique context which can simultaneously expose someone to direct discrimination, vicarious discrimination, and online-mediated exposure to a discriminatory reality (e.g., news articles detailing examples of personal experiences with structural heterosexism). By establishing a comprehensive measure that includes different facets of OHD, future research can explore whether there are differential risks imparted by the different forms that OHD may take. For example, although there is little research regarding vicarious experiences of heterosexist discrimination, research on vicarious racial discrimination during the COVID-19 pandemic has revealed associations with depression and anxiety and that vigilance of potential racist events could explain this relationship (Chae et al., 2021). It is also likely that factors identified in the MSM may not operate similarly for the different forms of OHD.

For example, one may still be exposed to vicarious experiences of OHD even though they are concealing their sexual orientation. Further, context may play a role, such that anonymous environments could impart greater risk for direct experiences of OHD. Each of these points are future directions that can build off the work conducted in the current study.

Moreover, from a measurement perspective, sexual orientation and related constructs should be assessed across different dimensions. A more inclusive approach would have expanded beyond simply asking if someone adopts a given label by including questions assessing sexual and romantic attraction, sexual and romantic behavior, and any fluidity the person experiences when thinking about their sexual identity. For instance, research has found variable substance use outcomes when exploring different domains of sexual identity (Green et al., 2012). More specifically, McCabe et al. (2005) found significant differences in substance use outcomes depending on which domain of sexual orientation was assessed, noting for example that self-identification as bisexual indicated an increased substance use risk for women alone but also that self-reported bisexual attraction (but not identity) was related to increased cigarette and marijuana use, but not alcohol use. Thus, ensuring a broad, comprehensive measurement of sexual orientation that includes attraction, behavior, and self-identification would help establish stronger and more meaningful conclusions for people with marginalized sexual orientations while also allowing for more freedom in including members of the LGBTQ+ community who may not use already-established terminology.

In summary, the current study found evidence that OHD is associated with negative mental health outcomes and that the MSM may help to explain the risk process that underlines this relationship. To my knowledge, this study is the first to address solely online experiences of heterosexist discrimination within the MSM among young adults with marginalized sexual orientations. My inclusion of LGBQ+ adults with marginalized gender identities and integration of minority stress theory (Meyer, 2003) help to provide a strong, evidence-backed basis for future research on experiences of OHD.

# APPENDIX

Table 5. Bivariate Correlations of Continuous Variables.

| | | Age | Online Discrimination | Social Support | Rejection Sensitivity | Internalized Heterosexism | Online Sexual Orientation Concealment | Psych. Distress | Alcohol Use | Cannabis Use |
|---|---|---|---|---|---|---|---|---|---|---|
| Online Discrimination | Correlation | -.173** | | | | | | | | |
| | p-value | .001 | | | | | | | | |
| Online Social Support | Correlation | -.039 | .302** | | | | | | | |
| | p-value | .463 | .000 | | | | | | | |
| Rejection Sensitivity | Correlation | -.163** | .311** | .152** | | | | | | |
| | p-value | .001 | .000 | .004 | | | | | | |
| Internalized Heterosexism | Correlation | -.082 | -.013 | -.067 | .294** | | | | | |
| | p-value | .109 | .807 | .216 | .000 | | | | | |
| Sexual Orientation Concealment | Correlation | -.120* | .215** | -.043 | .355** | .403** | | | | |
| | p-value | .018 | .000 | .426 | .000 | .000 | | | | |
| Psychological Distress | Correlation | -.243** | .365** | .046 | .347** | .150** | .286** | | | |
| | p-value | .000 | .000 | .388 | .000 | .003 | .000 | | | |
| Alcohol Use | Correlation | .077 | -.004 | -.001 | -.070 | .041 | .035 | .068 | | |
| | p-value | .132 | .940 | .985 | .175 | .424 | .498 | .188 | | |
| Cannabis Use | Correlation | .042 | .098 | .052 | -.008 | -.024 | .142** | .238** | .292** | |
| | p-value | .417 | .055 | .320 | .879 | .646 | .005 | .000 | .000 | |
| Other Drug Use | Correlation | .045 | .088 | .053 | -.012 | .044 | .056 | .104* | .301** | .269** |
| | p-value | .376 | .092 | .317 | .818 | .379 | .276 | .042 | .000 | .000 |

*Note*. ** = p < .01, * = p < .05. Sample sizes are as follows: Age = 383, Online Discrimination = 373, Social Support = 352, Rejection Sensitivity = 378, Internalized Heterosexism = 378, Online Sexual Orientation Concealment = 378, Psychological Distress = 368, Alcohol Use = 375, Cannabis Use = 378, Other Drug Use = 374.

Table 6. Post-Hoc Power Estimates for Indirect Effects.

| Parameter | Estimated Power |
|---|---|
| **Psychological Distress** | |
| Rejection Sensitivity | 0.84 |
| Online Sexual Orientation Concealment | 0.80 |
| Internalized Heterosexism | 0.03 |
| **Alcohol Use** | |
| Rejection Sensitivity | 0.52 |
| Online Sexual Orientation Concealment | 0.21 |
| Internalized Heterosexism | 0.02 |
| **Cannabis Use** | |
| Rejection Sensitivity | 0.36 |
| Online Sexual Orientation Concealment | 0.80 |
| Internalized Heterosexism | 0.00 |
| **Other Drug Use** | |
| Rejection Sensitivity | 0.27 |
| Online Sexual Orientation Concealment | 0.12 |
| Internalized Heterosexism | 0.01 |

*Note*. Results derived from a Monte Carlo simulation with 1,000 replications and 20,000 draws per replication. Standardized coefficients for parameter estimates were used.

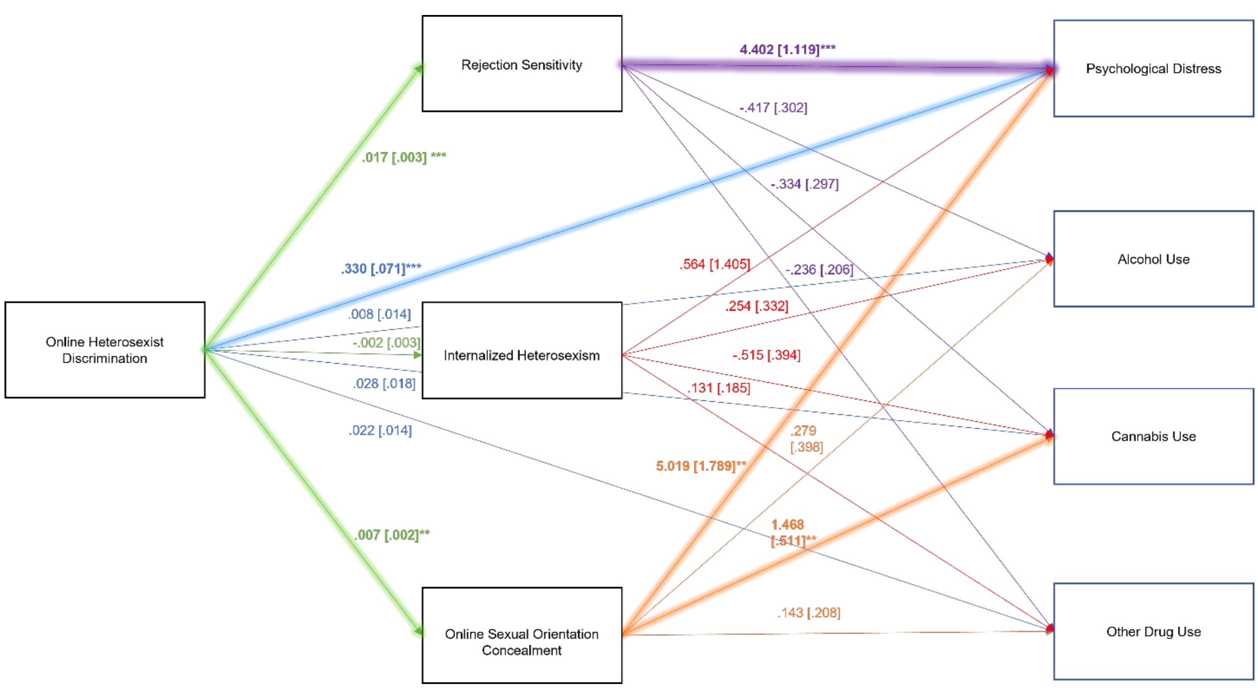


Figure 2. Parallel Mediation Model.

*Note*. Significant paths highlighted. Residual correlations not displayed. Mediators and outcome variables were correlated with each other. Unstandardized parameter estimates presented with standard errors. *** = p < .001, ** = p < .01, * = p < .05

Table 7. Time Spent Communicating with LGBTQ+ People Online

| Platform | N | Range | Mean | SD |
|---|---|---|---|---|
| Texting | 383 | 0-4 | 2.02 | 1.44 |
| Instagram | 383 | 0-4 | 1.64 | 1.35 |
| TikTok | 383 | 0-4 | 1.55 | 1.62 |
| YouTube | 382 | 0-4 | 1.39 | 1.30 |
| Reddit | 383 | 0-4 | 1.39 | 1.35 |
| Twitter | 382 | 0-4 | 1.25 | 1.39 |
| Snapchat | 383 | 0-4 | 1.02 | 1.36 |
| Facebook | 383 | 0-4 | 0.96 | 1.21 |
| Email | 380 | 0-4 | 0.81 | 1.17 |
| Dating sites/apps | 380 | 0-4 | 0.79 | 1.12 |
| Tumblr | 382 | 0-4 | 0.74 | 1.23 |
| Chat Services | 380 | 0-4 | 0.60 | 1.10 |
| Pinterest | 383 | 0-4 | 0.46 | 0.92 |
| RPGs | 379 | 0-4 | 0.46 | 1.04 |
| First person shooter games | 380 | 0-4 | 0.40 | 0.93 |
| GroupMe | 380 | 0-4 | 0.26 | 0.72 |
| LinkedIn | 381 | 0-4 | 0.23 | 0.65 |
| Battle arena games | 383 | 0-4 | 0.22 | 0.68 |
| WhatsApp | 381 | 0-4 | 0.22 | 0.67 |
| Sports/fighting/racing games | 382 | 0-4 | 0.20 | 0.65 |
| Kik | 382 | 0-3 | 0.08 | 0.36 |

*Note*. Items rated on a 5-point Likert scale (0 = *Never*, 1 = *Rarely*, 2 = *Sometimes*, 3 = *Pretty Often*, 4 = *A Lot*). The following prompt was provided: "Most sites, apps, services, and games on the Internet can be used in lots of different ways and for different purposes. We're interested in how much you use these online spaces to **connect or interact** with other people. This means we **are** interested in how much you use these online spaces to talk with people, post, comment, like, send messages, game with others, etc. This means we **are not** interested in how much you use these online spaces to scroll through other people's posts, watch or read content, or just look up information. **How much** do you use the following sites, apps, services, or games to **connect or interact with others in the LGBTQ+ community**?"

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