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The Relationship Between Discrimination and Alcohol Use Among Latinx College Students in The Context of COVID-19

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Author Note

All the keywords such as Hispanic, Latino, or Latina used in existing studies were converted to Latinx throughout this study's literature review.

Abstract

Latinx are the largest minority group in the United States. Ethnic discrimination is a common experience among this population—especially among young adults. Prior work has suggested an association between discrimination, psychological well-being, and alcohol use. Research has also highlighted that social support may buffer the impact of discrimination upon Latinx mental well-being and alcohol use. The present study investigated the relation between the appraisal of discrimination and alcohol-related outcomes (i.e. frequency of use, binge drinking, alcohol-related consequences and risky behavior) of Latinx college students in the context of the COVID-19 pandemic. We evaluated social support as a moderator for the relation between the discrimination stress and drinking outcomes. Study data was derived from an ongoing longitudinal study of a minority-serving university. Participants who self-identified as Latinx and were 18 and older (N= 343, female =246) completed questionnaires assessing discrimination stress, general stress, past-month drinking frequency, binge drinking episodes in past two-weeks, alcohol-related behavior and consequences, and social support. Multiple binomial regression determined a significant association between discrimination stress and frequency of alcohol use (B=.01, SE=.01, *p*=.04). No significant relation between discrimination stress, binge drinking, alcohol related consequence and risky behaviors were found. Further, social support did not moderate the association between discrimination stress and alcohol use and consequences. Study findings highlighted that discrimination is a consequential and modifiable factor impacting alcohol use frequency for Latinx college students. College administration and supports should target the psychological impact of discrimination as part of broader efforts to reduce drinking-related harms.

Key Words: Discrimination, alcohol use, Latinx, young adults, COVID-19 pandemic

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Table of Content

The Relationship Between Discrimination and Alcohol Use Among Latinx College Students in The Context of COVID-19

More than 51.1% of the United States (US) population growth between 2010 to 2020 came from Latinx groups, growing from 16.3% of the population in 2010 to 18.7% in 2020 (US Census Bureau, 2021). This population, which consists of a group of people residing in the US with Latin American roots or who have ancestry from Latin America, is the largest ethnic minority group in the US, and the most rapidly growing (National Institute on Alcohol Abuse and Alcoholism, 2021). It is essential to assess the level of discrimination that this population experiences in the United States. Ethnic discrimination was more commonly experienced among minorities than white individuals (Lee et al., 2019). One in five Latinx individuals reported their ethnicity has made it harder for them to succeed and their experiences of discrimination negatively influences their decision-making regarding their living style and success (Neel, 2017; Pew Research Center, 2016); furthermore, experiences of discrimination significantly impact Latinx individuals' psychological well-being and drinking behavior (Chavez et al., 2015; Cobbe et al., 2020). Alcohol may be used to deal with the experiences of discrimination, anxiety, and other mood disorders (Flores et al., 2010; Lee and Ahn, 2012; Cheng and Mallinckrodt, 2015), since the chemical has anxiolytic properties and helps with relaxation, euphoric feelings and reduces stress and anxiety (Gilman et al., 2008). During stressful events, such as the COVID-19 outbreak, discrimination and mental health stressors among the minority population, including the Latinx population, significantly increased (Lu et al., 2021; Garcini et al., 2021; Zhou et al., 2021). In addition, there is a 60% increase in alcohol use among the US population due to pandemic-related stressors such as financial difficulties, social isolation, and uncertainty

about the future (Grossman et al., 2020). Therefore, it is crucial to evaluate how discrimination in the United States affects Latinx young adult drinking behavior.

In the literature review which follows, relevant empirical research and theories will be discussed. First, a review of the prevalence of discrimination among Latinx youth in the US will be presented. Second, the association between discrimination and alcohol use in this population will be discussed and supported by conceptual models; moreover, the impact of discrimination on Latinx individuals' mental health will be consulted. Third, the significant relationship between stress levels and Latinx alcohol behavior will be described. Then, different protective factors will be evaluated that can moderate the relationship between Latinx mental health and alcohol behaviors. Lastly, the impact of COVID-19 on the mental health and alcohol use of the young adult Latinx population will be considered. The main objective of the study is to examine the association between discrimination and mental health in Latinx young adults and the former's link to alcohol use during the COVID-19 pandemic.

Discrimination in Latinx youth

Since the Latinx population makes up the majority of the US minority population, it is essential to evaluate the level of discrimination they may face in the country as it is an important aspect to their lived experiences as US residents. Discrimination can be defined as unfair treatment of individuals due to prejudices based on their race, gender, age, sexual orientation, and financial status (American psychological Association, 2019). In 2021, 54% of Latinx in the US reported experiencing discrimination within the past 12 months. Of note, younger Latinx individuals experienced discrimination at a higher rate when compared to older Latinx: roughly 62% of the individuals who reported discrimination ranged in age from 18 to 29, whereas 38% of older Latinx individuals reported being discriminated against in the same period (Noe-

Bustamante et al., 2021). About 35% of Latinx college students stated that they were discriminated against by non-Latinx individuals. These individuals described discriminatory acts such as being called offensive names, criticized for speaking their native language in public, being treated unfairly, or perceived as being less intelligent than other individuals (Noe-Bustamante et al., 2021). These expressions of discrimination can lead to psychological distress and anxiety. According to a study among college students from Hispanic-serving institution, the past month prevalence of severe stress (32%) while the scores were higher for who self-identified as Latinx (Ibarra-Mejia et al., 2022). Another investigation, general anxiety (31%) and depression (20.60%) disorders were found to be in higher prevalence among Mexican adolescence and young adults (Servan-Mori et al., 2020). This means that within Latinx population, there is a greater number of people suffering from mental health struggles.

Relationship between Discrimination and Alcohol use in Latinx youth

Studies of Latinx youth and adult populations have consistently found significant relation between the experiences of discrimination and alcohol use (Flores et al., 2010; Ehlers et al., 2009; Cheng and Mallinckrodt., 2015; Verissimo et al., 2014; Mulia et al., 2008; Lee and Ahn., 2012). Researchers consider acculturation stress as a type of discrimination, which may partially explain the association between alcohol use and discrimination-related stress in the Latinx community (Ehlers et al., 2009; Lee et al., 2013). Among the Latinx population, studies have found an association between discrimination and post-traumatic stress disorder (PTSD), social anxiety, coping motivated drinking as well as risky behaviors such as involvement in fights and sexual promiscuity, leading to negative consequences (Flores et al., 2010; Cheng & Mallinckrodt.,2015; Buckner et al.,2022). The effects of discrimination appear to vary according to nativity and gender. Compared to foreign born Latinx individuals, US born Latinx individuals

had a higher rate of alcohol and substance use due to discrimination (Verissimo et al., 2014). Additionally, discrimination increased the odds of substance use in male Latinx individuals, while for female Latinx individuals, there was an increase in both alcohol and substance use (Verissimo et al., 2014). Discrimination has also been found to be associated with binge drinking (Tran et al.,2010; Ornelas et al.,2016), defined as having an alcohol blood level concentration of 0.08% or higher when consuming multiple drinks in two hours (NIAAA, 2021).Given this knowledge, further evaluation of the association between discrimination and alcohol use among the Latinx population is warranted. This is especially true for the college student population since there has been minimal research conducted on this group. To date, two studies (Cheng and Mallinckrodt, 2015; Buckner et al.,2022) have focused on Latinx college students, whereas most of the other studies focused solely on particular subgroup within the Latinx population or had unidentified sampling within the Latinx population.

Understanding discrimination and alcohol use in Latinx youth: Conceptual models

To better understand the relation between discrimination and alcohol use, various conceptual frameworks such as stress-coping, minority stress model, and social stress theory have been applied to the issue. These models give insight into the importance of investigating the reasons behind the stress caused by ethnic discrimination. They shed light into how social conditions can lead to harmful consequences (Flores et al., 2010; Verissimo et al., 2014; Cheng &Mallinckrodt.2015).

The minority stress theory describes the relationship between minorities and their values and how it may conflict with their social environment (Meyer, 2003). This conceptualization was first presented to comprehend the high prevalence of mental health disorders among lesbian, gay, bisexual, transgender, and queer (LGBTQs) individuals to explain the negative social attitudes

and discrimination they experience, creating a stressful and challenging environment for them (Meyer, 2003). It has been applied to other populations, including females, immigrants, and ethnic minorities (Meyer et al.,2008) such as undocumented Latinx immigrants (Valentin-Cortes,2020), where these individuals deal with greater stress levels, anxiety, and depression due to verbal threats, harassments, discrimination, and prejudice (Woodford et al.,2014).

Social stress theory is another theory that elaborates on minority stress to understand the psychological toll that individuals experience when exposed to social stigma (Meyer, 2003). This theory argues that individuals facing social disadvantages because of their economic status, race/ethnicity, or gender and sexuality, are more susceptible to social stressors and have difficulty coping due to limited psychosocial resources, contributing to mental health disparities (Mossakowski, 2014). It provides a model for how race and socio-economic differences contribute to health inequalities (Thomas Tobin et al.,2021). This theory can be used to explain the stressors that Latinx individuals undergo due to discrimination, and how limited mental health resources can lead to higher stress and psychological difficulties (Flores et al., 2010). These empirical studies considered the frequency of exposure to discrimination and did not factor in the psychological distress aspect of the event and how stressful it could be for Latinx individuals. It's essential to consider the stress associated with exposure to discrimination. Notably, the social stress and minority stress theories do not expand on how individuals cope with discrimination and social disadvantages. A third conceptual model, the stress-coping framework could be used to discuss coping techniques that individuals may use, such as alcohol consumption, to deal with social stressors.

The stress- coping framework focuses on how individuals manage the impact of stress caused by threats, harm, life challenges, and whether there are appropriate resources to cope with

psychological dysregulation developed by stressors (Proulx & Aldwin, 2016). This framework was first developed to assess and evaluate the link between stress and social-emotional, cognitive, and psychological difficulties in the general population (Proulx & Aldwin, 2016). However, many researchers use this framework to discuss the relation between discrimination and unhealthy behaviors, such as alcohol and substance use, among minoritized populations (Borrell et al., 2012; Hunte & Barry, 2012). For example, it was utilized to examine the psychological functioning and alcohol use of Latinx individuals (Verissimo et al., 2014; Cheng and Mallinckrodt, 2015), suggesting the association of discrimination to mental health difficulties and alcohol use.

Relation between discrimination and mental health among Latinx

Prior empirical studies have revealed a significant association between discrimination and anxiety levels among Latinx individuals. They are more likely to be discriminated against by being accused or suspected of stealing, breaking the law, and cheating, which are associated with higher levels of anxiety (Hwang & Goto, 2008). Higher degrees of discrimination is linked to PTSD (Cheng &Mallinckrodt, 2015; Mulia et al., 2008), an increase in depression and anxiety symptoms, and negative general health (Flores et al.,2008; Cano et al., 2016; Serpas, 2021; Potochnick et al., 2010). Experiences of discrimination also predicted suicidal ideation when associated with higher levels of anxiety among Latinx (Cheref et al., 2018), with females reporting more depressive feelings and anxiety symptoms compared to males. Discrimination not only impacts the Latinx population directly but also has an indirect effect on anxiety symptoms via self-esteem for both genders (Cano et al., 2016). Self-esteem appears to mediate the impact of discrimination on the mental health of individuals. Studies indicate that the association is complex: Latinx individuals identifying themselves as LGBTQ did not report significantly

increased symptoms such as feeling depressed and anxious when experiencing discrimination (Serpas, 2021). Additionally, individuals with higher socioeconomic status have reported feeling less depressed and reported better general health compared to those from a lower socioeconomic background (Flores et al., 2008). Despite variation within the Latinx population, evaluating the impact of discrimination upon on functioning and health of Latinx individuals is critical.

Relation between stress and alcohol outcomes among Latinx

Latinx are less likely to drink alcohol compared to non-Latinx and have a greater rate of abstinence. However, those who choose to drink are more likely to consume a higher volume of alcohol and have greater prevalence of binge drinking (NIAAA, 2019; Salas-Wright, 2021). Stress levels have been shown to be a contributing factor to the increase of alcohol consumption in Latinx individuals. Stress can be caused by different factors such as demographic, social, and family contexts (Lee and Ahn, 2012). In Latinx adolescents' samples, alcohol use has been highly related to financial, social and family stressors, including educational status, acculturative gap, discrimination, community and gang violence, and drug use. (Goldbach et al.,2015; Martin et al.,2019). Some investigations defined social stress as acculturative stress, referring to the psychological impact of adapting to a new culture and environment, and argued these stressors relate to alcohol use among Latinx (Perreira et al., 2019; Salerno et al., 2019). One study determined that first-generation young adult Latinx are less exposed to social stress and, as a consequence, are less likely to use alcohol and substances than later generations (Salerno et al., 2019). In contrast, Perreira et al. (2019) argued that first and second-generation Latinx are exposed to more significant acculturative stress, making them more vulnerable to poor mental health outcomes, alcohol, and substance use (Perreira et al., 2019). Additionally, stress was

found to have an indirect association with problematic drinking (alcohol use, binge drinking) as a coping motive (Bacio et al., 2021).

Protective factors

Research suggests that individuals who suffer from increased stress levels and use alcohol to cope may benefit from social support. Social support can be operationalized as providing emotional or financial assistance to others to deal with biological, psychological, and social stress. These types of assistance could come from interpersonal relationships including family, friends, religious institutions or support groups (American Psychological Association, 2020). During the COVID pandemic, social support has been negatively correlated with student mental health problems such as depression, anxiety and stress (Romano et al., 2020; Guo et al., 2021). Moreover, perceived social support—when interpersonal relationships provide support to cope with social and psychological stressors (Zimet et al., 1988)—may also be a protective factor that acts as a moderator for alcohol use among individuals.

Research has empirically demonstrated an association between social support and alcohol behavior among Latinx individuals. There is a direct association between family cohesion, defined as the emotional and connectedness among family members, and social support and lower alcohol use in Latinx youth (Cano et al., 2018). In other words, the more social support the individuals receive, the lower their alcohol use and related problems (Cano et al., 2018). Familism refers to the strong identification and attachment with nuclear and/or extended family members (Campos et al.,2014). Some have found an association between familism and alcohol consumption among the Latinx population; Latinx males who reported higher familism reported less drinking than Latinx men with lower familism (DiBello et al., 2016). Others have not found such an association; Venegas et al.,2012 found no association in a college sample of Latinx

participants. Overall, social support may moderate alcohol use among Latinx young adults however the relatively small sample sizes of work to date limit generalizability.

There is also evidence that social support promotes the mental health of Latinx individuals. Social support reduces psychological difficulties such as depression and anxiety among Latinx immigrant adolescents (Potochnick et al., 2010), and moderated the association between resilience and depressive symptoms among emerging adult Latinx (Cano et al., 2020; Garcini et al., 2020). Moreover, discrimination also has indirect effect on anxiety symptoms via self-esteem for both genders (Cano et al., 2016). Family and social support may be a protective factor for anxiety symptoms, other psychological difficulties, alcohol use (Cano et al., 2020; Garcini et al., 2020) and moderate binge drinking among Latinx (Loury et al.,2010); therefore, the reserve capacity model can help identify the role of perceived social support as a moderator.

The reserve capacity model describes how resources, such as supportive social relationships, may enhance resilience and reduce risk among low social economic status or ethnic minorities (Cano et al., 2018; Gallo, 2009). This model was first developed to examine psychosocial factors in social economic status-driven health disparities. It discusses how socially disadvantaged individuals encounter a higher frequency of exposure to stress, trauma, and risky behaviors (Gallo, 2009). These individuals can turn towards psychosocial resources directly related to mental and physical health (Gallo, 2009; Gallo et al.,2009). This conceptualization was applied to ethnic minority populations, such as the Latinx population, and advanced the understanding of the factors that influence the impact of resilience on the mental health outcome of these populations (Cano et al., 2020).

The Impact of COVID-19 on Latinx students

In early 2020, the COVID-19 pandemic forced millions of Americans to change and adapt to a virtual way of life; for example, many individuals transitioned from a physical work environment to a remote one. Moreover, the outbreak not only impacted the life and environmental transitions of individuals but also impacted the general population's mental and physical health. Of note, Latinx individuals were at higher risk of requiring mechanical ventilation, ICU admission, and dying after COVID-19 infection (Noe-Bustamante et al., 2021; Poulson et al.,2021). More than half (62%) of Latinx individuals in the US reported that a family member or close friend had been hospitalized or died from COVID-19 (Noe-Bustamante et al., 2021). This population also had to cope with social stressors such as an increase in discrimination fueled by the pandemic, which can be explained by the lack of cultural compatibility and reflect general xenophobic attitudes (Lu et al., 2021). In addition to discrimination, minoritized individuals faced social disadvantages and additional stressors which are disproportionately borne by Latinx, such as lack of stable housing and food insecurities associated with COVID-19 (Garcia-Cerde et al., 2021; McKnight- Eily et al., 2020). In a survey conducted by The City University of New York, New York Latinx students and residents were more likely than other ethnic groups and high-income residents to be unemployed, report social isolation, loss of health insurance coverage, and housing-related stressors during COVID-19 (Boyraz et al., 2020; Enriquez et al .2021). These social disadvantages and additional stressors can lead to mental health struggles (Boyraz et al., 2020) and further escalate the vulnerability of PTSD and chronic psychological distress within Latinx individuals (Boyraz et al., 2020). In addition, younger individuals appeared to be more vulnerable to COVID-19 harms. Studies on young adults and college students reported higher perceived stress and anxiety, PTSD, depression, and hopelessness compared to older individuals (Hoyt et al., 2020; Kujawa et al.,

2020; Boyraz et al., 2020; Jiang et al.,2020). In sum, the pandemic appears to have increased discrimination and mental health difficulties among the young adult Latinx population, potentially leading them towards alcohol use as a coping strategy (McKnight-Eily, 2021).

It appears that the pandemic has significantly affected drinking behavior of Latinx youth (McKnight-Eily, 2021). For example, pre-pandemic about 24.7% of Latinx individuals reported binge drinking within a month in the year of 2018 (Sukumaran,2018) .New research determined that those who were binge drinkers pre-pandemic, along with those who had mental health struggles such as depression, increased their alcohol consumption during the pandemic (Weerakoon et al., 2020);thus, Latinx individuals who were binge drinkers pre-pandemic also may have increased their alcohol intake during the outbreak. Moreover, along with drinking behavior changes, social media activities, increased by quarantining measures, has led to mental health distress and alcohol use among Latin American and the Caribbean countries residents (Garcia-Cerde et al., 2021). Though the study was conducted outside of the US, it is still relevant to the current study as the COVID restrictions were similar worldwide; therefore, the study's results could be indicative of a similar trend in the US. This increase in social media and alcohol usage in the Latinx population may be understood as coping strategies to deal with psychological, pandemic-related distress.

Within the Latinx population, there are also other minority groups who were affected by psychosocial stressors and the pandemic. When considering gender and LGBTQ minorities in Latinx populations, higher mental health struggles were reported (Hoyt et al., 2020; Boyraz et al., 2020). The pandemic affected Latinx sexual minority men and transgender women's mental health, which increased their overall mental health struggles and alcohol use (MacCarth et al., 2020). Despite the prevalent research on the Latinx and LGBTQ community, there is minimal

research on the issue of alcohol usage among the Latinx young adult population. It can be hypothesized that Latinx young adults may be at risk for alcohol-related harms during the pandemic. In general college student samples, cannabis use, alcohol use, and consequences have been notably higher post-campus closure than pre-closure (Schepis et al., 2021). The increase in alcohol use, binge drinking, and other substance use among the Latinx young adult population can be explained by certain pandemic related stressors, which created a uniquely high pressure and stressful environment for Latinx young adults. It can be speculated that students may have had easier access to alcohol and other substances in their household or may have had parents who became lenient because of shafting priorities and additional stress. Moreover, the alcohol intake can be associated with dramatic life changes. For example, despite feeling less socially isolated after returning home during lockdown, students faced more difficulties transitioning to remote learning (Fruehwirth et al. 2021). Furthermore, many undocumented Latinx students with illegal parents struggled both mentally and faced financial insecurities (Enriquez et al., 2021). Many students returned to unstable households where their mental health was greatly affected; Latinx students who identify with the LGBTQ community could not freely express themselves in front of their families, while others lacked privacy and witnessed domestic violence in their households (Enriquez et al., 2021). All of these factors might contribute to a significant association between stress levels and alcohol use.

Present study

There is a demonstrated significant relation between discrimination and stress level, and alcohol use behavior among Latinx populations. Discrimination and overall stress levels have negatively impacted the adolescent and adult Latinx individuals' mental health and alcohol use behavior (Flores et al.,2008;Lee and Ahn., 2012;Verissimo et al., 2014; Cheng &Mallinckrodt,

2015; Cano et al., 2016; Serpas, 2021). As described above, there is a lack of research on the Latinx college student population regarding the relationship between stress associated with discrimination and students' drinking behavior and consequences especially, in the context of COVID-19 pandemic. Prior research has focused on the adolescent population and specific Latinx populations. Importantly, research to date has analyzed the experiences of discrimination and the stress associated with discrimination combined. No study on Latinx college students has discussed the protective factors for alcohol use. In light of these gaps, the objectives of the present study are (1) to describe and characterize the prevalence of drinking behaviors, and consequences, (2) examine the association between discrimination stress and multiple alcohol outcomes (i.e. frequency of use, binge drinking, consequences and risky behaviors), and lastly, (3) examine the effect of perceived social support as a protective factor within the relation of alcohol use to discrimination stress in Latinx college students. The following hypotheses were proposed: (1) Greater discrimination stress among Latinx students would be linked with higher alcohol use frequency and consequences. (2) perceived social support would moderate the relation between alcohol-related outcomes and discrimination stress.

Method

Study Design

The current study employs data collected as part of the by Environmental Prevention Initiative at The City College of New York (EPIC). The City College of New York (CCNY) is a large, minority-serving university and the EPIC group has focused on developing college programming in four areas of prevention (screening of problematic alcohol and substance use for students, information dissemination of social norms, safe practices for alcohol and substance use, and staff training) that is responsive and data-driven. To this end, EPIC has

implemented college-wide surveys since 2017 that seek to understand CCNY student's attitudes and behaviors about substance use and mental health.

Participants and Procedure

This study utilized a convenience sampling strategy. Participants (n=1,507) were recruited via university-wide broadcast emails and college research subject pools. Participants were informed that their responses would remain confidential. Students who completed the survey through the subject pool were given course credit, and students recruited via email were entered for a raffle to win $500 gift cards. Participants over the age of 18 and enrolled as students at CCNY were eligible to partake in the parent study. Participants who sent incomplete surveys, submitted multiple responses, took longer to complete the surveys, or completed the surveys in less than 20 minutes were removed from the study. For the current analysis, survey respondents had to self-identify as Latinx. The final sample size for the present study was narrowed down to (n=346) participants.

The current study used the May 2020 wave of cross-sectional data. The survey was open and available to students from May 1st, 2020, through May 31st, 2020. Participants were encouraged to complete the survey in one sitting, which takes approximately 45 minutes, and asked to complete and submit the survey online. To increase the response quality, three attention check questions with obvious correct answers were included in the survey. For example, one such question asked participants to select the word "Happy" from the four response choices of "Sad", "Unexcited", "Upset" and "Happy". In the current study's total sample, 89.9% and 98.3% of Latinx participants passed the first and second attention check respectively. In line with prior analyses of this dataset (Lopez-Castro et al.,2021; Brandt et al.,2022), participants who did not accurately respond to the attention check questions were not excluded from the study, but their

results were used as evidence to conclude that the majority of participants responded to questionnaires attentively.

Measures

Socio-demographic information. Demographic information such as, age, sex, gender identity, ethnicity, and employment status for both pre and post pandemic were collected.

The Depression, Anxiety and Stress Scales (DASS; Antony et al.,1998). This 21-item self-report scale was used to evaluate respondents' stress levels. The scale has high internal consistency reliability of Cronbach's a = 0.94 for Depression, 0.87 for Anxiety, and 0.91 for Stress (Antony et al.,1998). The participants were required to report their symptoms over the past week using a 4-point scale from 0 (Never) to 3 (Almost always). The values of a score which equaled or were less than 9 for depression, equal or less than 7 for anxiety, and equal or less than 14 for stress were considered in the normal range (Gomez, 2016).

Multidimensional Scale of Perceived Social Support (MSPSS; Zimet et al., 1988). This 12-item questionnaire was used to assess individuals' perceived social support from significant others, family, and friends. The MSPSS has been shown to have significant internal consistency reliability of Cronbach's a = 0.91 for significant others, 0.87 for family, 0.85 for friends, and 0.88 for the total scale, which indicates good internal consistency for the scale as a whole and the three subscales (Zimet et al., 1988). In addition, the test-retest reliability for the subscales of significant others, family, and friends were 0.72, 0.85, and 0.75, respectively. The scores demonstrated the scale's adequate stability over time. The study participants were required to report their social support based on the three subscales using a 7-point scale from 1 (Very Strongly Disagree) to 7 (Very Strongly Agree). The total perceived social support score is calculated as the mean score of all items. A mean score ranging from 1 to 2.9 indicates a low

level of social support, a score of 3 to 5 moderate, and a score of 5.1 to 7 suggests a high level of social support (Zimet et al., 1988).

General Ethnic Discrimination Scale (GED; Landrine et al.2006). This self-report was modeled on the Schedule of Racist Events (SRE; Landrine et al., 2006), an 18-item measure of perceived ethnic discrimination originally designed for Black individuals. The GED was developed to evaluate perceived ethnic discrimination as a type of stress for Blacks, Latinos, Asians, and White individuals. The scale measures two aspects of discrimination, frequency and appraisal. The frequency aspect assesses how often participants were exposed to discrimination and the appraisal element measures the stressfulness of the event. Each of the aspects has an independent contribution to health and health behavior. The self-report scale has a high internal consistency reliability for recent, lifetime, and appraisal discrimination, with Cronbach's a = 0.91–0.92 for white, 0.93–0.95 for African- Americans, 0.93– 0.94 for Latinx, and a = 0.91– 0.94 for Asian-Americans (Landrine et al.2006). The scale measures two elements of discrimination: frequency and appraisal. For this analysis we employed the participant's responses to the appraisal of discrimination. Participants were asked to rate their stress related to racial discrimination experiences in three areas (employment, educational and social services) using a scale with a range of 1 (Not at all stressful) to 6 (Extremely stressful). The sum of the scores which equaled or were less than 20 represented low, 21-27 represented the medium, and greater than 28 represented high recent ethnic discrimination (Landrine et al, 2006). In this study participants reported their experience within the past 30 days. Due to an inputting error, one of question, "being treated unfairly by friends," was omitted from the survey; this had minor impact on the final score range.

The Epidemic-Pandemic Impacts Inventory (EPII; Grasso et al., 2020). This 92 item self-report questionnaire was used to examine the negative and positive impact of the COVID-19 pandemic on participants' personal and social life domains. The scale is divided into the following sections of impact: work life, home life, social activities and isolation, emotional/physical health and infection, and positive change. Preliminary validation of the scale has shown it to be a reliable and valid instrument for measuring the participants' experiences in the context of a COVID-19 pandemic disaster (Grasso et al.,2020). For this study, we employed two of the subsections: The participants were asked to report their emotional/physical health and infection history and quarantining experiences within the past 30 days using a 4-point scale of (Yes Me),(Yes, person in-home),(No), and (N/A)with the exception for items 42, 43, and 65(Grasso et al.,2020).The final score was obtained by adding the "Yes " response and counting it as one point, despite there being two Yes value selections for each items in the domains.

The American College Health Association National College Health Assessment (ACHA-NCHA II). This assessment was used to evaluate respondents' alcohol use behaviors, related risk behaviors, and consequences. Two pilot data sets from spring 2009 and 2010 produced the reliability and validity analysis and determined strong consistency over the two survey periods (American College Health Association, 2013).

Binge drinking. A question asking participants how often they have had five or more drinks in one sitting over the last two weeks was used to examine the individuals' recent binge drinking behavior. Participants were prompted with standard quantity definitions (e.g., "one drink of alcohol is defined as a 12 Oz, can or bottle of beer, a 4 oz glass of wine or a shot of liquor straight or in a mixed drink). This question had a high reliability of α=0.82 for spring 2007 and 0.84 for spring 2008. The participants were required to record the number of their drinks

using five multiple-choice answers: “0,” “1-2 days,” “3-4 days,” “5-6 days,” and “7 or more days.” The higher number of days indicated higher quantity of alcohol use (American College Health Association, 2013). For the purpose of this study, the responses were converted to binary variables (0 days =”No” and 1 or more days=”Yes” to binge drinking).

Past-month frequency of alcohol use. The frequency of past-month alcohol use was examined using one of the items in the "Moderately Used Drugs" scale questionnaire. The self-report had the reliability of α =0.74 for spring 2009 and 0.74 for spring 2010. The participants were asked to report the number of days of their alcohol use (beer, wine, liquor) within the past 30 days; using the choice answers such as "1-2 days," "3-5 days, " "6-9 days ," "10-19 days," "20-29 days," "Used daily," “Have used but not in the last 30 days," and "Never used." The greater the number of days represents more frequent alcohol use (American College Health Association, 2013). For this study the frequency of alcohol use was coded to 0 =“Never used, or have used but not in the last 30 days," 1 = "1-2 days," 2 = "3-5 days, " 3 = "6-9 days ," 4 = "10-19 days," 5 = "20-29 days," and 6 = "Used daily."

Alcohol-related consequences. The consequences of drinking were evaluated using a 9-item self-report scale. The scale has an average inter-item correlation of 0.81 and a α = 0.98 for spring 2009 and 0.98 for spring 2010, which is highly reliable. The individuals reported their past 12 months experiences according to each item using a 3-point scale of (Yes), (No), and (I do not drink). Reporting “Yes” indicates that individuals experienced consequences. Items included experiences such as feeling regret and getting into legal trouble after drinking and reporting “No” indicates that individuals’ drinks but never experienced consequences (American College Health Association, 2013). The sum of all the items were obtained and a score of 10 and above were considered as consequences.

Risk behaviors. The 7-item self-report scale was used to measure participants' risky behaviors over the last 30 days. The reliability analysis reported a α =0.63 for spring 2009 and 0.63 for spring 2010(American College Health Association, 2013). The participants were asked to report on any risky behaviors such as physical and sexual aggression using a 2-point scale of (Yes) and (No). The "Yes" response shows risky behavior (American College Health Association, 2013). The sum of the total items were calculated for the analysis.

Data Analysis

The data analysis was computed using the IBM SPSS Statistics, which utilizes the pairwise deletions, even though there were no missing data. The frequency and descriptive statistics of each variable were calculated. To check the normality of distribution, the kurtosis and skewness of the main study conceptual variables were taken. Skew or kurtosis above or below 0 indicates a deviation from a normal distribution (Field, 2010). Refer to tables 3 and 4 to see the breakdown of skewness and kurtosis of the main study variables. The first step was to exclude 3 participants who were under the age of 18 and set the N to 343 instead of 346. Next, the analysis was run to compute the descriptive for the demographic and covariance variables (Aim 1), then the following analysis was run for further evaluation.

Bivariate Pearson correlation was computed to determine the relation strength between all considered variables. The correlations were significant when the P-value was less than .05.

Negative binomial regression analyses were used to analyze the study's central hypothesis and establish a cause and effect. This statistical method could consider the issue of overdispersion (variance > mean) of the data set. Overdispersion occurs when there are many zeros in a low-frequency dataset. Aim 2 hypotheses were analyzed through eight negative binomial regression models.

To analyze the association between discrimination stress and alcohol outcomes (behaviors, including frequency and binge drinking, consequences, and risky behaviors) (H1), the descriptive variables such as age, sex, covid-19 stressors (EPII) and general stress (DASS) were considered as covariates and kept constant throughout the analyses. General stress was kept constant to rule out any stress that was not related to discrimination stress and to increase the validity of the relation between the conceptual variables. Each of the outcome variables (alcohol behaviors, including frequency and binge drinking, consequences, risky behaviors) were computed step by step into 4 separate models.

To examine the association between perceived social support as moderator of discrimination stress and alcohol outcomes (Aim 3), covariates were included, and perceived social support was added to the factor box and included in the model as interaction variable. Four different regression models were created to show the interactions between social support and discrimination stress and its association with the study's outcome variables. Parameter estimates values were calculated such as regression coefficient, standard error, Wald chi-square, P-value and 95% confidence intervals, incidence rate ratio and Likelihood-Ratio chi-square

Results

Sample Characteristics

Table 1 provides a detailed summary of the sample's (n=343) socio-demographic characteristics. Participants reported an age range of 18-56 and self-identified as Latinx, of which 8.5% (n =29) racially self-identified as White, 8.5% Black (n = 29), 0.6% Asian (n = 2), 2.0% Native American (n = 7),2.0% biracial(n=7),4.4%multiracial (n =15) and 1.2% as others (n=4). The majority of the participants reported their sex as female (n= 246, 71.7%) and,

identified as women (n=240, 70%). Considering their employment status, about 43.7% of individuals (n=150) reported that the COVID-19 outbreak changed their employment status.

The COVID-19 stressors impacted individuals emotional, physical health, quarantining, and Infection history (Table 2). Table 2 presents the frequency and the percentages of the sample reported of each item and included the mean and standard deviation of each sub scale.

Table 3 illustrates participants' response on general stress (M=31.00; SD=25.59) The normative cut off score for severe symptoms for three subscales of depression, anxiety and stress were considered as. >21, >15 and >26 respectively (Gomez, 2016).

According to the normative score range of 17-102 for appraised discrimination, the associated stress (M=24.95; SD=13.00) was not significantly highly experienced among the Latinx students in the current study. Compared to Landrine et al. (2006), their investigation with discrimination stress (M=31.61; SD=16.38) among their participants, included Latinx adults.

When it comes to social support (M=5.39; SD=1.29), the finding showed that many individuals' self-reported perceived high social supports when normative mean of >5 was determined as significantly high social support (Lopez-Castro et al., 2021).

Table 4 describes the Latinx college students' past-month frequency of alcohol consumption, past two-week frequency of binge drinking and alcohol related consequences and risky behaviors. Each scale is described by answer choices and the frequency of participants' response to it. For the alcohol behavior (frequency) more than half (n=198, 57.70%) of individuals reported either never having used alcohol or it not within the last 30 days. The second largest proportion of students (n=145,42.20%) reported drinking one or more days within the past 30 days. With regard to binge drinking, 85.70% (n=294) denied a binge- drinking

episode in the past two weeks and 14.30% (n=49) 14.30% reported binge drinking one or more days.

Association between drinking behaviors, discrimination stress and social support

The association between covariates and the study's conceptual variables were evaluated using Pearson correlation and presented in Table 5. It summarizes the discrimination stress and its relation to each covariate (age, sex, EPII, DASS) and alcohol outcomes. COVID-19 related stressors were significantly linked with general stress r (343) = .40, p <.01, discrimination stress r (343) = .33, p <.01, alcohol consequences r (343) = .12, p <.05 and alcohol related risky behaviors r (343) = .15, p <.01.

General stress was significantly correlated with discrimination stress r (343) = .38, p <.01, perceived social support r (343) = -.23, p <.01, alcohol behavior (frequency) r (343) =.21, p <.01 and (binge drinking) r (343) =.12, p <.05, alcohol-related consequences r (343) =.17, p <.01, and risky behaviors r (343) =.15, p <.01. The predictor variable of discrimination stress was associated with alcohol behavior(frequency) r (343) =.18, p <.01, consequences r (343) =.15, p <.01, and risky behaviors r (343) =.16, p <.01,

Alcohol behavior (frequency) was significantly linked with binge drinking r (343) =.47, p <.01, and consequences r (343) =.48, p <.01. In addition, a significant association was found for binge drinking and consequences r (343) =.26, p <.01. These results shows that there is a positive relationship between individuals' experiences of discrimination stress and frequency of alcohol use outcomes (Table 5).

The relation between discrimination stress and alcohol outcomes

Hypothesis one predicted an association between discrimination stress and alcohol outcomes (i.e. frequency and binge drinking, consequences, and risky behaviors). Several

regression models were conducted to evaluate those associations. Table 6 reports the results of the regression model of past-month frequency of alcohol use. Frequency of alcohol was significantly linked with covariates such as age (B=.03, SE =.01, *p*= .02) and general stress (B=.01, SE=.00, *p* =.00). When the predictor variable of discrimination stress was added, it showed a statistically significant (B=.01, SE=.01, *p*=.04) association with alcohol behavior (frequency). Table 7 illustrates the association of discrimination stress with alcohol behavior (binge drinking). Model 1 determined a significant association of binge drinking with sex (B=.-.64, SE=.32, *p*=.05). Discrimination stress did not significantly contribute to the model (Table 7, Model 2).

In the regression model of alcohol-related consequences within the past 12 months, none of the covariates were found to be significant with consequences (Table 8, Model 1). In addition, there was no main effect between discrimination stress and consequences (Table 8, Model 2). For the relation between discrimination stress and alcohol related risky behaviors within the past 30 days, Table 9, Model 1 showed that there was a significant association with the of age, COVID-19 stressors, and general stress B=-.10, SE=.05, *p*=.04), (B=.09, SE=.04, *p*=.02) and (B=.02, SE=.01, *p*=.01) respectively. Model 2 demonstrated no main effect between discrimination stress and risky behavior.

In sum, in a multivariate modeling alcohol behavior (frequency) was found to be significantly associated with discrimination stress. The more self-reported stress related to discrimination, the more alcohol use increased among the sampled Latinx college students. Discrimination stress did not contribute to any of the other hypothesized outcomes: binge drinking, consequences, or risk behaviors.

The effect of perceived social support as a protective, moderating factor between discrimination stress, alcohol outcomes

Hypothesis two predicted that perceived social support moderated the alcohol use outcome and discrimination stress levels among Latinx college students. Different regression models were computed to examine the perceived social support as a moderator between the study's predictor and outcome variables. The variable of social support was added, and regression was conducted and determined that this variable did not have a significant main effect or interaction effect with discrimination stress on the outcome variable of alcohol behavior (frequency; Table 6, Model 3 and 4). The perceived social support also did not moderate the outcomes such as binge drinking with in past 2 weeks and alcohol related consequences and risky behaviors (Tables 7-9, Model 3 and 4). In sum, study hypothesis two was not supported and social support did not moderate the relation between discrimination stress, and alcohol outcomes.

Discussion

The present study investigated whether discrimination contributed to alcohol use and consequences (frequency of use and binge drinking episodes, related consequences, and related risky behaviors) among Latinx college students during May 2020, the tail-end of the first major COVID-19 outbreak in New York City. In addition, it evaluated how perceived social support moderated the relation between those discrimination and alcohol use. Study findings revealed that, as hypothesized, appraisal of ethnic discrimination stress was significantly related to the frequency of alcohol use within the past 30 days when controlling for levels of general stress and COVID-19 stressors. No significant relation was found between discrimination stress and the other alcohol outcomes (binge drinking, alcohol related consequences and risky behaviors).

Interpretation of aim 1: The prevalence of alcohol use and consequences

The first aim of this investigation was to describe and characterize the prevalence of drinking behaviors and consequences. We found that the majority of the participants reported not consuming alcohol in the previous month; 42.20% of the sample reported drinking one or more days with in past 30 days and 14.30 % of them reported at least one binge drinking (five or more drinks in less than two hours) in the past two weeks. Our sample finding appeared to report relatively low rates of drinking compared with other college samples. For example, Coakley et al. (2021) studied a college sample of a public university in the southwest region of the United States which included Latinx (28.70%) and reported that about 78.30% of undergraduate students self-reported ever drinking during the COVID-19 pandemic. Sampled during February and October of 2020, they also reported higher alcohol use during the past month (54%) when compared to the current study, specifically, there was a 48.10% of change in alcohol use of Latinx students from February to October. In addition, our sample reported a low rate of binge drinking when compared to other large universities across United State during the pandemic (White et al., 2020; Jackson et al., 2021). About 46.15% of college students from northeastern university self-reported no heavy drinking (Jackson et al., 2021) whereas our analysis shows 294 of participants which is 85.71% of the students reported zero days of binge drinking in past two weeks. In sum, college student participated in binge drinking less and that rate might be due to COVID-19 changes.

Regarding alcohol-related consequences and risky behavior, a significant portion of the sample did not experience any alcohol-related consequences and risky behavior: 73.40% and 90.20% of students, respectively, self-reported no experiences whatsoever. However, the highest experience was “Did something you later regretted,” in which about (n=54, 15.70%), and the

greater risky behavior experiences by participants were "verbally threatened" (n=18, 5.20%). The dearth of reported negative consequences may be due to different reasons in this sample. It may be related to the low base rate of alcohol behavior and/or COVID-19 restrictions and changes in living situations. This notion was supported by evidence from a representative sample indicating that alcohol-related consequences declined when accounting for the living situations (Patrick et al., 2020; Jackson et al., 2021). Those students who lived on campus had a higher prevalence of consequences than students who lived with parents, 61.80% versus 42.10%, respectively (Patrick et al., 2020). Also, 33.33% of northeastern university students reported reduced consequences during COVID-19(Jackson et al., 2021). A possible reason for our study finding might be due to changes in students living situations and moving in with parents since the parent study reported that 50% of individuals who had relocated indicated that they moved in with parents (Lopez-Castro et al., 2021). Another explanation might be the low rate of alcohol behavior since there is found to be an association between risky behavior and alcohol consumption among ethnic minority young adults (Hicks et al., 2022).

Interpretation of aim 2: Appraisal discrimination and past 30-day frequency of alcohol use

In multivariate regression analyses, we found a significant association between discrimination stress and alcohol use frequency. Prior literature has highlighted the significant association between discrimination experiences and alcohol consumption (Verissimo et al., 2014; Lee and Ahn., 2012; Mulia et al., 2008) applying conceptual frameworks such as stress-coping, minority stress model, and social stress theory to understand their relation. Other research has extended this discourse by examining the influence of discrimination on the mental well-being and psychological distress such as anxiety, PTSD, and depression symptoms (Flores et al.,2008; Mulia et al., 2008; Cheng &Mallinckrodt, 2015; Cano et al., 2016; Serpas, 2021; Potochnick et

al., 2010). Common to all frameworks is the premise that individuals turn to alcohol for its quick-acting anxiolytic and stress-relieving properties. Our study supports this general association between discrimination and alcohol use.

Our study findings also extend previous research in this area. Whereas prior work examined the effect of self-reported discrimination *experiences*, we studied the student's subjective assessment of the *stress* associated with discriminatory experiences or *appraisal* discrimination. Our study findings are critical because they consider the psychological stress of discrimination, which is likely to be the mechanism by which mental health is impacted. By focusing on stress, our study provides unique support to the association between discriminatory experiences. Another contribution is that we examined the Latinx intergroup associations rather than between groups with other minority populations. This study focused on the appraisal discrimination and its relation to alcohol behavior and controlled for other extraneous variable such as COVID-19 related stressors. It was reported that Latinx families were struggling with financial and food insecurities and medical support needs (Garcia-Cerde et al., 2021; Eily et al., 2020; Noe-Bustamante et al., 2021). The COVID-19 stressors might have impacted this minority group on how they perceive themselves in society and accelerated their stress levels.

Interpretation of aim 2: Appraisal discrimination, binge drinking and consequences

The current study found an association between sex assigned at birth and past two-week binge drinking frequency; Latinas were less likely to binge drink than Latinos in the sample. This finding converges with previous studies which found Latinas have lower prevalence of binge drinking compared to their male counterparts (Ehlers et al., 2009; Salerno et al.,2019; Salas-Wright, 2021).

Apart from alcohol frequency, no other alcohol outcome (i.e. binge drinking, alcohol related consequences and risky behavior were not significantly related with discrimination stress. These findings could be understood by considering the timeline of data collection (May 2020) and COVID-19 protocols. The stay-at-home order was mandatory between March 1st through May 31st in 2020 in 42 states affecting 73% of US counties including New York City which decreased the population movement (CDC, 2020). This could be why there no significant relationship found between alcohol use and consequences and discrimination stress. These findings were comparable to alcohol behavior of students in other universitas across United States, where they self-reported of having less social opportunities and approximately 104 individuals indicated endorsed change for quantity (38%) due to house rules limiting alcohol use (Jackson et al., 2021). Furthermore, the study indicated how the change in the student's lifestyle such as moving back with parents might be a reason to a minimal base rate in quantity of drinking (White et al., 2020; Jackson et al., 2021). Jackson and colleagues (2021) add on to the idea of social context and alcohol consequences by explaining how COVID-19 lower the chance for students to drink with their peers and strangers and participate in heavy drinking. Moreover, due to lack of social opportunities, the perceived risk of harm was reduced (Jackson et al., 2021). The new living situation and fewer social opportunities could explain the under reporting of the alcohol related consequences, risky behaviors and getting expose to appraisal discrimination in the current study.

Interpretation of aim 3; Perceived social support as moderator

Social support was evaluated as a moderator between discrimination stress and alcohol use and consequences. Our investigation did not find a significant interaction or main effect between social support and discrimination stress with alcohol behavior and consequences. This is

in contrast to prior literature suggesting that social support (Cano et al., 2018) and familism (DiBello et al., 2016) are significant moderators for alcohol use among Latinx individuals. In addition, it was highlighted how social and family support could be a protective factor against psychological difficulties and binge drinking in Latinx individuals (Cano et al., 2020; Garcini et al., 2020; Cano et al., 2016; Potochnick et al., 2010; Loury et al.,2011). Another study reported that social support moderated alcohol behavior among college students, including Latinx; however, it did not moderate the effect of psychological distress during the COVID-19 pandemic (Lechner et al., 2020).

Many college students living situations changed, and they moved with their parents during COVID-19(Lechner et al., 2020; Lopez-Castro et al., 2020; White et al., 2020; Jackson et al., 2021). This indicates that college students already received significant support from their family members, which was proven by obtaining a high social support mean of 5.39 among this study participants. Also, some students began drinking alcohol with their parents 41% more frequently (Jackson et al., 2021), which was a way for students to participate in drinking behavior with parental permission. This action could include shading social support's power as a protective factor. In addition, it was reported by Enriquez and colleagues (2021) that many Latinx individuals moved in with their parents and were not able to express their gender identity freely in front of their parents. That could suggest that individuals received the support; however, they might have gotten exposed to discrimination from family members because of their gender identity or other reasons, which cause support to not practical.

Implications

Our investigation analysis highlighted that when assessing Latinx young adults, clinicians should consider the influence of discrimination as a source of traumatic experiences and mental

health struggles. It is essential to acknowledge that exposure to discrimination might be extremely stressful for some individuals than others. Clinicians may assist the clients in recognizing and effectively managing emotional reactions to the discrimination experiences, finding strategies to express their emotions safely and healthily. They should help the clients release all of their emotions, find coping strategies, and give them more insight into the connection between appraisal discrimination, alcohol use, and consequences.

This study's findings may provide guidance for improving the mental health within academic institutions, creating policies and educational training concerning this topic. They should view discrimination more like mental health struggle and less of a negative experience. Moreover, it is critical that discrimination stress be less stigmatized for the minority population. Since the minority stress model was supportive of the association between discrimination stress and alcohol frequency within the past 30 days, it can suggest that the implication could be helpful for all minority populations, including Latinx.

Strengths and Limitations

The study has a few strengths; first, it is one of the few studies that investigated the appraisal discrimination and its relationship with alcohol outcomes among the Latinx. In contrast, the past researchers overlooked the subjective experience of discrimination and did not estimate the psychological difficulties of exposure to it. However, this study combined the aspect of subjective discrimination and its impact on psychological health and the association with alcohol outcomes. This should be considered one of the greatest strengths and contribute to understanding the impact of the experience of discrimination on the mental health of Latinx individuals. Along with that, we collected very detailed information about COVID-19 impacts which then was used to model the association between discrimination stress and alcohol

outcomes. Our ability to control for pandemic-related experiences was a significant strength when considering the link between stress associated with discrimination and alcohol outcomes.

The current study had several limitations that should be considered. First, the study was cross-sectional in which the causal influences could not be drawn, and we were unable to observe the pre and post pandemic changes in Latinx students' alcohol behavior and consequences rate. Second, findings are based on the convenient sampling which could risk the idea of generalizability of the results. The sampling was based on City College students which ensure the diversity among the participants in contrast to the study by Chang and Mallinckrodt (2015) where they recruited students from Hispanic serving institution which was not representative of Latinx students in other regions and universities. However, the online self-reports were sent out through Psychology broadcast email and the institution subject pool and that could have increased the chance of recruiting a higher percentage of psychology students who might have participated to receive a course credit. Even though the participants were informed that surveys are anonymous, and their self-report will stay confidential still the concern of self-report bias such as self-promotion or social desirability could be underestimated. There is a change that students could of under report their experiences. Lastly, there is a possibility that measurements instruments that was presented in the survey were not accurate representative of the aim of this investigation. For example, in study by white and colleagues (2020), students self-reported 9.9 drinks per week and their maximum number of drinks per day was reported as 3.3(White et al., 2020). In contrast to our study the self-report measurement was more precise and detailed according to the students number of drinks within past week, total number of drinks and maximum number of drink in any one day whereas our measurements requested the number of drinking days in past two weeks which was not as detailed and didn't provide access to

students number of drinks per day which could have caused measurements error and had major effect on the drinking behavior findings.

Future Directions

This investigation highlighted the association between discrimination stress and alcohol outcomes despite the limitations. Future studies should take into account the limitation of this study. For instance, asking participants about their quantity of daily use could provide a more accurate reflection of their alcohol intake and related behaviors. Second, future work can assess the association between alcohol use and alcohol-related consequences and risks. After such a relation is confirmed, the association between discrimination stress and harm can be investigated.

Future work should also examine how the appraisal of discrimination is related to the frequency of discrimination, and the relative contribution of both of these aspects of discrimination to drinking behaviors. Our study examined the appraisal of discrimination while prior work as primarily examined the exposure of discrimination. The overwhelming feelings of one-time exposure might affect them psychologically and cause stress and traumatic symptoms at the same level as a person who was exposed to discrimination multiple times, especially considering the additional stressors caused by the COVID-19 outbreak and the financial and health struggles that families went through.

In the current study we measured the exposure to pandemic-related experiences. Future studies could examine the level of stress and the appraisal of such pandemic experiences. It may be that that pandemic stress may exacerbate the appraisal of discrimination; pandemic experiences may have an additive effect, increasing the impact of discrimination stress. In this study we looked discretely at the effect of discrimination stress; future work is tasked with examining the complex relationship between discrimination and pandemic-related stress.

Another future area of research could consider the role of social media usage as an additional stressor variable and as a possible mechanism for discrimination exposure. During the COVID-19 outbreak, many individuals quarantined, and the prevalence of social media use increased, which might have impacted mental well-being. Studies found the association between social media use and alcohol behavior (Gercia-Cerdo et al., 2021). Alternately, social media may function as a protective factor. It would be interesting to keep examine the contribution of social media usage to the association between discrimination stress and students' alcohol behavior.

The data was collected during the first 2020 wave of the COVID-19 outbreak, so it is interesting to see through a longitudinal study and within participants how the finding could change throughout the COVID-19 timeline and as the protocols changed. There might be a chance that the experiences of discrimination and alcohol outcomes would increase as the people adapt to a new lifestyle.

In addition, the identity intersectionality could influence the association between discrimination stress and alcohol outcomes and moderate the relation between these conceptual variables. There are many identities that individuals identify with, such as sex, gender, religion, social class, and ethnicity. For example, future studies could evaluate gender identity as a protective factor and how it could be the moderator for the association between the study variables.

Conclusion

This study aimed to examine the association between discrimination stress and alcohol use and consequences while controlling for general stress and COVID-related stressors. The study found that Latinx students' report of discrimination stress was associated with the frequency of their past-month alcohol use. While no relationship was found between

discrimination stress and other alcohol outcomes such as binge drinking, alcohol-related consequences and risky behavior, future studies should examine these associations in longitudinal form and control for other variables such as other salient identities, traditional practices and spiritual beliefs that might play role in their risk of discrimination and how they overcome with stress associated with it. Lastly, there was no interaction between social support and discrimination stress with alcohol outcomes suggesting that social support did not moderate the association between any of the study's conceptual variables.

References

American College Health Association. (2013). ACHA-NCHA-II Reliability and Validity Analyses. *American College Health Association*.

American Psychological Association (2020). *Apa Dictionary of Psychology*. American Psychological Association. Retrieved October 29, 2021, from https://dictionary.apa.org/social-support.

American Psychological Association. (2019). *Discrimination: What it is, and how to Cope*. American Psychological Association. Retrieved December 21, 2021, from https://www.apa.org/topics/racism-bias-discrimination/types-stress

Antony, M. M., Bieling, P. J., Cox, B. J., Enns, M. W., & Swinson, R. P. (1998). Psychometric Properties of the 42-item and 21-item versions of the depression anxiety stress scales in clinical groups and a community sample. *Psychological Assessment*, *10*(2), 176–181. https://doi.org/10.1037/1040-3590.10.2.176

Bacio, G. A. (2021). Motivational pathways to problematic drinking among Latinx College Drinkers. *Experimental and Clinical Psychopharmacology*, *29*(5), 466–478. https://doi.org/10.1037/pha0000516

Blume, A. W., Resor, M. R., Villanueva, M. R., & Braddy, L. D. (2009). Alcohol use and comorbid anxiety, traumatic stress, and hopelessness among Hispanics. Addictive Behaviors, 34(9), 709–713. https://doi.org/10.1016/j.addbeh.2009.03.039

Borrell, L. N., Kiefe, C. I., Diez-Roux, A. V., Williams, D. R., & Gordon-Larsen, P. (2012). Racial discrimination, racial/ethnic segregation, and health behaviors in the Cardia study. *Ethnicity & Health*, *18*(3), 227–243. https://doi.org/10.1080/13557858.2012.713092

Boyraz, G., & Legros, D. N. (2020). Coronavirus disease (covid-19) and traumatic stress: Probable risk factors and correlates of posttraumatic stress disorder. *Journal of Loss and Trauma*, *25*(6-7), 503–522. https://doi.org/10.1080/15325024.2020.1763556

Brandt, L., Anthonipillai, N. J., López-Castro, T., Melara, R., & Espinosa, A. (2022). Substance use trajectories among urban college students: Associations with symptoms of stress, anxiety, and depression before and during COVID-19. *Journal of American College Health*, 1–10. https://doi.org/10.1080/07448481.2022.2089844

Buckner, J. D., Lewis, E. M., Shepherd, J. M., & Zvolensky, M. J. (2022). Ethnic discrimination and alcohol-related problem severity among Hispanic/Latin drinkers: The Role of Social Anxiety in the minority stress model. *Journal of Substance Abuse Treatment*, *138*, 108730. https://doi.org/10.1016/j.jsat.2022.108730

Cano, M. Á., Castro, F. G., De La Rosa, M., Amaro, H., Vega, W. A., Sánchez, M., Rojas, P., Ramírez-Ortiz, D., Taskin, T., Prado, G., Schwartz, S. J., Córdova, D., Salas-Wright, C. P., & de Dios, M. A. (2020). Depressive symptoms and resilience among Hispanic emerging adults: Examining the moderating effects of mindfulness, distress tolerance, emotion regulation, family cohesion, and Social Support. *Behavioral Medicine*, *46*(3-4), 245–257. https://doi.org/10.1080/08964289.2020.1712646

Cano, M. Á., Castro, Y., de Dios, M. A., Schwartz, S. J., Lorenzo-Blanco, E. I., Roncancio, A. M., Martinez, M. J., Sheehan, D. M., Auf, R., Piña-Watson, B., Huynh, Q.-L., & Zamboanga, B. L. (2016). Associations of ethnic discrimination with symptoms of anxiety and depression among Hispanic emerging adults: A moderated mediation model. *Anxiety, Stress, & Coping*, *29*(6), 699–707. https://doi.org/10.1080/10615806.2016.1157170

Cano, M. Á., Sánchez, M., Rojas, P., Ramírez-Ortiz, D., Polo, K. L., Romano, E., & De La Rosa, M. (2018). Alcohol use severity among adult Hispanic immigrants: Examining the roles of family cohesion, social support, and gender. *Substance Use & Misuse*, *53*(4), 668–676. https://doi.org/10.1080/10826084.2017.1356333

Campos, B., Ullman, J. B., Aguilera, A., & Dunkel Schetter, C. (2014). Familism and Psychological Health: The intervening role of closeness and social support. *Cultural Diversity and Ethnic Minority Psychology*, *20*(2), 191–201. https://doi.org/10.1037/a0034094

Centers for Disease Control and Prevention. (2020). *Timing of state and territorial COVID-19 stay-at-home orders and changes in population movement - United States, March 1–May 31, 2020*. Centers for Disease Control and Prevention. Retrieved May 19, 2022, from https://www.cdc.gov/mmwr/volumes/69/wr/mm6935a2.htm

Chavez, L. J., Ornelas, I. J., Lyles, C. R., & Williams, E. C. (2015). Racial/Ethnic Workplace Discrimination:Association with Tobacco and Alcohol Use. *National Institutions of Health* . https://doi.org/doi:10.1016/j.amepre.2014.08.013

Cheng, H.-L., & Mallinckrodt, B. (2015). Racial/ethnic discrimination, posttraumatic stress symptoms, and alcohol problems in a longitudinal study of Hispanic/Latino college students. *Journal of Counseling Psychology*, *62*(1), 38–49. https://doi.org/10.1037/cou0000052

Cheref, S., Talavera, D., & Walker, R. L. (2018). Perceived discrimination and suicide ideation: Moderating roles of anxiety symptoms and ethnic identity among Asian American, African American, and Hispanic emerging adults. *Suicide and Life-Threatening Behavior*, *49*(3), 665–677. https://doi.org/10.1111/sltb.12467

Coakley, K. E., Lardier, D. T., Holladay, K. R., Amorim, F. T., Mechler, H., & Zuhl, M. N. (2021). Mental health severity is associated with increases in alcohol consumption in young adult students during the COVID-19 pandemic. *Alcoholism Treatment Quarterly*, *39*(3), 328–341. https://doi.org/10.1080/07347324.2021.1917325

Cobb, C. L., Salas-Wright, C. P., John, R., Schwartz, S. J., Vaughn, M., Martínez, C. R., Awad, G., Pinedo, M., & Cano, M. Á. (2020). Discrimination trends and mental health among native- and foreign-born Latinos: Results from National Surveys in 2004 and 2013. *Prevention Science*, *22*(3), 397–407. https://doi.org/10.1007/s11121-020-01186-4

DiBello, A. M., Gonzales, R., Young, C. M., Rodriguez, L. M., & Neighbors, C. (2016). Blood is thicker than booze: Examining the role of familism and gender in alcohol use and related consequences among Hispanic College students. *Journal of Ethnicity in Substance Abuse*, *15*(3), 310–324. https://doi.org/10.1080/15332640.2015.1044684

Ehlers, C. L., Gilder, D. A., Criado, J. R., & Caetano, R. (2009). Acculturation stress, anxiety disorders, and alcohol dependence in a select population of young adult Mexican Americans. Journal of Addiction Medicine, 3(4), 227–233. https://doi.org/10.1097/adm.0b013e3181ab6db7

Enriquez, L. E., Morales, A. E., Rodriguez, V. E., Chavarria, K., & Ro, A. (2021). Mental health and covid-19 pandemic stressors among latina/o/X college students with varying self and parental immigration status. *Journal of Racial and Ethnic Health Disparities*. https://doi.org/10.1007/s40615-021-01218-x

Field, A. (2010). *Discovering Statistics Using Spss Third Edition* .

Fruehwirth, J. C., Biswas, S., & Perreira, K. M. (2021). The COVID-19 pandemic and Mental Health of first-year college students: Examining the effect of covid-19 stressors using longitudinal data. *PLOS ONE*, *16*(3). https://doi.org/10.1371/journal.pone.0247999

Flores, E., Tschann, J. M., Dimas, J. M., Pasch, L. A., & De Groat, C. L. (2010).Perceived racial/ethnic discrimination, posttraumatic stress symptoms, and health risk behaviors among Mexican American Adolescents. Journal of Counseling Psychology, 57, 264-273.

Flores, E., Tschann, J. M., Dimas, J. M., Bachen, E. A., Pasch, L. A., & de Groat, C. L. (2008). Perceived discrimination, perceived stress, and mental and physical health among Mexican-origin adults. Hispanic Journal of Behavioral Sciences, 30,401-424.

Gallo, L. C. (2009). The reserve capacity model as a framework for understanding psychosocial factors in health disparities. *Applied Psychology: Health and Well-Being*, *1*(1), 62–72. https://doi.org/10.1111/j.1758-0854.2008.01000.x

Gallo, L. C., Penedo, F. J., Espinosa de los Monteros, K., & Arguelles, W. (2009). Resiliency in the face of disadvantage: Do hispanic cultural characteristics protect health outcomes? *Journal of Personality*, *77*(6), 1707–1746. https://doi.org/10.1111/j.1467-6494.2009.00598.x

Garcia-Cerde, R., Valente, J. Y., Sohi, I., Falade, R., Sanchez, Z. M., & Monteiro, M. G. (2021). Alcohol use during the covid-19 pandemic in Latin America and the Caribbean. *Revista Panamericana De Salud Pública*, *45*, 1. https://doi.org/10.26633/rpsp.2021.52

Garcini, L. M., Chen, M. A., Brown, R., LeRoy, A. S., Cano, M. A., Peek, K., & Fagundes, C. (2020). "Abrazame que ayuda" (hug me, it helps): Social support and the effect of perceived discrimination on depression among US- and foreign-born latinxs in the USA. *Journal of Racial and Ethnic Health Disparities*, *7*(3), 481–487. https://doi.org/10.1007/s40615-019-00676-8

Garcini, L. M., Rosenfeld, J., Kneese, G., Bondurant, R. G., & Kanzler, K. E. (2021). Dealing with distress from the COVID-19 pandemic: Mental health stressors and coping strategies in vulnerable Latinx communities. *Health & Social Care in the Community*, *30*(1), 284–294. https://doi.org/10.1111/hsc.13402

Gilman, J. M., Ramchandani, V. A., Davis, M. B., Bjork, J. M., & Hommer, D. W. (2008). Why we like to drink: A functional magnetic resonance imaging study of the rewarding and

anxiolytic effects of alcohol. *Journal of Neuroscience*, *28*(18), 4583–4591. https://doi.org/10.1523/jneurosci.0086-08.2008

Goldbach, J. T., Berger Cardoso, J., Cervantes, R. C., & Duan, L. (2015). The relation between stress and alcohol use among Hispanic adolescents. *Psychology of Addictive Behaviors*, *29*(4), 960–968. https://doi.org/10.1037/adb0000133

Gomez, F. (2016). A Guide to the Depression, Anxiety and Stress Scale(DASS-21). *Consultant Clinical Psychologist*.

Grasso, D., Briggs-Gowan, M. J., Carter, A., Goldstein, B., & Ford, J. D. (2020). A person-centered approach to profiling Covid-related experiences in the United States: Preliminary findings from the epidemic-pandemic impacts inventory (EPII). https://doi.org/10.31234/osf.io/v36hj

Grossman, E. R., Benjamin-Neelon, S. E., & Sonnenschein, S. (2020). Alcohol consumption during the covid-19 pandemic: A cross-sectional survey of US adults. *International Journal of Environmental Research and Public Health*, *17*(24), 9189. https://doi.org/10.3390/ijerph17249189

Guo, K., Zhang, X., Bai, S., Minhat, H. S., Nazan, A. I., Feng, J., Li, X., Luo, G., Zhang, X., Feng, J., Li, Y., Si, M., Qiao, Y., Ouyang, J., & Saliluddin, S. (2021). Assessing social support impact on depression, anxiety, and stress among undergraduate students in Shaanxi Province during the covid-19 pandemic of China. *PLOS ONE*, *16*(7). https://doi.org/10.1371/journal.pone.0253891

Hicks, T. A., Chartier, K. G., Buckley, T. D., Reese, D., Working Group, T. S., Vassileva, J., Dick, D. M., Amstadter, A. B., Peterson, R. E., & Moreno, O. (2022). Divergent changes: Abstinence and higher-frequency substance use increase among racial/ethnic minority young adults during the COVID-19 Global Pandemic. *The American Journal of Drug and Alcohol Abuse*, *48*(1), 88–99. https://doi.org/10.1080/00952990.2021.1995401

Hoyt, L. T., Cohen, A. K., Dull, B., Maker Castro, E., & Yazdani, N. (2021). "constant stress has become the new normal": Stress and anxiety inequalities among US college students in the time of covid-19. *Journal of Adolescent Health*, *68*(2), 270–276. https://doi.org/10.1016/j.jadohealth.2020.10.030

Hunte, H. E. R., & Barry, A. E. (2012). Perceived discrimination ANDDSM-IV–based alcohol and Illicit Drug Use Disorders. *American Journal of Public Health*, *102*(12). https://doi.org/10.2105/ajph.2012.300780

Hwang, W.-C., & Goto, S. (2009). The impact of perceived racial discrimination on the mental health of Asian American and Latino College students. *Asian American Journal of Psychology*, *S*(1), 15–28. https://doi.org/10.1037/1948-1985.s.1.15

Ibarra-Mejia, G. , Lusk, M. & Jeon, S. (2022) "Stress, Anxiety, and Depression among Latinx University Students during the COVID-19 Pandemic", *Social Development Issues*. 43(1). doi: https://doi.org/10.3998/sdi.1815

Jackson, K. M., Merrill, J. E., Stevens, A. K., Hayes, K. L., & White, H. R. (2021). Changes in alcohol use and drinking context due to the COVID-19 pandemic: A multimethod study of

college student drinkers. *Alcoholism: Clinical and Experimental Research*, *45*(4), 752–764. https://doi.org/10.1111/acer.14574

Jiang, H., Nan, J., Lv, Z., & Yang, J. (2020). Psychological impacts of the COVID-19 epi- demic on Chinese people: Exposure, post-traumatic stress symptom, and emotion regula- tion. Asian Pacific Journal of Tropical Medicine. Advance online publication. http://www.apjtm.org/preprintarticle.asp?id=281614

Jones, N., Marks, R., Ramirez, R. & Rios-Vargas, M. (2021). *2020 census illuminates racial and ethnic composition of the country*. Census.gov. Retrieved November 9, 2021,

Kujawa, A., Green, H., Compas, B. E., Dickey, L., & Pegg, S. (2020). Exposure to covid-19 pandemic stress: Associations with depression and anxiety in emerging adults in the United States. *Depression and Anxiety*, *37*(12), 1280–1288. https://doi.org/10.1002/da.23109

Landrine, H., Klonoff, E. A., Corral, I., Fernandez, S., & Roesch, S. (2006). Conceptualizing and measuring ethnic discrimination in Health Research. *Journal of Behavioral Medicine*, *29*(1), 79–94. https://doi.org/10.1007/s10865-005-9029-0

Lee, C. S., Colby, S. M., Rohsenow, D. J., López, S. R., Hernández, L., & Caetano, R. (2013). Acculturation stress and drinking problems among urban heavy drinking Latinos in the Northeast. *Journal of Ethnicity in Substance Abuse*, *12*(4), 308–320. https://doi.org/10.1080/15332640.2013.830942

Lee, D. L., & Ahn, S. (2012). Discrimination Against Latina/os: A Meta- Analysis of Individual-Level Resources and Outcomes. *The Counseling Psychologist*, *40*(1), 28–65. https://doi.org/10.1177/0011000011403326

Lee, R. T., Perez, A. D., Boykin, C. M., & Mendoza-Denton, R. (2019). On the prevalence of racial discrimination in the United States. *PLOS ONE*, *14*(1). https://doi.org/10.1371/journal.pone.0210698

Lechner, W. V., Laurene, K. R., Patel, S., Anderson, M., Grega, C., & Kenne, D. R. (2020). Changes in alcohol use as a function of psychological distress and social support following COVID-19 related university closings. *Addictive Behaviors*, *110*, 106527. https://doi.org/10.1016/j.addbeh.2020.106527

Lopez-Castro, T., Brandt, L., Anthonipillai, N., Espinosa, A., & Melara, R. (2021). Experiences, impacts and mental health functioning during a COVID-19 outbreak and lockdown: Data from a diverse New York City sample of college students. https://doi.org/10.31234/osf.io/nyght

Loury, S., Jesse, E., & Wu, Q. (2010). Binge drinking among male Mexican immigrants in rural North Carolina. *Journal of Immigrant and Minority Health*, *13*(4), 664–670. https://doi.org/10.1007/s10903-010-9402-0

Lu, Y., Kaushal, N., Huang, X., & Gaddis, S. M. (2021). Priming COVID-19 salience increases prejudice and discriminatory intent against Asians and Hispanics. *Proceedings of the National Academy of Sciences*, *118*(36). https://doi.org/10.1073/pnas.2105125118

MacCarthy, S., Izenberg, M., Barreras, J. L., Brooks, R. A., Gonzalez, A., & Linnemayr, S. (2020). Rapid mixed-methods assessment of COVID-19 impact on Latinx Sexual Minority men and latinx transgender women. *PLOS ONE*, *15*(12). https://doi.org/10.1371/journal.pone.0244421

Martin, M. J., Conger, R. D., & Robins, R. W. (2019). Family stress processes and drug and alcohol use by Mexican American adolescents. *Developmental Psychology*, *55*(1), 170–183. https://doi.org/10.1037/dev0000629

McKnight-Eily, L. R., Okoro, C. A., Strine, T. W., Verlenden, J., Hollis, N. T. D., Njai, R., Mitchell, E. W., Board, A., Puddy, R., & Thomas, C. (2021). Racial and ethnic disparities in the prevalence of stress and worry, mental health conditions, and increased substance use among adults during the COVID-19 pandemic — United States, April and May 2020. *MMWR. Morbidity and Mortality Weekly Report*, *70*(5), 162–166. https://doi.org/10.15585/mmwr.mm7005a3

Meyer, I. H. (2003). Prejudice, social stress, and Mental Health in lesbian, gay, and bisexual populations: Conceptual issues and research evidence. *Psychological Bulletin*, *129*(5), 674–697. https://doi.org/10.1037/0033-2909.129.5.674

Meyer, I. H., Schwartz, S., & Frost, D. M. (2008). Social patterning of stress and coping: Does disadvantaged social statuses confer more stress and fewer coping resources? *Social Science & Medicine*, *67*(3), 368–379. https://doi.org/10.1016/j.socscimed.2008.03.012

Mossakowski, K. N. (2014). Stress and mental illness. *The Wiley Blackwell Encyclopedia of Health, Illness, Behavior, and Society*, 1–5. https://doi.org/10.1002/9781118410868.wbehibs358

Mulia, N., Ye, Y., Zemore, S. E., & Greenfield, T. K. (2008). Social disadvantage, stress, and alcohol use among black, Hispanic, and white americans: Findings from the 2005 US National Alcohol Survey. *Journal of Studies on Alcohol and Drugs*, *69*(6), 824–833. https://doi.org/10.15288/jsad.2008.69.824

Neel, J. (2017). *Poll: Most Americans think their own group faces discrimination*. NPR. Retrieved December 20, 2021, from https://www.npr.org/sections/health-shots/2017/10/24/559116373/poll-most-americans-think-their-own-group-faces-discrimination

NIAAA. (2019). *Alcohol and the Hispanic Community*. National Institute on Alcohol Abuse and Alcoholism. Retrieved December 21, 2021, from https://www.niaaa.nih.gov/publications/brochures-and-fact-sheets/alcohol-and-hispanic-community

NIAAA. (2021). *College drinking*. National Institute on Alcohol Abuse and Alcoholism. Retrieved December 21, 2021, from https://www.niaaa.nih.gov/publications/brochures-and-fact-sheets/college-drinking

Noe-Bustamante, L., Gonzalez-Barrera, A., Edwards, K., Mora, L., & Hugo Lopez, M. (2021). Half of U.S Latinos experienced some form of discrimination during the first year of the pandemic. *Pew Research Center*.

Ornelas, I. J., Lapham, G. T., Salgado, H., Williams, E. C., Gotman, N., Womack, V., Davis, S., Penedo, F., Smoller, S., & Gallo, L. C. (2016). Binge drinking and perceived ethnic discrimination among Hispanics/latinos: Results from the Hispanic Community Health Study/Study of Latinos sociocultural ancillary study. *Journal of Ethnicity in Substance Abuse*, *15*(3), 223–239. https://doi.org/10.1080/15332640.2015.1024374

Otiniano Verissimo, A. D., Grella, C. E., Amaro, H., & Gee, G. C. (2014). Discrimination and substance use disorders among Latinos: The role of gender, nativity, and ethnicity. *American Journal of Public Health*, *104*(8), 1421–1428. https://doi.org/10.2105/ajph.2014.302011

Patrick, M. E., Terry-McElrath, Y. M., Evans-Polce, R. J., & Schulenberg, J. E. (2020). Negative alcohol-related consequences experienced by young adults in the past 12 months: Differences by college attendance, living situation, binge drinking, and sex. *Addictive Behaviors*, *105*, 106320. https://doi.org/10.1016/j.addbeh.2020.106320

Perreira, K. M., Marchante, A. N., Schwartz, S. J., Isasi, C. R., Carnethon, M. R., Corliss, H. L., Kaplan, R. C., Santisteban, D. A., Vidot, D. C., Van Horn, L., & Delamater, A. M. (2019). Stress and resilience: Key correlates of mental health and substance use in the Hispanic Community Health Study of Latino Youth. *Journal of Immigrant and Minority Health*, *21*(1), 4–13. https://doi.org/10.1007/s10903-018-0724-7

Pew Research Center. (2016). *Personal experiences with discrimination*. Pew Research Center's Social & Demographic Trends Project. Retrieved December 20, 2021, from

https://www.pewresearch.org/social-trends/2016/06/27/5-personal-experiences-with-discrimination/

Potochnick, S. R., & Perreira, K. M. (2010). Depression and anxiety among first-generation immigrant Latino youth. *Journal of Nervous & Mental Disease*, *198*(7), 470–477. https://doi.org/10.1097/nmd.0b013e3181e4ce24

Poulson, M., Neufeld, M., Geary, A., Kenzik, K., Sanchez, S. E., Dechert, T., & Kimball, S. (2021). Intersectional disparities among Hispanic groups in COVID-19 outcomes. *Journal of Immigrant and Minority Health*, *23*(1), 4–10. https://doi.org/10.1007/s10903-020-01111-5

Proulx, J., & Aldwin, C. (2016). Stress and coping theory in Geropsychology. *Encyclopedia of Geropsychology*, 1–10. https://doi.org/10.1007/978-981-287-080-3_120-1

Romano, L., Tang, X., Lauri, H., Salmela-Aro, K, Caterina, F. (2020). Students' Trai Emotional Intelligence and Perceived Teacher Emotional Support in Preventing Burnout: The Moderating Role of Academic Anxiety. *International Journal of Environmental Research and Public Health,* 17, 4771, doi:10.3390/ijerph17134771.

Salas-Wright, C. P., Cano, M., Hai, A. H., Cano, M. Á., Oh, S., Piñeros-Leaño, M., & Vaughn, M. G. (2021). Alcohol abstinence and binge drinking: The intersections of language and gender among Hispanic adults in a national sample, 2002–2018. *Social Psychiatry and Psychiatric Epidemiology*, *57*(4), 727–736. https://doi.org/10.1007/s00127-021-02154-1

Salerno, S., Taylor, J., & Kilpatrick, Q. K. (2019). Immigrant generation, stress exposure, and substance abuse among a South Florida sample of Hispanic Young Adults. *Socius: Sociological Research for a Dynamic World*, *5*, 237802311984301. https://doi.org/10.1177/2378023119843017

Serpas, D. G. (2021). Everyday discrimination and mental health symptoms among Hispanic and Non-Hispanic students of color attending a Hispanic serving institution. *Health Equity*, *5*(1), 316–323. https://doi.org/10.1089/heq.2020.0095

Schepis, T. S., De Nadai, A. S., Bravo, A. J., Looby, A., Villarosa-Hurlocker, M. C., & Earleywine, M. (2021). Alcohol use, cannabis use, and psychopathology symptoms among college students before and after covid-19. *Journal of Psychiatric Research*, *142*, 73–79. https://doi.org/10.1016/j.jpsychires.2021.07.040

Serván-Mori, E., Gonzalez-Robledo, L. M., Nigenda, G., Quezada, A. D., González-Robledo, M. C., & Rodríguez-Cuevas, F. G. (2020). Prevalence of depression and generalized anxiety disorder among Mexican indigenous adolescents and young adults: Challenges for Healthcare. *Child Psychiatry & Human Development*, *52*(1), 179–189. https://doi.org/10.1007/s10578-020-01001-9

Sukumaran, P. (2018). *Alcoholism: A rising health crisis for latinos*. Salud America. Retrieved December 19, 2021, from https://salud-america.org/alcoholism-a-rising-health-crisis-for-latinos/#:~:text=Latinos%20and%20Alcohol%3A%20Stats&text=Puerto%20Ricans%20have%20higher%20rates,and%20Mental%20Health%20Services%20Administration.

Thomas Tobin, C. S., Erving, C. L., & Barve, A. (2020). Race and SES differences in psychosocial resources: Implications for social stress theory. *Social Psychology Quarterly*, *84*(1), 1–25. https://doi.org/10.1177/0190272520961379

Tran, A. G., Lee, R. M., & Burgess, D. J. (2010). Perceived discrimination and substance use in Hispanic/latino, African-born black, and Southeast Asian immigrants. *Cultural Diversity and Ethnic Minority Psychology*, *16*(2), 226–236. https://doi.org/10.1037/a0016344

US Department of Health and Human Services. (2021). *Alcohol and the Hispanic Community*. National Institute on Alcohol Abuse and Alcoholism. Retrieved November 9, 2021, from https://www.niaaa.nih.gov/publications/brochures-and-fact-sheets/alcohol-and-hispanic-community.

Valentín-Cortés, M., Benavides, Q., Bryce, R., Rabinowitz, E., Rion, R., Lopez, W. D., & Fleming, P. J. (2020). Application of the minority stress theory: Understanding the mental health of undocumented Latinx immigrants. *American Journal of Community Psychology*, *66*(3-4), 325–336. https://doi.org/10.1002/ajcp.12455

Venegas, J., Cooper, T. V., Naylor, N., Hanson, B. S., & Blow, J. A. (2012). Potential cultural predictors of heavy episodic drinking in Hispanic College students. *The American Journal on Addictions*, *21*(2), 145–149. https://doi.org/10.1111/j.1521-0391.2011.00206.x

White, H. R., Stevens, A. K., Hayes, K., & Jackson, K. M. (2020). Changes in alcohol consumption among college students due to covid-19: Effects of campus closure and residential change. *Journal of Studies on Alcohol and Drugs*, *81*(6), 725–730. https://doi.org/10.15288/jsad.2020.81.725

Weerakoon, S. M., Jetelina, K. K., & Knell, G. (2020). Longer time spent at home during COVID-19 pandemic is associated with binge drinking among us adults. *The American Journal of Drug and Alcohol Abuse*, *47*(1), 98–106. https://doi.org/10.1080/00952990.2020.1832508

Woodford, M. R., Han, Y., Craig, S., Lim, C., & Matney, M. M. (2014). Discrimination and mental health among sexual minority college students: The type and form of discrimination does matter. *Journal of Gay & Lesbian Mental Health*, *18*(2), 142–163. https://doi.org/10.1080/19359705.2013.833882

Zhou, S., Banawa, R., & Oh, H. (2021). The mental health impact of covid-19 racial and ethnic discrimination against Asian American and Pacific Islanders. https://doi.org/10.1101/2021.06.06.21258177

Zimet, G.D., Dahlem, N.W., Zimet, S.G. & Farley, G.K. (1988). The Multidimensional Scale of Perceived Social Support. Journal of Personality Assessment, 52, 30-41.

Figure 1a.

Hypothesis One, Relation Between Variables

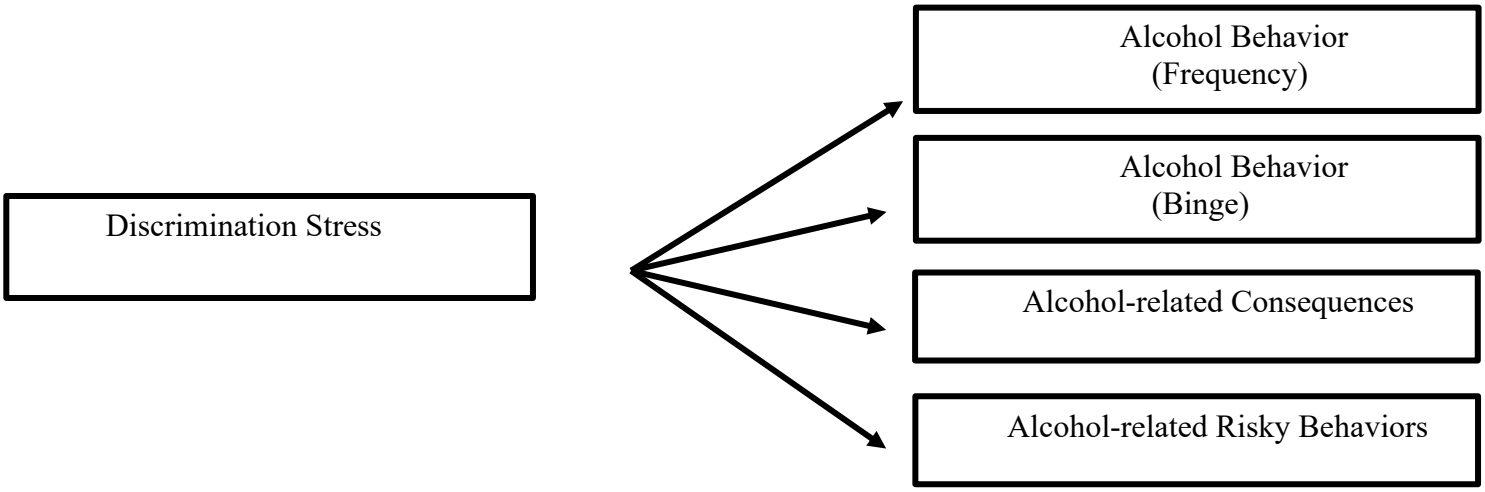

Figure 1b.
Hypothesis Two, The protective factor of Perceived Social Support

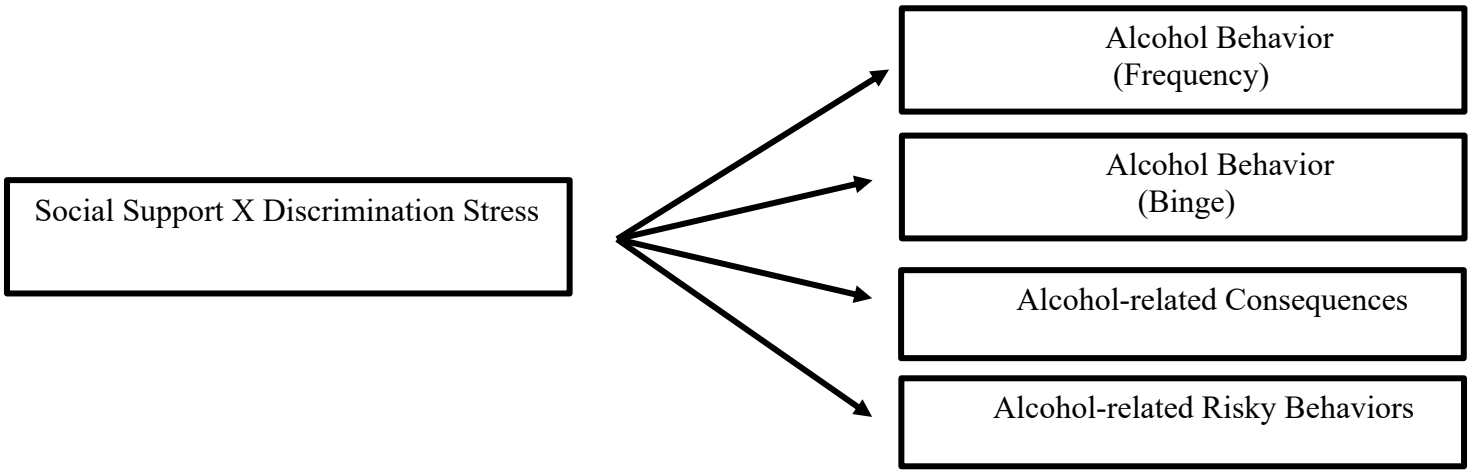

Table 1

Demographic Characteristics, N=343

	Sample Characteristics	*n*	(%)	*M*(SD)
Age		343	100	*23.7*(5.7)
Sex assigned at birth				
	Female	246	71.7	
	Male	97	28.3	
Gender Identity	Woman	240	70.0	
	Man	91	26.5	
	Transgender	5	1.5	
	Trans woman	2	0.6	
	Gender queer	7	2.0	
	Another Identity	3	0.9	
Ethnicity				
	Latinx	343	100	
Employment (Pre Covid)				
	Unemployed	117	34.1	
	Full Time	74	24.6	
	Part Time	152	44.3	
Employment (Change due to COVID-19 Pandemic)		150	43.7	

Not Applicable	194	56.6
No longer employed	118	34.4
Working less hours per week	24	7.0
Working more hours per week	7	2.0

*Note: Demographic information for the N=343 Latinx Participants

Table 2

Epidemic-Pandemic Impacts Inventory (COVID-19 Stressors), N=343

	Variable Characteristics	*n*	%	*M*(SD)
Emotional Health				*3.57*(1.74)
	Spent more time on screens and devices	316	92.10	
	Increase in sleep problems or poor sleep quality	283	82.50	
	Increase in mental health problems or symptoms	252	73.50	
	Increase in child's sleep difficulties or nightmares	90	26.20	
	Increase in child behavioral or emotional problems	88	25.70	
	Unable to access mental health treatment or therapy	79	23.00	
	Increase in use of alcohol or substances	66	19.20	
	Not satisfied with changes in mental health treatment or therapy	50	14.60	
Physical Health				*3.46*(1.46)
	More time sitting down or being sedentary	319	93.00	
	Less physical activity or exercise	295	86.00	
	Overeating or eating more unhealthy foods	254	74.10	
	Got less medical care than usual	131	38.20	
	Increase in health problems not related to this disease	86	25.10	
	Important medical procedure cancelled	56	16.30	
	Elderly or disabled family member not in the home unable to get the help they need	30	8.70	
	Unable to access medical care for a serious condition	17	5.00	

Quarantining				*2.57*(1.87)
	Isolated or quarantined due to possible exposure to this disease	207	60.30	
	Limited physical closeness with child or loved one due to concerns of infection	154	44.90	
	Isolated due to existing health conditions that increase risk of infection or disease	145	42.30	
	Entire household was quarantined for a week or longer	138	40.20	
	Isolated or quarantined due to symptoms of this disease	122	35.60	
	Close family member not in the home was quarantined	69	20.10	
	Family member was unable to return home due to quarantine or travel restrictions	33	9.60	
	Moved out or lived away from family due to a high-risk job	15	4.40	
Infection History				*1.17*(1.26)
	Someone died of this disease while in our home	131	38.20	
	Had symptoms of this disease but never tested	10	30.90	
	Got medical treatment due to severe symptoms of this disease	56	16.30	
	Death of close friend or family member from this disease	30	8.70	
	Currently have symptoms of this disease but have not been tested	26	7.60	
	Tested positive for this disease but no longer have it	22	6.40	
	Hospital stays due to this disease	17	5.00	
	Tested and currently have this disease	13	3.80	

*Note: The table illustrates the numbers and percentage of participants “Yes Me” or “Yes person in the home” response to EPII Items from sections Emotional and physical health, Quarantining and infection history with in past 30 days. The overall mean and Standard deviation of each section is also reported.

Table3

Features of Study's Variables

Variables	Characteristic	*M*(SD)	Range	Skewness	Kurtosis
Discrimination (GED)					
	Associated stress	*24.95*(13.00)	16-83	2.00	3.98
General Stress (DASS)					
	Overall DASS	*31.00*(25.59)	0-110	0.80	-0.11
Perceived Social Support (MSPSS)					
	Overall Support	*5.39*(1.29)	1-7	-1.06	1.32

*Note: The table illustrate the descriptive statistics of statistics of GED= General Ethnic Discrimination scale; DASS= Depression, Anxiety, Stress Scale; MSPSS=Multidimensional Scale of Perceived Social Support.

Table 4

Characteristics of Each Items in Outcome Variables

Variables	Characteristic	*n* (%)	Range	Skewness	Kurtosis
Alcohol behavior					
	Drinking days, past 30 days		*0-6*	*0.78*	*-0.98*
	Never drank alcohol	126 (36.70)			
	Have drank, but not in last 30 days	72 (21.00)			
	1-2 days	56 (16.30)			
	3-5 days	37 (10.80)			
	6-9 days	20 (5.80)			
	10-19 day	23 (6.70)			
	20-29 days	8 (2.30)			
	Used daily	1 (0.30)			
	Binge Drinking, days in past 2 weeks		*0-4*	*3.62*	*14.52*
	0 days	294 (85.70)			
	1-2 days	31 (9.00)			
	3-4 days	11 (3.20)			
	5-6 days	3 (0.90)			
	7 or more days	4 (1.20)			
Consequences, Past 12 month					
	Did something you later regretted		*1-3*	*-0.18*	*-0.76*
	Yes	54 (15.70)			

No	184 (53.60)			
I do not drink	105 (30.60)			
Forgot where you were or what you did		*1-3*	*-0.12*	*-0.45*
Yes	36 (10.50)			
No	205 (59.80)			
I do not drink	102(29.70)			
Got in trouble with the police		*1-3*	*0.64*	*-0.77*
Yes	4 (1.20)			
No	238 (69.40)			
I do not drink	101(29.40)			
Someone had sex with me without my consent		*1-3*	*0.70*	*-0.85*
Yes	3 (0.90)			
No	239 (69.70)			
I do not drink	101(29.40)			
Had sex with someone without their consent		*1-3*	*0.92*	*-1.16*
Yes	0 (0.00)			
No	243 (70.80)			
I do not drink	100 (29.20)			
Had unprotected sex		*1-3*	*-0.15*	*-0.67*
Yes	51 (14.90)			
No	191 (55.70)			
I do not drink	101 (29.40)			

	Physically injured yourself		*1-3*	*0.14*	*-0.30*
	Yes	17 (5.00)			
	No	225 (65.60)			
	I do not drink	101(29.40)			
	Physically injured another person		*1-3*	*0.70*	*-0.85*
	Yes	3 (0.90)			
	No	239 (69.70)			
	I do not drink	101 (29.40)			
	Seriously considered suicide		*1-3*	*0.40*	*-0.47*
	Yes	9 (2.60)			
	No	233 (67.90)			
	I do not drink	101 (29.40)			
Risky Behaviors, Recent					
	Were you in a physical fight?		*1-2*	*9.14*	*82.00*
	Yes	4(1.20)			
	No	339(98.80)			
	Were you physically assaulted?		*1-2*	*10.60*	*111.00*
	Yes	3(0.90)			
	No	340(99.10)			
	Were you verbally threatened?		*1-2*	*4.03*	*14.34*
	Yes	18(5.20)			

No	325(94.80)			
Were you sexually touched without your consent?		*1-2*	*9.14*	*82.00*
Yes	4(1.20)			
No	339(98.80)			
Was sexual penetration attempted without your consent?		*1-2*	*10.60*	*111.00*
Yes	3(0.90)			
No	340(99.10)			
Were you sexually penetrated without your consent?		*1-2*	*10.60*	*111.00*
Yes	3(0.90)			
No	340(99.10)			
Were you a victim of stalking?		*1-2*	*5.62*	*29.78*
Yes	10(2.90)			
No	333(97.10)			

Table 5

The Correlation Coefficient for The Main Study Variables &Covariates

	1	2	3	4	5	6	7	8	9	10
1.Age										
2. Sex	-.07									
3.EPII	.06	.10								
4. DASS	.01	.07	.40**							
5.GED	.02	.07	.33**	.38**						
6.MSPSS	.00	.07	-.08	-.23**	-.05					
7.AU	.13*	-.06	.05	.21**	.18**	.03				
8. Binge Drinking	.07	-.14*	.04	.12*	.09	-.03	.47**			
9.Consequences	.11*	.02	.12*	.17**	.15**	.05	.48**	.26**		
10.Risky behaviors	-.09	-.00	.15**	.15**	.16**	-.07	.04	.03	.07	

*Note: *p<0.05, **p<0.01;(2 tailed). The N value for all variables were 343. The pairwise deletion was used. Left Column abbreviations. 1.Age; 2. Sex; 3. EPII= Epidemic-Pandemic Impacts Inventory(COVID-19 Stressors);4. DASS= Depression, Anxiety, Stress Scale (General Stress levels); 5.GED = GED= General Ethnic Discrimination(Stress associated with discrimination) ; ;6. MSPSS= Multidimensional Scale of Perceived Social Support(Overall Social Support); Alcohol Behavior(7.Frequency; 8.Binge Drinking); 9.Consequences(Sum of all the items); 10.RiskyBehaviors(Sum of all the items)

Table 6.

The association between Discrimination Stress and Drinking days in past 30.

Variable	B	SE	95% Wald Conf.Interval	Wald Chi-Square	IRR	Likelihood Ratio Chi-square
Model 1						22.71***
Age	.03	.01	CI [.01, .06]	5.71*	1.03	
Sex	-.14	.17	CI [-.48, .20]	.69	.87	
EPII	-.01	.02	CI [-.05, .03]	.15	.99	
DASS	.01	.00	CI [.01, .02]	14.91***	1.01	
Model 2						27.09***
Age	.04	.01	CI [.01, .06]	6.08*	1.04	
Sex	-.14	.17	CI [-.48, .20]	.65	.87	
EPII	-.02	.02	CI [-.06, .02]	.79	.98	
DASS	.01	.00	CI [.00, .02]	9.87**	1.01	
GED	.01	.01	CI [.00, .03]	4.31*	1.01	
Model 3						29.84***
Age	.03	.01	CI [.01, .06]	5.60*	1.03	
Sex	-.16	.17	CI [-.50, .18]	.83	.85	
EPII	-.02	.02	CI [-.06, .02]	.71	.98	
DASS	.01	.00	CI [.01, .02]	11.63***	1.01	
GED	.01	.01	CI [.00, .03]	4.44*	1.01	
MSPSS	.11	.01	CI [-.02, .24]	2.72	1.12	
Model 4						30.71***
Age	.03	.01	CI [.01, .06]	5.36*	1.03	
Sex	-.15	.17	CI [-.49, .20]	.71	.86	
EPII	-.02	.02	CI [-.06, .02]	.77	.98	
DASS	.01	.00	CI [.01, .02]	11.44***	1.01	
GED	.04	.02	CI [-.01, .08]	2.10	1.04	
MSPSS	.22	.13	CI [-.05, .48]	2.60	1.24	
GED X MSPSS	-.00	.00	CI [-.01, .01]	.86	1.00	

Note: *p<.05, **p<.01, ***p<.001, Negative binomial regression models predicted the association between discrimination stress and alcohol frequency within the past 30 days. Age, Sex (Male reference group), EPII= Epidemic-Pandemic Impacts Inventory (COVID-19 Stressors), and DASS= Depression, Anxiety, Stress Scale (General stress) are constant variables. GED= General Ethnic Discrimination scale (Discrimination stress); MSPSS=Multidimensional Scale of Perceived Social Support; GED X MSPSS = Interaction between discrimination stress and perceived social support. B=Unstandardized coefficient, SE= Standard Error, and IRR=Incidence rate ratio. The Likelihood ratio changed from [LR= 22.71 p =0.00] to [LR= 27.09 p =0.00] after discrimination stress was included and were founded significant [LR= 29.84 p =0.00] after the protective variable of social support was added to the model.

Table 7.

The association between Discrimination Stress and Binge Drinking in Past Two Weeks.

Variable	B	SE	95% Wald Conf.Interval	Wald Chi-Square	IRR	Likelihood Ratio Chi-square
Model 1						8.84
Age	.03	.02	CI [-.02, .07]	1.17	1.03	
Sex	-.64	.32	CI [-1.26, -.02]	4.03*	.53	
EPII	-.00	.04	CI [-.08, .07]	.00	1.0	
DASS	.01	.01	CI [-.00, .02]	3.40	1.01	
Model 2						9.60
Age	.03	.02	CI [-.02, .07]	1.21	1.03	
Sex	-.64	.32	CI [-1.27, -.02]	4.13*	.53	
EPII	-.01	.04	CI [-.09, .07]	.05	1.00	
DASS	.01	.01	CI [-.00, .02]	2.32	1.01	
GED	.01	.01	CI [-.01, .03]	.79	1.01	
Model 3						9.61
Age	.03	.02	CI [-.02, .07]	1.20	1.03	
Sex	-.65	.32	CI [-1.27, -.02]	4.13*	.52	
EPII	-.01	.04	CI [-.09, .07]	.05	1.00	
DASS	.01	.01	CI [-.00, .02]	2.31	1.01	
GED	.01	.01	CI [-.01, .03]	.79	1.01	
MSPSS	.01	.12	CI [-.23, .25]	.01	1.01	
Model 4						9.61
Age	.03	.02	CI [-.02, .07]	1.20	1.03	
Sex	-.65	.32	CI [-1.27, -.02]	4.10*	.52	
EPII	-.01	.04	CI [-.09, .07]	.05	1.00	
DASS	.01	.01	CI [-.00, .02]	2.30	1.01	
GED	.01	.04	CI [-.07, .10]	.08	1.01	
MSPSS	.02	.24	CI [-.46, .50]	.01	1.02	
GED X MSPSS	.00	.01	CI [-.02 , .02]	.00	1.00	

Note: *p<.05, **p<.01, ***p<.001, Negative binomial regression models predicted the association between discrimination stress and Binge drinking in the past two weeks. Age, Sex (Male reference group), EPII= Epidemic-Pandemic Impacts Inventory (COVID-19 Stressors), and DASS= Depression, Anxiety, Stress Scale (General stress) are constant variables. GED= General Ethnic Discrimination scale (Discrimination stress); MSPSS=Multidimensional Scale of Perceived Social Support; GED X MSPSS = Interaction between discrimination stress and perceived social support. B=Unstandardized coefficient, SE= Standard Error, and IRR=Incidence rate ratio.

Table 8.

The association between Discrimination Stress and Alcohol- related Consequences.

Variable	B	SE	95% Wald Conf.Interval	Wald Chi-Square	IRR	Likelihood Ratio Chi-square
Model 1						6.33
Age	.02	.01	CI [-.01, .04]	1.91	1.02	
Sex	.05	.13	CI [-.21, .30]	.13	1.05	
EPII	.01	.01	CI [-.02, .04]	.64	1.01	
DASS	.00	.00	CI [-.00, .01]	2.27	1.00	
Model 2						7.03
Age	.02	.01	CI [-.01, .04]	1.86	.17	
Sex	.05	.13	CI [-.21, .30]	.12	.73	
EPII	.01	.01	CI [-.02, .04]	.31	.58	
DASS	.00	.00	CI [-.00, .01]	1.42	.23	
GED	.00	.01	CI [-.01, .01]	.69	.41	
Model 3						7.93
Age	.01	.01	CI [-.01, .04]	1.63	1.02	
Sex	.04	.13	CI [-.21, .30]	.11	1.04	
EPII	.01	.01	CI [-.02, .04]	.30	1.01	
DASS	.00	.00	CI [-.00, .01]	1.92	1.00	
GED	.00	.01	CI [-.01, .01]	.68	1.00	
MSPSS	.05	.05	CI [-.05, .14]	.90	1.05	
Model 4						8.32
Age	.01	.01	CI [-.01, .04]	1.56	1.01	
Sex	.05	.13	CI [-.21, .30]	.13	1.05	
EPII	.01	.01	CI [-.02, .04]	.31	1.01	
DASS	.00	.00	CI [-.00, .01]	1.84	1.00	
GED	.02	.02	CI [-.02, .05]	.67	1.02	
MSPSS	.10	.10	CI [-.09, .29]	1.03	1.10	
GED X MSPSS	-.00	.00	CI [-.01, .01]	.39	1.00	

Note: *p<.05, **p<.01, ***p<.001, Negative binomial regression models indicated the association between discrimination stress and Alcohol consequences within the past 12 months. Age, Sex (Male reference group), EPII= Epidemic-Pandemic Impacts Inventory (COVID-19 Stressors), and DASS= Depression, Anxiety, Stress Scale (General stress) are constant variables. GED= General Ethnic Discrimination scale (Discrimination stress); MSPSS=Multidimensional Scale of Perceived Social Support; GED X MSPSS = Interaction between discrimination stress and perceived social support. B=Unstandardized coefficient, SE= Standard Error, and IRR=Incidence rate ratio.

Table 9.

The association between Discrimination Stress and Alcohol- related Risky Behavior.

Variable	B	SE	95% Wald Conf.Interval	Wald Chi-Square	IRR	Likelihood Ratio Chi-square
Model 1						22.96***
Age	-.10	.05	CI [-.20, -.01]	4.31*	.90	
Sex	-.26	.37	CI [-.97, .46]	.50	.77	
EPII	.09	.04	CI [.02, .16]	5.87*	1.09	
DASS	.02	.01	CI [.00, .03]	6.00*	1.01	
Model 2						24.78***
Age	-.10	.05	CI [-.20, -.00]	4.19*	91	
Sex	-.28	.37	CI [-1.00, .44]	.58	.76	
EPII	.07	.04	CI [.00, .15]	3.91*	1.08	
DASS	.01	.01	CI [-.00, .03]	3.41	1.01	
GED	.02	.01	CI [-.01, .04]	1.89	1.02	
Model 3						25.98***
Age	-.10	.05	CI [-.20, -.00]	4.16*	.91	
Sex	-.22	.37	CI [-.95, .52]	.33	.81	
EPII	.08	.04	CI [.00, .15]	4.08*	1.08	
DASS	.01	.01	CI [-.00, .02]	2.43	1.01	
GED	.02	.01	CI [-.01, .04]	2.06	1.02	
MSPSS	-.14	.13	CI [-.40, .11]	1.23	.87	
Model 4						26.44***
Age	-.10	.05	CI [-.20, -.01]	4.13*	.91	
Sex	-.23	.37	CI [-1.00, .50]	.38	.79	
EPII	.07	.04	CI [.00, .15]	3.79*	1.08	
DASS	.01	.01	CI [-.00, .02]	2.50	1.01	
GED	-.01	.04	CI [-.09, .07]	.06	1.00	
MSPSS	-.29	.25	CI [-.79, .21]	1.32	.75	
GED X MSPSS	.01	.01	CI [-.01, .02]	.45	1.01	

Note: *p<.05, **p<.01, ***p<.001, Negative binomial regression models displayed the relationship between discrimination stress and Alcohol-related risky behavior within the past 30 days. Age, Sex (Male reference group), EPII= Epidemic-Pandemic Impacts Inventory (COVID-19 Stressors), and DASS= Depression, Anxiety, Stress Scale (General stress) are constant variables. GED= General Ethnic Discrimination scale (Discrimination stress); MSPSS=Multidimensional Scale of Perceive Social Support.