A moderated mediation model: the interplay between discrimination, marianismo, alcohol use, and culturative stress among Latina college students

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A MODERATED MEDIATION MODEL: THE INTERPLAY BETWEEN DISCRIMINATION, MARIANISMO, ALCOHOL USE, AND ACCULTURATIVE STRESS AMONG LATINA COLLEGE STUDENTS

by

Yajaira A. Cabrera Tineo

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DEDICATION

I dedicate this dissertation to God for giving me the grace of perseverance, and to my parents, Jose Antonio and Florangel, my siblings, Jose Antonio Jr. and Cristy, and my loving boyfriend, JuanJose for always believing in me and supporting my educational goals and aspirations. Si se puede y si se pudo!
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ABSTRACT

Although alcohol use is on the rise among young Latina college students, little is known about drinking behaviors among this population. The present study sought to expand the current literature by examining (a) the mediating role of alcohol use in the relationship between perceived discrimination and acculturative stress, in addition to (b) competing models of conditional moderated mediation between perceived discrimination, alcohol use, marianismo beliefs, and acculturative stress, while accounting for nativity. Path analyses were conducted with data from 1243 Latina students between the ages of 18 and 25 from college campuses across the U.S. Mediation analyses indicated that alcohol use did not explain the link between perceived discrimination and acculturative stress. Moreover, conditional moderated mediation analyses indicated that the mediation effect of alcohol use was not dependent on any of the separate marianismo beliefs. Findings revealed several significant direct associations between perceived discrimination and acculturative stress, marianismo beliefs and alcohol use, and nativity and acculturative stress. Implications, limitations, and future directions are discussed.

Keywords: Perceived discrimination, alcohol use, marianismo beliefs, acculturative stress, Latina college students
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CHAPTER ONE: INTRODUCTION

Alcohol use is a public health concern among young adults, with approximately 55% of full-time college students between the ages of 18 and 22 reporting drinking within the past month, and about 37% of them engaging in heavy episodic drinking (i.e., operationalized as 5 or more drinks for men or 4 or more drinks for women on a single occasion; NAAA, 2019a). In general, Latinx college students engage in comparable drinking rates as Whites, but report more alcohol-related problems than White college students (DiBello et al., 2016) and general community samples (Zemore et al., 2018). Data further indicate that Latinx are more prone to continue heavy episodic drinking beyond emerging adulthood than Whites (Mulia et al., 2018).

Although Latinas are considered a low-risk group for alcohol use (Cabellos et al., 2012), emerging data suggest that young Latina women are now drinking at rates similar to, and at times exceeding, their male counterparts (NAAA, 2019b). Data also suggest that Latina college students are drinking at higher rates than national samples of Latinas over the age of 18 (Perrotte et al., 2020). Alcohol use and the risk of developing alcohol-related problems may be more prominent among Latina college students than non-college attending Latinas due to the transitions associated with the college experience (e.g., leaving their homes for the first time, becoming more independent; Bekteshi & van Hook, 2015; Power & McKinney, 2013; Schwartz et al., 2011). Latinas’ racial/ethnic identity (e.g., experiences of discrimination) and conflicting cultural expectations (e.g., experiences of acculturative stress) between Latinx heritage and U.S. dominant cultural norms may further complicate emerging adulthood, particularly in college (Bekteshi & Hook, 2015; Cano et al., 2015; Vaughan et al., 2014). Together, these experiences could make them susceptible to increased psychological distress (Lui, 2015) and problematic drinking (Cano et al., 2015). As such, there is a need to examine young adult Latina drinking
behaviors to inform the development of culturally-tailored prevention and intervention programs targeting alcohol use among this population. To this end, the present study sought to contribute to the literature by examining potential sociocultural processes (i.e., perceived discrimination and traditional gender norm endorsement) underlying alcohol use among Latina college students.

**Discrimination and Alcohol Use**

The association between discrimination and negative health outcomes (e.g., psychological distress, substance use, and physical health; Carter et al., 2017) is well documented in the literature across marginalized groups, including Latinx (Molina et al., 2013; Otiano Verissimo et al., 2014). The *minority stress model* postulates that People of Color may experience unfair biases and treatment from others due to their marginalized racial/ethnic identity (Meyer, 2003; O’Keefe et al., 2014), which in turn may make them susceptible to a number of psychological responses. That is, a minority identity may place one at risk for experiencing prejudice and discrimination (i.e., minority stress) that could lead to psychological and health concerns such as alcohol use (Otiano Verissimo et al., 2014).

Among immigrant groups, such as Latinx, adapting to the U.S. involves a unique process of racialization (i.e., a process through which individuals are ascribed specific meanings based on features related to any one of their identities; Silverstein, 2005) by which they are challenged with ideas about their “minority” status and the stigmatized meanings attached to their group (Cabrera Tineo et al., 2020; Viruell-Fuentes et al., 2012). Discriminatory experiences and derogatory messages related to Latinx racial/ethnic identity can cause conflicting ideas about themselves and others from their group. As Latinx undergo this racialization process, they may

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1 Although it is projected that People of Color will comprise the majority of the U.S. population by 2050, they are still referred to as minority members within society, which has caused some debate about use of this terminology. Thus, the use of quotation marks here is to highlight this discrepancy.
attempt to construct a more positive sense of self by engaging in coping strategies to manage negative experiences, some of which may be risky and negatively impact their health (Virruell-Fuentes, 2011; Virruell-Fuentes et al., 2012). For example, Latinx may distance themselves from members of their racial/ethnic group to avoid the negative connotations attached to their racial/ethnic identities and assimilate to U.S. dominant culture (Virruell-Fuentes, 2011) or engage in increased alcohol use—a behavior that is indicative of being more acculturated to the U.S. culture as it conflicts with the traditional gender norms that discourage alcohol use among Latina women (Cano et al., 2015).

Per the stress-coping model of addiction (Gil et al., 2000), alcohol use can be used as a coping mechanism to manage stress and help increase positive affect and decrease negative affect. However, repeatedly drinking to cope with distress can lead to the development of alcohol problems or alcohol use disorder (Gil et al., 2000). Latinx are particularly susceptible to increased alcohol use and alcohol-related problems because discrimination is a stressful experience (Otiano Verissimo et al., 2014). Numerous empirical studies support the links between increased discrimination, alcohol use, and alcohol-related problems among Latinx samples (Abraido-Lanzza et al., 2016; Cabrera Tineo et al., 2020; Carter et al., 2017; Gilbert & Zemore, 2016). Although the stress-alcohol relationship is widely accepted within the minority stress and stress coping models (Gilbert & Zemore, 2016), this body of literature is limited by solely focusing on the direct path from discrimination to alcohol use. Hence, examining the role of alcohol use more broadly in relation to stress and other health outcomes is warranted to expand our understanding of the minority stress and stress-coping models, particularly among understudied populations such as Latinas.

**Alcohol Use as a Mediator between Perceived Discrimination and Acculturative Stress**
Among Latinas, it is possible that alcohol use may help explain the relationship between discrimination and other psychological and health outcomes, such as acculturative stress. Specifically, *acculturative stress* refers to psychological strain resulting from the adaptation process (Berry, 2005), including language competency and the negotiation between conflicting cultural pressures from native and receiving cultures (Rodriguez et al., 2002). A relatively recent study by Ertl et al. (2017) demonstrated that alcohol use exacerbates acculturative stress among recently immigrated (< 12 months of U.S. residence) Latina young adults. Ertl et al.’s finding is noteworthy because it suggests that alcohol use is not just a negative health outcome, but may also contribute to negative health outcomes and distress among Latinas. From a theoretical perspective, this finding has significant implications for the stress-coping model of addiction. If this finding is replicable, the model may need to be modified to include additional pathways where alcohol use is not only an outcome but also a predictor of health determinants or other negative health outcomes (e.g., acculturative stress). Furthermore, such findings will also imply that preventative and treatment interventions need to consider reducing alcohol use as a means to address other negative health outcomes. Thus, the present study examined alcohol use as a mediator between discrimination and acculturative stress, as a means to further our understanding of its role in relation to stress and other negative health outcomes.

Although acculturative stress is not in and of itself a negative health outcome, it is an outcome of discrimination and an important determinant of negative health outcomes among Latina women (Bekteshi et al., 2017; De Oliveira et al., 2017). As per the literature, acculturative stress has been positively related to depression (Torres, 2010), psychological distress (Da Silva et al., 2017), decreased physical health (Finch & Vega, 2003), disordered eating (Claudat et al., 2016), and alcohol use (Lee et al., 2013). Based on this understanding, the present study drew
from the minority stress model to expand our understanding of how portions of the model may relate to discrimination, alcohol use, and other forms of stress, such as acculturative stress.

Latinas, for example, may experience discrimination due to their racial/ethnic identity and consume alcohol as a coping strategy (Otiano Verissimo et al., 2014), particularly because alcohol use is a normative behavior among college students and more congruent with U.S. norms than traditional Latinx norms (Cano et al., 2015; Perrotte et al., 2020). Engaging in alcohol use—a dominant cultural norm—may lead to increased pressures against acculturation, as members of these women’s cultural heritage (e.g., family and friends) may look down on them or accuse them of assimilating to U.S. culture for engaging in alcohol use (Bekteshi & van Hook, 2015; Cano, 2016). This supposition is based on the social identity theory (Tajfel, 1981), which postulates that individuals who do not adhere to their group’s cultural norms may become subject to marginalization. In contrast, alcohol use can also negatively relate to pressures for acculturation, as alcohol use is a dominant cultural norm and indicative of being more acculturated to U.S. culture. That is, alcohol use may help explain the relationship between perceived discrimination and acculturative stress (i.e., pressures to acculturate and pressures against acculturation) because alcohol use itself is indicative of greater acculturation to the U.S. culture.

According to a relatively recent meta-analysis, there is a significant association between acculturation and alcohol use among the general Latinx population (Lui & Zamboanga, 2018). That is, the more acculturated Latinx individuals are to U.S. culture, the more likely they are to engage in alcohol use. More importantly, the meta-analysis revealed larger correlations among Latina women as compared to Latino men between acculturation and drinking frequency, intensity, binge drinking, and drinking problems. The explanation provided by the authors for the
gender difference is consistent with the understanding that alcohol use among Latina women is incongruent with traditional Latinx cultural norms. Thus, in the present study, alcohol use was seen as an indicator of acculturation among Latina college students that could change their experience of acculturative stress.

**Marianismo: A Moderator between Perceived Discrimination, Alcohol Use and Acculturative Stress**

Because alcohol use and experiences of acculturative stress among Latinas are influenced by other sociocultural factors than those accounted for by the minority stress and stress-coping models, the present study also applied a cultural-social context model approach to examine the interplay between perceived discrimination, alcohol use, and acculturative stress among young Latina college students (Castro & Alarcón, 2002). Specifically, the cultural-social context model postulates that sociocultural factors (e.g., marianismo beliefs) influence substance use among marginalized racial/ethnic groups, and further recommends the incorporation of such factors as moderators in the relationship between social context (e.g., perceived discrimination) and health behaviors (e.g., alcohol use; Cano, 2016; Castro & Alarcón, 2002). To this end, it is expected that such investigations will inform prevention and treatment efforts by considering cultural factors that influence health risk behaviors and could be used to create cultural adaptations that would increase the effectiveness of interventions among marginalized racial/ethnic groups.

Among Latinas, marianismo is a sociocultural factor that merits attention (Erlt et al., 2019; Nuñez et al., 2016; Perrotte & Zamboanga, 2021). Specifically, *marianismo* is a set of beliefs rooted in the image of the Virgin Mary, emphasizing that women should (a) be sources of strength for their families, (b) remain chaste or pure until marriage, (c) be subordinate to others, (d) self-silence to keep familial harmony, and (e) be spiritual leaders of their families (Castillo et
al., 2010). Endorsing dimensions of marianismo may be seen as either positive or negative depending on its association with positive or negative health outcomes. For example, some scholars have conceptualized the virtuous/chaste, family pillar, and spiritual pillar marianismo beliefs as “positive marianismo,” with these beliefs being associated with more positive outcomes (e.g., decreased depression; Cupito et al., 2015). In contrast, “negative marianismo” includes the self-silencing and subordinate to others beliefs, with these being associated with more negative outcomes (e.g., acculturative stress; Ertl et al., 2019).

Although the underlying theory of marianismo suggests that these beliefs as a whole may be protective against a number of risky health behaviors, dimensions of marianismo are hypothesized to differentially affect the behavior of Latina women depending on the context (Bekteshi & van Hook, 2015; Ceballos et al., 2012; Perrotte & Zamboanga, 2021). In regards to alcohol use, marianismo is a key factor to consider among Latina women because its multiple dimensions (e.g., subordinate to others, virtuous and chaste beliefs) may facilitate or limit alcohol consumption. Sanchez et al. (2019), for example, found that the virtuous/chaste beliefs were negatively related to substance use among Mexican American adolescent girls. While virtuous/chaste beliefs may be incongruent with alcohol use, other marianismo beliefs such as being subordinate to others have been suggested to potentially lead to alcohol use (Perrotte et al., 2020), particularly within a context of normative heavy alcohol use such as college (Perrotte et al., 2018). Due to the complexity of marianismo beliefs and its multidimensionality, researchers have called for the examination of each dimension in relation to alcohol use (Perrotte et al., 2018; Perrotte et al., 2020). To this end, the present study examined whether the mediation effect of alcohol use between perceived discrimination and acculturative stress is dependent on the moderating effect of each of the marianismo beliefs on the relation between perceived
discrimination and alcohol use. Additionally, the moderating effect of each of the marianismo beliefs was examined on the relation between perceived discrimination and acculturative stress (i.e., pressures to acculturate and pressures against acculturation).

To date, no study has examined the conditional moderated mediation effect (i.e., a mediation effect that is conditional upon a moderation effect; Hayes, 2018) between perceived discrimination and acculturative stress, with marianismo beliefs as the moderator and alcohol use as the mediator, among Latina college students. In the context of drinking to cope with discrimination, experiences of acculturative stress (i.e., pressures to acculturate and pressures against acculturation) may be influenced differently by the endorsement of specific marianismo beliefs due to how these function across contexts (Perrotte & Zamboanga, 2021) and cultural conflict relating to the permissibility of alcohol use among Latina women (Cano et al., 2015; Cebellos et al., 2012). The latter is assumed because adhering or subscribing to Latinx cultural values (e.g., marianismo) from one’s heritage is incongruent with the dominant cultural norms within the college environment, such as alcohol use (e.g., Cano, 2016; Ertl et al., 2019). Therefore, examining the moderating effect of marianismo beliefs in regard to the relationships between perceived discrimination, alcohol use, and dimensions of acculturative stress (i.e., operationalized as pressures to acculturate and pressures against acculturation) among young Latina college students is, therefore, paramount.

**The Present Study**

Drawing from the minority stress and stress-coping models and utilizing a cultural-social approach, the present study examined (a) the mediation effect of alcohol use on the link between perceived discrimination and acculturative stress, in addition to the (b) conditional moderated mediation effect between perceived discrimination and acculturative stress with marianismo
beliefs as the moderator, while accounting for nativity. Nativity may be an important health determinant among Latina women (Viruell-Fuentes, 2007), and a potential covariate in the hypothesized relations based on whether these women were U.S.-born or foreign-born. The present study also measured two dimensions of acculturative stress, pressures to acculturate and pressures against acculturation. To date, no study has examined alcohol use as a mediator of the relation between perceived discrimination and acculturative stress, particularly in regard to multiple dimensions of acculturative stress.

All mediation and conditional moderated mediation models included perceived discrimination as having a positive relation to acculturative stress (i.e., pressures to acculturate and pressures against acculturation; paths 2 and 3) and alcohol use (path 1). For conditional moderated mediation models examining the moderation effect of subordinate to others and self-silencing marianismo beliefs (See Figure 2), it was hypothesized that subordinate to others and self-silencing marianismo beliefs would strengthen the relation between perceived discrimination and alcohol use (path 7). In turn, alcohol use would further (a) negatively relate to pressures to acculturate (path 10) and (b) positively relate to pressures against acculturation (paths 11). It was also expected that subordinate to others and self-silencing marianismo beliefs would positively relate to alcohol use. For conditional moderated mediation models examining the moderation effect of virtuous/chaste, family pillar, and spiritual pillar marianismo beliefs (See Figure 3), it was expected that these moderators would weaken the relation between perceived discrimination and alcohol use (path 7). In turn, alcohol use would (a) positively relate to pressures to acculturate (path 10) and (b) pressures against acculturation (paths 11). Furthermore, it was expected that the virtuous/chaste, family pillar, and spiritual pillar marianismo beliefs would negatively relate with alcohol use. It was expected that marianismo beliefs would strengthen the
relation between perceived discrimination and acculturative stress, regardless of the dimension. Additionally, it was expected that marianismo would positively relate to acculturative stress (i.e., pressures to acculturate and pressures against acculturation (paths 5 and 6).
CHAPTER TWO: METHOD

Participants

The present study consisted of a sample of 1,243 Latina/Hispanic female college students, who self-identified as alcohol drinkers, from a larger cross-sectional study examining the psychological and sociocultural correlates of college drinking attitudes and behaviors across several universities in the U.S. To partake in the larger study, participants had to be current college students between the ages of 18 and 25. The age criteria was based on the definition of emerging adulthood (Arnett, 2000) and captures the age of the traditional college students. In the present study, the mean age was 20.19 (SD = 1.78). The vast majority of participants self-identified as heterosexual (85.6%), whereas the rest self-identified as part of the LGBTQ+ community. Participants were from all class years, with 26.8% being first-year students, 21.8% second-year students, 29.5% third-year students, 3.4% fifth-year students, and .4% Other. Over a third (38.4%) of participants indicated living with parents, 32.5% reported living in off-campus apartments, 20.3% indicated living on campus, 4.9% indicated living in university-owned apartments, 2.6% reported living with relatives other than parents, and .7% indicated living in sorority houses. The remainder (.6%) of participants did not specify their residence. About 21% of participants identified as international students and approximately 17% were foreign-born.

Procedure

Participants were recruited from Fall 2017 to Summer 2019 across 12 participating universities in the U.S. Recruitment efforts were made via research participant pools, classroom and email announcements, flyer postings across universities, extra credit, and prized raffles. Participants were directed to an informed consent online page detailing all the details of the study and their rights. After consent was provided, participants were directed to a 45-60 minute
online Qualtrics survey on substance misuse and sociocultural correlates of alcohol use. All data were collected online, and anonymously to maintain confidentiality. Participants were provided with research/course credits or were entered into a raffle as compensation for their time. IRB approval was granted at each and every university involved.

Measures

**Perceived Discrimination.** The Everyday Discrimination Scale (EDS; Kim et al., 2014; Williams et al., 1997) was utilized to examine perceived discrimination (See Appendix A). The EDS is a 9-item measure that assesses chronic, routine, and minor unfair treatment in everyday life. Example items include: “You are treated with less courtesy than other people are” and “You are treated with less respect than other people are.” Items are rated using a Likert-type scale ranging from 1 (*never*) to 6 (*experience discrimination almost every day*). Higher scores are indicative of increased perceived discrimination or everyday discriminatory incidents. In the present study, the total score was used as a composite variable for EDS, Cronbach alpha and test-retest reliability during two to four weeks for the EDS have generally been acceptable at .74 and .70, respectively (Krieger et al., 2005). In the present study, the Cronbach alpha was .93.

The EDS was originally developed with a sample of White and Black community members (Williams et al., 1997) and has since been validated with diverse populations, including college students (Kwan et al., 2018) and Latinx (Kim et al., 2014).

**Marianismo Beliefs.** The Marianismo Beliefs Scale (MBS; Castillo et al., 2010) was used to examine marianismo beliefs (See Appendix B). The MBS is a 24-item instrument that assesses women’s endorsement of traditional Latina gender roles through five subscales: Family Pillar (5 items), Virtuous and Chaste (5 items), Subordinate to Others (5 items), Silencing Self to Maintain Harmony (6 items), and Spiritual Pillar (3 items). Example items include “Remaining(}
a virgin until marriage” and “The spiritual leader of the family.” Although items are rated on a 4-point Likert-type scale (i.e., from 1 [disagree strongly] to 4 [agree strongly]) on the original scale, the present study used a 7-point Likert-type ranging from (1 = disagree strongly) to (7 = agree strongly). Ratings are based according to the degree that participants agree with each statement. In the present study, a mean score was computed for each of the marianismo beliefs subscales. Internal consistency for each of the marianismo beliefs subscales were reported at .77, .79, .76, .78, and .85 for Family Pillar, Virtuous and Chaste, Subordinate to Other, Self-silencing to Maintain Harmony, and Spiritual Pillar, respectively (Castillo et al., 2010). In the present study, internal reliability was .82, .79, .75, .85, .85 for Family Pillar, Virtuous and Chaste, Subordinate to Other, Self-silencing to Maintain Harmony, and Spiritual Pillar, respectively.

The MBS was originally developed with a sample of college students from Mexican decent (Castillo et al., 2010). Measurement invariance testing has provided support for the five-factor structure for the MBS across language (i.e., Spanish and English), sex (i.e., male and female), and several Latinx subgroups (i.e., Dominican, Cuban, Puerto Rican, Mexican American, Central American, and South American; Castillo et al., 2020).

**Alcohol Use.** The Alcohol Use Disorders Identification Test Consumption Subscale (AUDIT-C; Saunders et al., 1993) was used to examine alcohol use (See Appendix C). The AUDIT-C is a 3-item subscale originating from the 10-item AUDIT (Barry et al., 2013) that assesses alcohol consumption within the past year. Items on the AUDIT-C are based on a standard drink. Thus, a scale that demonstrates a standard drink of beer, shot, and wine is presented to participants. All items are scored from 0 to 4, with higher scores indicating more alcohol consumption. For the AUDIT-C, total possible scores range from 0 to 12. In the present study, a total score was created summing up the responses to each of the items of the AUDIT-C.
A clinical cut-off of 4 appears to be optimal to detect at-risk drinking among women (Aalto et al., 2009) and college students (Madson et al., 2020). The cutoff of 4 is used to provide a percentage of the participants who engage in clinically significant at-risk drinking for descriptive purposes only to facilitate comparisons of at-risk drinking across studies.

The AUDIT-C has been validated across genders, several racial/ethnic groups (Frank et al., 2008), and populations, such as college students (Barry et al., 2013; DeMartini & Carey, 2012). Furthermore, DeMartini and Carey (2012) found the AUDIT-C performs considerably better compared to the AUDIT in detecting at-risk drinking among college students, particularly for females. Internal consistency for the AUDIT-C with a college sample has been reported at .80 (Campbell & Maisto, 2018). Although the psychometrics of the AUDIT-C are limited, it is widely used in research because of its clinical significance (Frank et al., 2008). Hence, it was determined to be an appropriate measure to examine alcohol use, with an internal reliability of .68 in the present study.

**Acculturative Stress: Pressures to Acculturate and Pressures Against Acculturation.**

The Multidimensional Acculturative Stress Inventory (MASI; Rodriguez et al., 2002) was utilized to measure both pressures to acculturate and pressures against acculturation (See Appendix D). The MASI is a 36-item measure that examines acculturative stress during the past three months across four dimensions, (a) Spanish competency pressures, (b) English competency pressures, (c) pressures to acculturate, and (d) pressures against acculturation. In the present study, only the pressures to acculturate and pressures against acculturation subscales were used due to their relevance to the variables of interest. Specifically, the pressures to acculturate is a 7-item subscale with items reflecting pressures associated with adopting to U.S. dominant culture. Example items include, “It bothers me when people pressure me to assimilate to the American
ways of doing things” and “I don’t feel accepted by Whites.” In contrast, the pressures against acculturation is a 4-item subscale with items reflecting pressures associated with not adhering to native culture. Example items include, “I have had conflicts with others because I prefer American customs over Latino ones” and “People look down upon me if I practice American customs.” All items as rated on a 5-point Likert-type scale ranging from 0 (does not apply) to 5 (very well/very much). Higher scores indicate greater involvement or identification with either native or U.S. cultural norms. Mean scores for each scale (i.e., pressures to acculturate and pressures against acculturation) were used to create composite variables.

Internal consistency and test-retest coefficients over a period of 2-weeks for pressures to acculturate and pressures against acculturation were reported at .84/.53 and .77/.84, respectively (Rodriguez et al., 2002). Subscales of pressures to acculturate and pressures against acculturation have been reported to be correlated at .46; thus, a multivariate approach was used (Haase & Ellis, 1987) and the multicollinearity and covariance of these two subscales were modeled within the conceptual and statistical models (see Figures 1, 2, 3, and 4). In the present study, the internal reliability for pressures to acculturate and pressures against acculturation were .80 and .60, respectively.

The MASI was originally developed with a community sample of Latinx with Mexican descent. Although the MASI was originally developed using principal components analyses, it has been examined for its factor structure and measurement equivalence across Latinx and Asian individuals (Castillo et al., 2015). The MASI has been used and validated among Latinx college students (Castillo et al., 2015).

**Covariate.** Nativity (0 = U.S.-born or 1 = foreign-born) was as a covariate in the present study.
Data Analytic Plan

**Preliminary Analysis.** Before conducting the main analyses, data were screened for missing values using Little’s Missing Completely at Random (MCAR) \( \chi^2 \) test to determine the extent and nature of missing data. Data were also screened for univariate and multivariate outliers. Mahalanobis distances \( (D^2) \) values were calculated to detect multivariate outliers. Further, the data were examined for linearity, normality, homoscedasticity, and multicollinearity. Bivariate correlations were performed among all variables of interest to determine if they were significant relations among variables.

**Main Analysis.** A total of 5 Multivariate Measured Variable Path Analysis (MVPA) were conducted in Mplus Version 8.8 (Muthén & Muthén, 2012) to examine the hypothesized mediation and conditional moderated mediation models (See Figures 3 and 4). Of note, all interaction terms were created between perceived discrimination and each of the marianismo beliefs by multiplying these predictors. All variables in the statistical model were standardized to prevent issues of multicollinearity when estimating interaction effects. Error terms associated with pressures to acculturate and pressures against acculturation were allowed to correlate as these variables were both taken from the MASI, the acculturative stress measure.

To examine the conditional moderated mediation models, the present study used bootstrapping. Specifically, bootstrapping is a nonparametric resampling technique that allows for the computation of an indirect effect in a large number of samples (Preacher & Hayes, 2008), which further provides standard errors and percentile confidence intervals. A significant indirect effect is found when confidence intervals do not include zero at \( p < .05 \). The fit between the statistical models (See Figures 3 and 4) and the data were assessed using (1) the comparative fit index (CFI), (2) the standardized root-mean-square residual (SRMR), and (3) the root-mean
square error of approximation (RMSEA). Although there is no consensus in the literature regarding the best approach for examining model fit, the recommendations set by Hu and Bentler (1999) was carried out according to the following criteria (Hu & Bentler, 1999): $\text{CFI} \geq .96$, $\text{SRMR} \leq .08$, or $\text{RMSEA} \leq .06$. 
CHAPTER THREE: RESULTS

Preliminary Analyses

Before conducting the main analyses, data were examined for missing values and regression statistical assumptions. Data were not missing at random, as evidenced by a significant Little’s Missing Completely at Random (MCAR) $\chi^2$ test at an alpha level of .05. To preserve the validity of the analyses, participants ($n = 101$) who had more than 5% of missing data on each of the variables of interests (i.e., perceived discrimination, marianismo, alcohol use, and acculturative stress) were excluded from the main analyses. No univariate outliers were identified using criteria for adequate leverage (>2k/n for large samples; Cohen et al., 2003), discrepancy/leverage based on the standardized deleted residual values (> 3.0 or < -3.0), Cook’s distance [$> 1$ or $4/(n-k-1)$], and DFBETAS (>1.0 or < -1.0; Field, 2013). However, 119 participants were identified as multivariate outliers, with statistically significant ($p < .05$) $D^2$ values greater than the critical value for $D^2$. These participants were closely examined and removed from the main analyses due to being consistent multivariate outliers across all dependent variables (i.e., alcohol use and acculturative stress sub-scales). After the removal of these problematic cases, the sample size consisted of 1,243 participants, who were included in all subsequent analyses. Although variance inflation factor (VIF) values were significantly lower than 10 for all predictors, the high correlation (.80%) between subordinate to others and self-silencing beliefs indicated redundancy among these two variables of interest. Hence, a new variable was created combining subordinate to others beliefs and self-silencing beliefs with the mean of both scales. Skewness and kurtosis values were less than $|3|$ and $|8|$, respectively, for all variables of interest. However, the assumption of normality was violated for all the main variables of interest (i.e., perceived discrimination, marianismo, alcohol use, and acculturative
stress). As such, log transformations were conducted for all main variables of interest. All preliminary analyses were conducted on SPSS Version 25.

**Descriptives and Correlations**

Bivariate correlations can be found in Table 1. A total of 45.2% of Latina women in the sample were considered to be engaging in at-risk drinking behaviors using the clinical cut-off of 4 on the AUDIT-C. Alcohol use was negatively related to family pillar beliefs and virtuous and chaste beliefs. Perceived discrimination was associated with acculturative stress, pressures to acculturate, and pressures against acculturation. Nativity was significantly correlated with perceived discrimination, pressures against acculturation, and all five marianismo beliefs (i.e., family pillar, virtuous and chaste, etc.). That is, foreign-born Latinas were more likely to endorse traditional marianismo, experience discrimination, and pressures against acculturation as compared to US-born Latinas.

**Main Analyses**

All main analyses were conducted in Mplus 8.8 (Muthén & Muthén, 2017) using maximum likelihood estimation. All models included nativity as a covariate due to its significant correlation with some of the main variables of interest. To examine mediation and conditional moderated mediation, the bias-corrected bootstrap technique with 1,000 samples was used to calculate 95% confidence intervals (MacKinnon et al., 2002). All variables were standardized. Model fit statistics were irrelevant due to models being completely saturated.

**Mediation**

Before examining conditional moderated mediation, a mediation analysis was conducted to assess whether alcohol use explained the relationship between perceived discrimination and acculturative stress (i.e., pressures to acculturate and pressure against acculturation). It was
expected that perceived discrimination would be related to alcohol use, which, in turn, would be related to two types of acculturate stress, pressures to acculturate and pressures against acculturation. As shown in Table 2, perceived discrimination had a non-significant relationship with alcohol use, and alcohol use had non-significant associations with pressures to acculture, and pressures against acculturation. The indirect effect of perceived discrimination on pressures to acculturative and pressures against acculturation were also non-significant while accounting for nativity. Hence, conventional mediation was not supported.

*Moderated mediation*

Next, conditional moderated mediation was examined per each of the marianismo beliefs subscales as specified in Figures 3 and 4. As previously stated, subordinate to others and self-silencing beliefs were combined into one variable due to concerns over multicollinearity. Hence, only four moderated mediation models were tested as opposed to five, as originally planned.

**MBS Subordinate to Others/Self-Silencing Model.** All path analyses in the full moderated mediation model with subordinate to others/self-silencing beliefs as the moderator are presented in Table 3. In this model, the association between perceived discriminationXsubordinate to others/self-silencing beliefs and alcohol use was nonsignificant, which indicated that subordinate to others/self-silencing beliefs did not moderate alcohol use. The associations between alcohol use and the acculturative stress subscales also were non-significant, pressures to acculturate and pressures against acculturation. Lastly, the association between perceived discrimination and alcohol use was nonsignificant. Taken together, these results did not support moderated mediation between perceived discrimination and acculturative stress with subordinate to others/self-silencing beliefs as the moderator.
As expected, perceived discrimination×subordinate to others/self-silencing beliefs moderated pressures to acculturate (See Figure 5). However, no moderation effect was found for perceived discrimination×subordinate to others/self-silencing beliefs on pressures against acculturation. Perceived discrimination was also positively related to pressures to acculturate and pressures against acculturation. Contrary to expectations, the association between subordinate to others/self-silencing beliefs and alcohol use was non-significant. Additionally, subordinate to others/self-silencing beliefs was negatively related to pressures to acculturate and pressures against acculturation. Being foreign-born was positively associated with pressures against acculturation.

**MBS Family Pillar Model.** All path analyses in the full moderated mediation model with family pillar beliefs as the moderator are presented in Table 3. In this model, the association between perceived discrimination×family pillar beliefs and alcohol use was nonsignificant, which indicated that family pillar beliefs did not moderate alcohol use. The associations between alcohol use and the acculturative stress subscales also were non-significant, pressures to acculturate and pressures against acculturation. The association between perceived discrimination and alcohol use was nonsignificant. Thus, results did not support moderated mediation between perceived discrimination and acculturative stress (i.e., pressures to acculturate and pressures against acculturation) with family pillar beliefs as the moderator.

Contrary to expectations, perceived discrimination×family pillar beliefs did not moderate pressures to acculturate or pressures against acculturation. Perceived discrimination was positively related to pressures to acculturate and pressures against acculturation. As expected, there was a significant negative association between family pillar beliefs and alcohol use. Additionally, there were nonsignificant associations between family pillar beliefs and pressures
to acculturate, and pressures against acculturation. Being foreign-born was negatively associated with pressures to acculturate.

**MBS Virtuous Chaste Model.** All path analyses in the full moderated mediation model with virtuous and chaste beliefs as the moderator are presented in Table 3. In this model, the association between perceived discrimination × virtuous and chaste beliefs and alcohol use was nonsignificant, which indicated that virtuous and chaste beliefs did not moderate alcohol use. The associations between alcohol use and the acculturative stress subscales were non-significant, pressures to acculturate and pressures against acculturation. The association between perceived discrimination and alcohol use was nonsignificant. Moderated mediation between perceived discrimination and acculturative stress (i.e., pressures to acculturate and pressures against acculturation) with virtuous and chaste beliefs as the moderator was not supported.

As expected, perceived discrimination × virtuous and chaste beliefs moderated pressures to acculturate (See Figure 6). However, perceived discrimination × virtuous and chaste beliefs did not moderate pressures against acculturation. Perceived discrimination was positively associated with pressures to acculturate and pressures against acculturation. As expected, there was a significant negative association between virtuous and chaste beliefs and alcohol. Additionally, virtuous and chaste beliefs had significant negative associations with pressures to acculturate and pressures against acculturation. Being foreign-born was negatively associated with pressures to acculturate and positively associated with pressures against acculturation.

**MBS Spiritual Pilar Model.** All path analyses in the full moderated mediation model with spiritual pillar beliefs as the moderator are presented in Table 3. In this model, the association between perceived discrimination × spiritual pillar beliefs and alcohol use was nonsignificant, which indicated that spiritual pillar beliefs did not moderate alcohol use. The
associations between alcohol use and the acculturative stress subscales were also non-significant, pressures to acculturate and pressures against acculturation. The association between perceived discrimination and alcohol use was non-significant. Thus, results did not support moderated mediation between perceived discrimination and acculturative stress (i.e., pressures to acculturate and pressures against acculturation) with spiritual pillar as the moderator.

Contrary to expectations, perceived discriminationXspiritual pillar beliefs did not moderate pressures to acculturate or pressures against acculturation. Perceived discrimination did positively relate to pressures to acculturate and pressures against acculturation. Spiritual pillar beliefs had nonsignificant associations with alcohol use, pressures to acculturate, and pressures against acculturation. Being foreign-born was negatively associated with pressures to acculturate and positively associated with pressures against acculturation.
CHAPTER FOUR: DISCUSSION

Informed by the minority stress and stress-coping models and utilizing a cultural-social approach, the present study sought to expand our understanding of (a) the sociocultural and political factors that influence alcohol use and (b) the role of alcohol use in relation to significant determinants of health (e.g., perceived discrimination, acculturative stress) among Latina college students. To this end, the present study examined mediation and conditional moderated mediation models assessing the associations between perceived discrimination, alcohol use, marianismo beliefs, and acculturative stress, while accounting for nativity. Across all models, findings replicated the strong association between perceived discrimination and acculturative stress (Bekteshi & Kang, 2020; Torres et al., 2012), underscoring the idea that these young women’s experiences of acculturative stress are closely tied to sociocultural and political factors, such as perceived discrimination. Hence, the importance of broadening our understanding of how other factors may interact and help explain the association between perceived discrimination and acculturative stress to inform individual and systemic prevention and intervention programs to address discrimination among this understudied population.

Mediation: Perceived Discrimination, Alcohol Use, and Acculturative Stress

In the mediation model, findings indicated (a) a nonsignificant relationship between perceived discrimination and alcohol use, in addition to (b) nonsignificant relations between alcohol use and the two dimensions of acculturative stress; pressures to acculturate and pressures against acculturation. That is, alcohol use did not help explain the link between perceived discrimination and acculturative stress. The nonsignificant association between perceived discrimination and alcohol use is contrary to the minority stress model and a strong body of literature supporting this link (Cabrera Tineo et al., 2020; Cano, 2020; Gilbert & Zemore, 2016;
Otiniano Verissimo et al. (2014). Among this group of Latina college students, however, it is possible that alcohol use may be associated with extraneous variables.

A possible explanation may be that other forms of discrimination, such as intragroup marginalization (e.g., being marginalized by members of one’s ethnic group due to behaving in accordance with mainstream norms; Castillo et al., 2007), could play more of a factor in alcohol use in this population as compared to perceived discrimination. Mata-Greve and Torres (2019), for example, found that intragroup marginalization and intragroup separation predicted depression, anxiety, and alcohol misuse above and beyond general ethnic discrimination among a sample of mostly Latina community women of Mexican descent. Intragroup marginalization may be particularly relevant for Latina women who endorse more traditional Latinx values, particularly around the central value of familismo (e.g., the importance of family, such as keeping close ties with family members; Steidel & Contreras, 2003) and the idea of honoring one’s family. Hence, deviating from familial expectations and traditional or native cultural norms within group members may be seen as dishonoring the family, and consequently, lead to intragroup separation, which may heighten their risk of developing an alcohol use disorder.

Among college students specifically, research also suggests that engaging in heavy drinking may be socially motivated (White et al., 2016), which denotes the importance of examining motivations for drinking—a significant limitation within the present study that could have helped clarify the non-significant association between perceived discrimination and alcohol use.

Although the present study is the first to attempt to explain Ertl’s (2017) novel finding regarding alcohol use exacerbating acculturative stress among Latina women, the nonsignificant associations between alcohol use, perceived discrimination, and acculturative stress might be attributable to the uniqueness of the present sample. For instance, a large proportion of
participants (38.4%) reported living at home with parents, which could have played a role in the nonsignificant findings. Living at home with parents may serve as a protective factor against drinking among college students. Indeed, students who live at home with parents have reported less frequent alcohol use than their counterparts (Chan et al., 2020). Among Latina young adults specifically, living at home may be indicative of the traditional Latinx central value of familismo which also may buffer experiences of discrimination and acculturative stress (Umaña-Taylor et al., 2011).

**Moderated Mediation: Marianismo Beliefs, Perceived Discrimination, Alcohol use, and Acculturative stress**

A total of four conditional moderated mediation models were examined to detect whether the mediation effect of alcohol use on perceived discrimination and acculturative stress was dependent upon the moderating effect of marianismo beliefs at different levels of the moderating variable (Hayes, 2018). Across all four models with changing marianismo beliefs (e.g., subordinate to others/self-silencing beliefs versus family pillar beliefs, etc.), findings indicated nonsignificant moderated mediation. That is, the mediation effect of alcohol use on perceived discrimination and acculturative stress (i.e., pressures to acculturate and pressures against acculturation) was not dependent on the marianismo beliefs. As such, the main hypotheses regarding conditional moderated mediation were not supported.

In regards to the direct relations between marianismo beliefs and alcohol use, findings indicated that only family pillar beliefs and virtuous and chaste beliefs were negatively and significantly associated with alcohol use, providing partial support for the study hypotheses. These findings support the protective nature of the family pillar and virtuous and chaste beliefs against negative health outcomes (e.g., decreased depression; Cupito et al., 2015), including
alcohol use (Sanchez et al., 2019). However, the nonsignificant associations between other marianismo beliefs and alcohol use highlight the complexity of this construct and how distinct dimensions may operate differently across samples of Latina women. Perrotte et al. (2020), for example, noted that it is possible that only some of the marianismo beliefs may be directly related to alcohol use, while others may be unrelated or indirectly related to alcohol use through other factors. Hence, the importance of conducting more robust examinations of marianismo beliefs and alcohol use among Latina women.

In regards to acculturative stress, moderation was detected in the moderated mediation models examining subordinate to others/self-silencing beliefs and virtuous and chaste beliefs. Findings indicated that both (1) perceived discriminationXsubordinate to others/self-silencing beliefs and (2) perceived discriminationXvirtuous and chaste were negatively related to pressures to acculturate, providing partial support for a priori hypotheses. The negative nature of these associations suggests that these particular marianismo beliefs (i.e., subordinate to others/self-silencing beliefs and virtuous and chaste beliefs) inverted the relationship between perceived discrimination and pressures to acculturate. To illustrate, findings suggest the more these Latina college women endorsed subordinate to others/self-silencing beliefs, the more perceived discrimination increased and pressures to acculturate decreased or the more discrimination increased, the more these women endorsed these marianismo beliefs and pressures to acculturate decreased; likewise, the more these Latina women endorsed virtuous and chaste beliefs, the more perceived discrimination increased and pressures to acculturate decreased or the more discrimination increased, the more these Latina women endorsed these marianismo beliefs and pressures to acculturate decreased. A possible explanation for these findings may be that these women’s endorsement of traditional gender beliefs, coupled with experiences of discrimination,
may lead them to limit engagement in mainstream society, and thus, limit their exposure to pressures to acculturate. This explanation is substantiated by the notions that (a) societal factors such as experiences of discrimination may influence adaptation strategies among Latinx groups (Berry, 2015), and (b) perceived discrimination and acculturative stress result largely from interacting with mainstream society (Torres et al., 2012).

Subordinate to others/self-silencing beliefs and virtuous and chaste beliefs were negatively related to acculturative stress. More specifically, women who endorsed higher levels of subordinate to others/self-silencing beliefs and virtuous and chaste beliefs were less likely to experience pressures to acculturate and against acculturation. Interestingly, these findings are inconsistent with study hypotheses and other research suggesting that marianismo beliefs of subordinate to others, self-silencing, and virtuous chaste are positively related to acculturative stress (Ertl et al., 2019). However, because endorsement of marianismo beliefs may be indicative of lower levels of acculturation (Cabrera Tineo et al., 2020), it is possible that the women in the present study may be protected from mainstream society, and consequently, experience less pressure to acculturate or not acculturate because it is less relevant to them. Concurrently, endorsement of marianismo beliefs would be a protective factor from pressures against acculturation from members of their cultural group because these women are adhering to traditional values. Additionally, since the vast majority of the women in the present study were U.S. born, another possibility is that these women may have higher levels of intercultural competence (e.g., ability to effectively navigate and interact with both heritage and receiving cultures; Driscoll & Torres, 2020) due to their bi-cultural upbringing. Hence, these women may be less likely to experience acculturative stress as compared to other groups of Latinas.
It is notable that in the present study being foreign-born was negatively associated with pressures to acculturate when considering family pillar beliefs and virtuous and chaste beliefs. That is, women who were foreign-born reported experiencing less pressure to acculturate when endorsing family pillar beliefs and virtuous and chaste beliefs. Moreover, being foreign-born was also positively associated with pressures against acculturation when considering subordinate to others/self-silencing beliefs, virtuous and chaste beliefs, and spiritual pillar beliefs. That is, women who were foreign-born reported experiencing more pressures against acculturation when endorsing greater subordinate to others/self-silencing beliefs, virtuous and chaste beliefs, and spiritual pillar beliefs. In general, being foreign-born is indicative of lower acculturation levels, and, perhaps, less exposure to mainstream society (Viruell-Fuentes, 2007). Thus, it is reasonable to speculate that these foreign-born women would experience less pressure to acculturate from mainstream society and more pressure against acculturation from these women’s cultural heritage group (e.g., relatives, friends).

Implications

In the current sample, 45.2% of all Latina women were considered to be engaging in at-risk drinking behaviors using the clinical cut-off of a score of 4 on the AUDIT-C. This percentage of at-risk drinking is significantly higher than the reported percentage for binge drinking (22.66%) among Latina college students in other samples (e.g., Krieger et al., 2018), but comparable to the reported percentage (about 50%) for Latinx college student samples, including males and females (e.g., Cano et al., 2015; Zamboanga et al. 2006). The high percentage of at-risk drinking among the current sample supports more permissive gender norms about drinking from the acculturation process (Cano et al., 2015; NIAAA, 2019b), particularly among a group of emerging adults. Among Latina college students specifically, preventative and
treatment interventions targeting alcohol use should be mindful of marianismo beliefs and how they function to either exacerbate or limit their alcohol use. Based on the present findings, for example, family pillar, and virtuous and chaste beliefs were negatively related to alcohol use, suggesting that these beliefs may serve as protective factors for alcohol use, and therefore, should be incorporated into the larger conversation about alcohol use.

Clinicians may integrate marianismo beliefs in alcohol use treatment by assessing the level of endorsement of these beliefs and how they function in relation to thoughts and behaviors associated with drinking among Latinx college students. For instance, a Latina student may endorse higher levels of virtuous and chaste beliefs and/or family pillar beliefs that preclude their engagement in heavy episodic drinking. If this is the case, it may be helpful to explore what about their beliefs or thought processes related to gender makes it important for them to limit their alcohol use. Another possibility may be that the Latina student may endorse these marianismo beliefs and engage in heavy episodic drinking, which makes it particularly relevant to explore and highlight the cognitive dissonance. In this case, using a value-based approach to help resolve the ambivalence or dissonance may be particularly relevant to help prevent these women from developing an alcohol use disorder or experiencing negative alcohol-related consequences.

Although acculturation and changes resulting from it (e.g., endorsement of marianismo beliefs) may play an important role in drinking behaviors among Latina women, drinking behaviors among this population still remains largely understudied and misunderstood (Perrotte et al., 2020). In the present study, the high rates of at-risk drinking, coupled with a high percentage of women living at home with parents, highlights the need to consider other factors, including residential status and other traditional values (e.g., familismo) in relation to alcohol
use. Although national studies have indicated that about half of young adults and the general college student population lives at home, most of the research on college drinking behaviors has been conducted with students living on campus or far away from home (Fry et al., 2020; Chan et al., 2020). This represents a significant gap in the literature on college drinking, particularly for marginalized groups such as Latina women who may be more likely to live at home while attending college than their White counterparts. Hence, the importance for researchers and clinicians alike to explore how residential status and on-campus and off-campus leisure activities may exacerbate alcohol use.

Furthermore, preventative and treatment interventions targeting Latinx alcohol use should address political and sociocultural factors, such as perceived discrimination, marianismo, and acculturative stress, that may function to develop, maintain, or deter problematic drinking. Possible ways to address these concerns in treatment may be to evaluate the level of endorsement of these factors during an intake, and subsequently, include them into the larger conversation in treatment if relevant to the individual. As such, treatment interventions will take a culturally-tailored approach that may increase the effectiveness of these efforts.

**Limitations & Future Research**

The findings of the present study need to be considered in light of its limitations. First, the study is cross-sectional which limits any causal claims regarding the variables of interest. As such, findings should be interpreted as relational rather than causal. Researchers are encouraged to examine the interplay between perceived discrimination, marianismo, alcohol use, and acculturative stress over time to determine whether there are causal relations. Second, the use of a general perceived discrimination instrument (i.e., EDS) related to race in the present study did not account for other types of discriminatory experiences (e.g., intragroup marginalization).
which may be more relevant to alcohol use among Latina women (Mata-Greve & Torres, 2019). Third, although the stress coping model of addiction was used to inform the present study, drinking motivates were not examined, and thus, it is not clear what reasons participants had for consuming alcohol or not. Future research should include a measure of drinking motives to examine the reasons for which Latina college students are engaging in alcohol use. Fourth, although nativity was accounted for by all models examined, there are several other variables that might have influenced the present findings, including, but not limited to: acculturation levels, residential status, intragroup marginalization, and motivations for drinking. Lastly, it is important to recognize that Latinas are a heterogeneous group and that sub-Latinx groups may have similar, but distinct experiences of perceived discrimination, marianismo, alcohol use, and acculturative stress. Hence, it is encouraged that future studies (a) examine the variables of interest across different Latinx subgroups and (b) examine measurement invariance of these specific variables (e.g., marianismo, acculturative stress) across Latinx subgroups, as these experiences may varied across ethnicity and geographic location based on the political and sociocultural climate.

Concurrently, there are several strengths to the present study. The use of mediation and competing conditional moderated mediation models to understand structural relations between perceived discrimination, marianismo, alcohol use, and acculturative stress among Latina college students is noteworthy. Because findings from these types of statistical analyses provide a more nuanced and comprehensive understanding of the interrelationships among these variables, consumers can develop more precise and effective prevention and intervention efforts targeting college drinking among Latina students. Moreover, the present study examined two dimensions of acculturative stress, pressures to acculturate and pressures against acculturation, which
provide insight into the complexity of bicultural identity and the adaptation process for Latinas. Furthermore, the use of multivariate MVPA limited the number of tests performed and subsequently protected against Type I and Type II error rates, which help validate the current findings.
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Appendix A: Everyday Discrimination Scale (EDS; Kim, Sellbom, & Ford, 2014; Williams et al., 1997)

Instructions: In your day-to-day life, how often do any of the following things happen to you because of your race/ethnicity?

Rating:

Likert-type scale ranging from 1 (never) to 6 (experience discrimination almost every day).

1. You are treated with less courtesy than other people are
   1 2 3 4 5 6
2. You are treated with less respect than other people are
   1 2 3 4 5 6
3. You receive poorer service than other people at restaurants or stores
   1 2 3 4 5 6
4. People act as if they think you are not smart
   1 2 3 4 5 6
5. People act as if they are afraid of you
   1 2 3 4 5 6
6. People act as if they think you are dishonest
   1 2 3 4 5 6
7. People act as if they’re better than you are
   1 2 3 4 5 6
8. You are called names or insulted
   1 2 3 4 5 6
9. You are threatened or harassed
   1 2 3 4 5 6
Appendix B: Marianismo Beliefs Scale (Castillo et al., 2010)

Instructions: The following series of statements represent some of the different expectations for Hispanic and Latina girls and women. For each statement, please mark the answer that best describes what **YOU BELIEVE** rather than what you were taught or what you usually practice.

The rating scale is as follows:
1 = Strongly disagree
2 = Disagree
3 = Slightly disagree
4 = Neither disagree or agree
5 = Slightly agree
6 = Agree
7 = Strongly agree

A Hispanic or Latina girl/woman …
1. Must be a source of strength for the family
2. Is considered the main source of strength for her family
3. Mother must keep the family unified
4. Should teach her children to be loyal to the family
5. Should do things that make her family happy
6. Should (should have) remain(ed) a virgin until marriage
7. Should wait until after marriage to have children
8. Should be pure
9. Should adopt the values taught by her religion
10. Should be faithful to her partner
11. Should satisfy her partner’s sexual needs with argument
12. Should not speak out against men
13. Should respect men’s opinions even when she does not agree
14. Should avoid saying no to people
15. Should do anything a male in her family asks her to do
16. Should not discuss birth control
17. Should not express her needs to her partner
18. Should feel guilty about telling people what she needs
19. Should not talk about sex
20. Should be forgiving in all aspects
21. Should always be agreeable to men’s decisions
22. Should be the spiritual leader of the family
23. Is responsible for taking family to religious services
24. Is responsible for the spiritual growth of the family
Appendix C: The AUDIT-C Questionnaire

This next section asks you about your drinking behaviors and attitudes toward alcohol use. Please read over the next set of questions carefully and answer honestly and to the best of your ability. Please note that some of these questions might seem quite personal, but remember, your privacy will be strictly protected.

1. **How often do you have a drink containing alcohol?**

   (0) Never
   (1) Monthly or less
   (2) 2 to 4 times a month
   (3) 2 to 3 times per week
   (4) 4 or more times a week

2. **How many drinks containing alcohol do you have on a typical day when you are drinking?**

   (0) 1 or 2
   (1) 3 or 4
   (2) 5 or 6
   (3) 7 or 8
   (4) 10 or more

3. **How often do you have six or more drinks on one occasion?**

   (0) Never
   (1) Less than monthly
   (2) Monthly
   (3) Weekly
   (4) Daily or almost daily

**Scoring:** Sum of 3 questions results in possible AUDIT-C scores of 0–12 points

Recommended screening thresholds: ≥ 4 points for women and college students
Appendix D: Acculturative Stress (Rodriguez et al., 2002)

**Instructions:** Please think about whether you had experience any of the statements below within the past 3 months. If you have not experienced a statement, please indicate 0 (does not apply). If you have experienced the statement during the past 3 months, please rate the stressfulness of that event using a 5-point scale ranging from 1 (not at all stressful) to 5 (extremely stressful).

### Pressures to Acculturate

1. It bothers me when people pressure me to assimilate to the American ways of doing things.  
   0 1 2 3 4 5
2. It bothers me when people don’t respect my Latino values.  
   0 1 2 3 4 5
3. Because of my cultural background, I have a hard to fitting in with Whites.  
   0 1 2 3 4 5
4. I feel uncomfortable when others expect me to know American ways of doing things.  
   0 1 2 3 4 5
5. I don’t feel accepted by Whites.  
   0 1 2 3 4 5
6. I feel uncomfortable when I have to choose between Latino and American ways of doing things.  
   0 1 2 3 4 5
7. People look down upon me if I practice Latino customs.  
   0 1 2 3 4 5

### Pressures Against Acculturation

1. I had conflicts with others because I prefer American customs over Latino ones.  
   0 1 2 3 4 5
2. People look down upon me if I practice American customs.  
   0 1 2 3 4 5
3. I feel uncomfortable when other expect me to know Latino ways of doing things.  
   0 1 2 3 4 5
4. I feel uncomfortable because my family members do not know Latino ways of doing things.  
   0 1 2 3 4 5
Figure 1

Conceptual Model for Subordinate to Others and Self-silencing Marianismo Beliefs.

Note. Solid lines are indicative of hypotheses relations, whereas dashed lines are indicative of assumed covariances between endogenous elements.
Figure 2

Conceptual Model for Virtuous/Chaste, Family Pillar, and Spiritual Pillar Marianismo Beliefs.

Note. Solid lines are indicative of hypotheses relations, whereas dashed lines are indicative of assumed covariances between endogenous elements.
Figure 3

Statistical Model for Subordinate to Others and Self-silencing Marianismo Beliefs.

Note. Solid lines are indicative of hypotheses relations, whereas dashed lines are indicative of assumed covariances between exogenous and endogenous elements.
Figure 4

Statistical Model for Virtuous/Chaste, Family Pillar, and Spiritual Pillar Marianismo Beliefs.

Note. Solid lines are indicative of hypotheses relations, whereas dashed lines are indicative of assumed covariances between exogenous and endogenous elements.
Figure 5

*Perceived Discrimination* × *Subordinate to Others/Self-silencing Beliefs on Pressures to Acculturate*

Note. BC = bias-corrected, CI = confidence interval.
Figure 6

Perceived Discrimination × Virtuous and Chaste Beliefs on Pressures to Acculturate

Note. BC = bias-corrected, CI = confidence interval
Table 1

Correlations, Means, Standard Deviations, and Alphas for Measured Variables

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Mean     - 1.67 3.35 4.91 3.72 1.90 1.76 2.95 .72 .44
SD       - .73 1.82 1.30 1.31 .96 .90 1.50 .95 .74

Note. EDS = perceived discrimination, AU = alcohol use, MBS = marianismo beliefs scale, Sub/SS = subordinate to others, SS = self-silencing beliefs, FP = family pillar beliefs, VC = virtuous and chaste beliefs, SP = spiritual pillar beliefs, PA = pressures for acculturation, PAA = pressures against acculturation, SD = standard deviation. Dashes indicate that these values are not available for this variable due to categorical nature. ** Correlation is significant at p < .01. * Correlation is significant at p < .05.
Table 2

Path Analysis of Mediation Using Structural Equation Modeling

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Note. EDS = perceived discrimination, AU = alcohol use, PA = pressures for acculturation, PAA = pressures against acculturation, DE = direct effect, IE = indirect effect, $\beta$ = estimate, SE = standard error, Est/SE = estimate divided by standard error, 95% CI = lower and upper 95% bias-corrected confidence intervals derived from bootstrap estimates. *** $p < .001$, ** $p < .01$, * $p < .05$. Adjusted for nativity.
Table 3

Path Analyses of The Moderated Mediation Models Using Structural Equation Modeling

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**MBS Virtuous and Chaste Model**

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</tbody>
</table>

**Note.** DV = dependent variable, IV = independent variable, (CV) = control variable, EDS = perceived discrimination, AU = alcohol use, PA = pressures for acculturation, PAA = pressures against acculturation, Sub/SS = subordinate to others and self-silencing beliefs, FP = family pillar beliefs, VC = virtuous and chaste beliefs, SP = spiritual pillar beliefs. $\beta$ = estimate, SE = standard error, Est/SE = estimate divided by standard error, 95% CI = lower and upper 95% bias-corrected confidence intervals derived from bootstrap estimates. *** $p < .001$, ** $p < .01$, * $p < .05$. 

1. Nativity (CV) .03 .03 1.03 (−.02, .08) .03 .03 1.03 (−.02, .08)
2. PA EDS .53*** .03 20.56 (.49, .57) .53*** .02 23.12 (.49, .57)
3. PA AU .03 .02 1.13 (−.02, .06) .03 .02 1.13 (−.02, .06)
4. PA SP -.04 .03 -1.57 (-.08, .01) -.04 .03 -1.57 (-.08, .01)
5. PA EDS*SP -.03 .03 -1.08 (-.03, .02) -.03 .03 -1.08 (-.03, .02)
6. PA Nativity (CV) -.05 .02 -2.25 (-.09, .01) -.05* .02 -2.25 (-.09, .01)
7. PAA EDS .31*** .03 10.77 (.29, .36) .31*** .03 11.54 (.27, .36)
8. PAA AU .04 .03 1.68 (.00, .09) .04 .03 1.68 (.00, .09)
9. PAA SP -.05 .03 -1.90 (-.10, .00) -.05 .03 -1.91 (-.10, .00)
10. PAA EDS*SP .00 .03 .13 (-.05, .06) .00 .03 .13 (-.05, .06)
11. PAA Nativity (CV) .05* .02 2.21 (.01, .09) .05* .02 2.20 (.01, .09)