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PREDICTORS OF HISPANIC COLLEGE STUDENT ALCOHOL USE WITH
CONSIDERATION OF SEX, GENDER, AND ETHNIC DIFFERENCES: A SCOPING
REVIEW OF CULTURAL, PEER AND FAMILY INFLUENCES

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ABSTRACT

The U.S. college environment presents risk of alcohol consumption and related consequences, with more than half of full-time college students reporting alcohol use in the past month and a third engaging in binge drinking (4 + drinks (females)/5+ drinks (males); National Survey on Drug Use and Health [NSDUH], 2018). U.S. college students that identify as Hispanic/Latinx have grown in volume, representing nearly 1 in 5 college students (College Enrollment Statistics, 2022; U.S. Department of Education, 2019). There is indication that Hispanic adolescents experience unique cultural, peer, and family risk factors for alcohol use and related consequences (Goldbach et al., 2015; Jacobs et al., 2016; Segura et al., 2003; Zamboanga et al., 2009). However, there remain unanswered questions on the precise nature of these influences for Hispanic emerging adults in the college environment (Lui & Zamboanga, 2019; Zamboanga et al., 2014). The aims of this scoping review were to examine the literature among Hispanic U.S. college student alcohol use and related consequences for: (1) cultural, peer, and family predictors; and (2) demographic variance by sex, gender, and ethnic subgroup. From the 46 articles identified in PubMed and PsychINFO databases, 80.4% analyzed *traditional* Hispanic (pan-ethnic) samples and 19.5% analyzed Mexican American samples. Nine additional sources of gray literature identified themes of family and cultural stress among Hispanic college students. Highly acculturated individuals appeared to be more at risk for general consumption, which was characteristic of social motives. High enculturation was associated with drinking related consequences, which could be an indication that these students are more likely to view alcohol use as a coping or conformity motive. There was not full support for familism or first-generation status as protective constructs, and instead, other related components such as communication and religiousness emerged as relevant predictors. More acculturated females tend to be more

vulnerable to high stress environments, and in turn binge drinking episodes. Lowered familism, increased traditional machismo (e.g., dominance and toughness), and elevated peer norms were predictors putting males more at risk, an indication that perceptiveness to the influences of peers and family depend on gender. No articles were able to specify variance in predictors by sex, and only articles of Mexican American subgroup were identified, which presents a clear gap for future research to fill.

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Introduction

U.S. College Student Alcohol Use

A recent national survey reported 52.5% of full-time college students drank alcohol in the past month, with 33% of students engaging in binge drinking behavior (National Survey on Drug Use and Health [NSDUH], 2018). Binge drinking is defined as 4 or more drinks on a single occasion for females and 5 or more for males (NSDUH, 2019). Some immediate risks of college student drinking include injuries, sexual or physical assault, memory loss, drunk driving, suicidal attempts, and death, while potential long-term effects include hypertension, alcohol use disorder and increased risk of cancer (Hayibor et al., 2019; NSDUH, 2019; O'Brien et al., 2006; White & Hingson, 2014). The prevalence of alcohol use among U.S. college students renders them especially vulnerable to death, assault, academic problems, and alcohol use disorder, underscoring the importance of understanding key predictors of this behavior (*College Drinking | National Institute on Alcohol Abuse and Alcoholism (NIAAA)*, 2021).

Epidemiology of Hispanic U.S. College Student Alcohol Use

Hispanic U.S. college students have undergone exponential growth in the past decade with nearly 1 in 5 college students identifying as Hispanic/Latinx (College Enrollment Statistics, 2022; U.S. Department of Education, 2019). U.S. Hispanic students are heterogenous in nativity status with the population encompassing individuals with native origins of over 20 countries (Krogstad & Noe-Bustamante, 2021; Pew Research Center, 2019). Second only to non-Hispanic,

White college students, Hispanic students report high rates of alcohol use and binge drinking compared to other racial/ethnic groups (O'Malley & Johnston, 2002). Hispanic students also report more alcohol-related consequences and dependence than their non-Hispanic, White counterparts (Mulia et al., 2009). Compared to other age groups (i.e., 12-17 and 26 and older), Hispanic Americans aged 18-25 experience the highest rates of alcohol use and alcohol use disorders (Substance Abuse and Mental Health Services Administration (SAMSHA), 2020). Taken together, Hispanic college students aged 18-25 are particularly at risk for alcohol use and related consequences.

The Socio-Ecological Model (SEM)

The underlying factors contributing to the elevated risks of alcohol use and related problems among Hispanic U.S. college students may be conceptualized by the Socio-Ecological Model. The Socio-Ecological Model (SEM) is a framework used in public health research by studying the health status of an individual with respect to personal attributes (e.g., genetic heritage, psychological dimensions) and environmental factors (e.g., social, institutional and cultural interactions; Stokols, 1992). Regarding alcohol use behaviors in the U.S. college setting, *intrapersonal factors* for Hispanic students may include socioeconomic status, race/ethnicity, generational status, personal attitudes, beliefs, and perceived norms of alcohol use, while *interpersonal factors* may consist of family and peer-related pressures (Connell et al., 2010; Salihu et al., 2015; Sudhinaraset et al., 2016). *Institutional factors* may include the policies and type of the university (e.g., Hispanic Serving Institution vs. Predominantly White Institution), while *community factors* may include availability, acceptance, and local attitudes of alcohol use (Salihu et al., 2015; Sudhinaraset et al., 2016). Bronfenbrenner (1994) also describes these

different contexts of development in terms of systems, where *macrosystems* encompasses interactions of *community level* and *interpersonal factors*, and ties in the broader culture or subculture (e.g., belief systems, customs, and lifestyles) in which the individual is developing. This socio-ecological model has shown relevance in studying Hispanic adolescent drinking behavior, by associating both intrapersonal and interpersonal socio-ecological determinants with alcohol use (Asfour et al., 2017; Jacobs et al., 2020). The current review will take the SEM conceptual framework into consideration for Hispanic college student drinking with the following two foci: 1) predictors of college student drinking in this population (e.g., cultural, peers and family influences), 2) sex, gender, and ethnic subgroup differences (e.g., Mexican, Cuban, Puerto Rican etc.).

Predictors of Hispanic College Student Drinking

Cultural Influences

Culture is a macrosystem component of the SEM that may differentially impact alcohol consumption in Hispanic students (Bronfenbrenner, 1994; Sudhinaraset et al., 2016). Culture in minority populations is theoretically tied to *acculturation*: the gradual, non-linear process of psychological and behavioral adjustment to a dominant culture (Berry, 1994; Marín & Posner, 1995). Berry (1994) describes *behavioral shifts* as a process of learning from the new society which induces changes in dimensions of identity such as values, attitudes, and motives. While acculturation is related to dimensions of the dominant culture, measures of *enculturation* tie retention of heritage culture to ethnic identity (Pham et al., 2021; Roberts et al., 1999). Research in Hispanic adolescent samples indicate that acculturation (American orientation), and

enculturation (Hispanic orientation) are associated with alcohol use (Goldbach et al., 2015; Zamboanga et al., 2009). However, a recent review of acculturation in the Hispanic college student population revealed inconsistencies in terminology (e.g., enculturation vs. heritage-cultural orientation) and both proximal and distal domains of acculturation (values, identifications, practices and birthplace, generational status; Schwartz et al., 2010). This warrants clarification of recent research publications in the cultural domain (Zamboanga et al., 2014).

Peer Influences

In the U.S., students transitioning to college are in a developmental stage of exploration of career, identity, and relationships (Arnett, 2007; Vaughan et al., 2013). Accompanying this exploration is socialization with peers, whose influence is often independent to parental influences that were prominent prior to college (Borsari & Carey, 2001a; Brown et al., 1997). The role of peers extends beyond the classroom, as peers are also considered the most salient component to social environments in college (Perkins, 1997). Peers may function at the interpersonal level of the SEM by directly impacting alcohol consumption (e.g., offering of alcohol; Borsari & Carey, 2001; Salihu et al., 2015). Social involvement may also act as an intrapersonal risk factor for alcohol use (Sudhinaraset et al., 2016), as research shows individuals tend to overestimate the amount of drinking (descriptive norms) and the acceptance of the drinking (injunctive norms) of peers, making excessive alcohol consumption seem normal and accepted (Borsari & Carey, 2001a, 2003; LaBrie et al., 2012; Lorant et al., 2013).

There is indication that peer influences are differential across Hispanic college students and other non-Hispanic U.S. college students, a potential result of the population referent group

for these perceptions (LaBrie et al., 2012). The referent group for alcohol perceptions in college moderates the association of perceived norms and alcohol consumption (Neighbors et al., 2010), and may relate to increased proximity or feelings of connectedness (Hummer et al., 2012). For Hispanic college students, the environment for selecting a referent group may vary based on the type of institution (Hispanic Serving Institution (HSI) vs. Predominantly White Institution (PWI)) and perceived stereotypes in their campus climate (Hurtado & Ponjuan, 2005; (Ponjuán & Hernández, 2021)). Perceived ethnic discrimination may manifest from *acculturative stress*, negative effects (e.g., trauma, anxiety) as a result acculturation (Berry, 1994; Finch et al., 2001). Perceived norms of peers exemplify the complex interaction of peers, culture, and institutional factors of behavior operating at the macrosystem level (Bronfenbrenner, 1994). Further, drinking motives, such as social and conformity motives are salient factors associated with drinking in settings where heavy drinking may be accepted (Cooper, 1994; Kuntsche et al., 2005; Wahesh et al., 2015). Given the established role of peer influence on drinking in Hispanic adolescents and college students provides evidence that peer influences on Hispanic college student drinking is an important pathway to review (Jacobs et al., 2016; Segura et al., 2003; Song et al., 2018).

Family Influences

While Arnett (2007) notes that college-aged individuals become less dependent on family during emerging adulthood, Vaughan et. al (2013) suggests this may not hold true for Hispanic students due to cultural values like *collectivism* and *familism*. In *collectivist cultures*, self-exploration often occurs in the home, which may deviate from dominant cultures in the U.S. due to variance in parenting style and family dynamic (Arnett, 2007; Domenech Rodríguez et al.,

2009; Vaughan et al., 2013). Parenting style is an important consideration in alcohol use research, as parental permissiveness of alcohol use has frequently been correlated with alcohol use and related consequences (Abar, 2012; Koning et al., 2012; Mallett et al., 2019; Rulison et al., 2016; Van Der Vorst et al., 2009; Waldron et al., 2021). Because the influence of parents extends throughout college, it is crucial to understand the precise nature of the parent-child relationship for Hispanic college students in the home in order to inform future interventions (Abar & Turrisi, 2008; Waldron et al., 2021).

Familism is a unique construct to Hispanic parents and families, which is tied to decisions that reflect adherence to a collective, family responsibility and obligation (Smith-Morris et al., 2013). Observation of *familism* can extend to a range of behaviors (Smith-Morris et al., 2013), but is generally conceived as a protective cultural factor in Hispanic adolescent health behaviors (Germán et al., 2009; Guilamo-Ramos et al., 2009; Strunin et al., 2015). Through the transition into emerging adulthood it is expected that internalized *familism* values continue to operate, despite increased peer interaction (Germán et al., 2009; Keefe et al., 1979). While research has shown that *familism* is protective against alcohol use in college students in Mexico, (Strunin et al., 2015), Gil et al. (2000) demonstrated that for students in the U.S., *familism* interacts with cultural stress and acculturation in a sample of Hispanic adolescents. Clarifying the interplay of *familism* with other variables impacting intraindividual beliefs and values may help distinguish this as a protective or risk factor of Hispanic college student drinking.

Demographic Differences in Alcohol Use

Sex Differences

Sex is defined as a biological variable that distinguishes male and female characteristics (National Institutes of Health [NIH], 2017; World Health Organization [WHO], n.d.). It is important to consider biological sex in alcohol use research because biological differences can lead to the same quantity of alcohol impacting blood alcohol levels differently for males and females (Julien et al., 2014). Males typically have lower body fat percentages compared to females, allowing for the same amount of alcohol consumption to result in a higher blood alcohol concentration for females (Thomasson, 1995.) This variance can also be a result of greater levels of alcohol dehydrogenase in males, the enzyme responsible for metabolizing alcohol by gastric tissue (Frezza et al., 1990; Thomasson, 1995). Hormonal differences between males and females may also contribute to variance in reward circuitry activation during alcohol use, and there is some evidence this is reduced for women who consume alcohol in the luteal phase of menstruation (Agabio et al., 2016; Lenz et al., 2012). Identification of sex specific differences of alcohol use in Hispanic college students could help inform biologically tailored interventions.

Gender Differences

While sex will be considered as a biological variable that can influence Hispanic college student drinking outcomes, research that considers *gender identity* may also help clarify at risk behaviors for males and females. In contrast to sex, gender identity is a socially constructed term related to assumed roles and behaviors within a specific historical and cultural context (NIH, n.d.). Traditional gender roles are often characterized by *marianismo* for Hispanic women, which suggests that value placed on family relationships may deter their decision to engage in alcohol use (Castillo et al., 2010; Corbin et al., 2008a). While *marianismo* typically refers to expectations related to purity, spirituality and family dependency, the exact nature of each of

these constructs' association with alcohol use in the college environment is unclear (Castillo et al., 2010; Perrotte & Zamboanga, 2021). Another construct related to traditional gender roles in Hispanic culture is *machismo*, which characterizes the normative male role in Hispanic culture and has been tied to heavy alcohol use in Hispanic men (Galanti, 2003). Research of gender roles among U.S. Hispanic college students seems to be limited in nature and most studies do not differentiate between "gender" (e.g., roles, identity) and biological sex. In this review we will consider both *gender identity* and *sex* differences in alcohol use predictors.

Ethnic Subgroup Differences

Expansion of ethnic subgroups within the U.S. Hispanic population is reflected by the 2010 Census revisions that add: "Mexican, Mexican Am., Chicano," "Puerto Rican," "Cuban," as options (Marks & Rios-Vargas, 2021). Despite the massive growth in this population, literature has historically used the pan-ethnic labels "Hispanic" or "Latino/a/x," failing to address ethnic subgroup diversity in socioeconomic status, degrees of acculturation and historical experiences (Arellano-Morales et al., 2015; Castañeda et al., 2019; Gilbert & Cervantes, 1986). Castañeda et al. (2019) further establishes that the internal and external components related to acculturative stress may also vary greatly by ethnic group. While research of the pan-ethnic Hispanic population is beneficial for setting a conceptual framework in the initial stages of theory making, it limits the ability to apply these theories directly to ethnically diverse Hispanic subgroups (Delgado, 2005; Rodriguez-Andrew, 1998; Suarez-Orozco & Paez, 2008). Within group differences may be intertwined with other variables at the intrapersonal level of the SEM, as an individual's nativity and historical experiences may shape the type and level of perceived discrimination they experience (Viruell-Fuentes et al., 2012).

Although the literature focusing on alcohol use across Hispanic ethnic subgroups is growing in volume, most studies focus on adult or adolescent populations, and are limited to the largest subgroup of Mexican Americans (Alaniz et al., 1999; Vaughan et al., 2013).

Understanding how variables impact ethnically diverse Hispanic students may be beneficial, as research that distinguishes across White, Black, Asian, and pan-ethnic Hispanic samples provides us with a rich understanding of how drinking differences by race and ethnicity (Alaniz et al., 1999; Conn et al., 2017; Corbin et al., 2008a; Gilbert et al., 2017; Kenney et al., 2018; Randolph et al., 1998). The present review will include research that indicates Hispanic subgroups (Mexican, Puerto Rican, Cuban, Central American, South American etc.), which may provide us with a better understanding of drinking behavior patterns for all students who identify as Hispanic.

Justification for Current Study

Outlined above are the cultural, peer and family predictors of alcohol use frequently studied in the literature for Hispanic Americans or college students. Literature reviews have established trends in predictors of alcohol use in the general Hispanic population (Barnes & Skeer, 2015; Chartier et al., 2017; Perrotte & Zamboanga, 2021; Vaeth et al., 2017), yet few have addressed the interplay of these factors specifically in the U.S. college setting (Zamboanga et al., 2014, 2017). While two reviews by Zamboanga et al. (2014, 2017) had aims of clarifying the role of acculturation on alcohol use in Hispanic U.S. college students, the SEM indicates that behavior could be an outcome of intrapersonal, interpersonal, community, and institutional level factors. The growth of the U.S. Hispanic college student population and their elevated risk of

alcohol related consequences and dependency emphasizes the importance for a review of this field of research.

Aims of Current Study

The study consisted of two aims. Aim 1 intended to fill gaps in the current literature by culminating the research and unveiling the full scope of the predictors of alcohol use for Hispanic U.S. college students (i.e., cultural, peer, family influences). Aim 2 examined demographic differences in predictors by sex, gender, and ethnic subgroup to help inform and tailor future interventions to Hispanic college students.

Methods

Literature Review

This literature review was conducted as a scoping review in accordance with guidance from the Joanna Briggs Institute (JBI) (Peters et al., 2015). The scoping review type is suitable to answer broader research questions and its main goal is to determine the range of emerging evidence in a field by mapping the literature graphically (Peters et al., 2015). The volume of research that remains unknown for alcohol use predictors in Hispanic U.S. college students will benefit from this process outlined by Arksey & O'Malley (2005). The main objectives this scoping review will address are "to examine the extent, range and nature of research activity" and "to identify research gaps in the existing literature" (Arksey & O'Malley, 2005).

The Search

The search was conducted in accordance with protocol suggestions from the JBI and the PRISMA checklist for scoping reviews. The search of *white* literature was carried out in PubMed and PsychINFO databases to identify peer reviewed articles. In accordance with the study aims, the search focused on identification of articles related to four parameters: 1) Hispanic population, 2) predictor variables, 3) college students, 4) alcohol use. Initial searches identified keywords related to each parameter. The final searches were carried out in January 2022 and the Boolean phrases (AND/OR) were used to combine all keywords related to each parameter:

1. Hispanic population (*Mexican American OR Mexican OR Puerto Rican American OR Puerto Rican OR Cuban American OR Cuban OR South American OR Central American OR Latino OR Latinx OR Latina OR Latins OR Hispanic*)
2. Predictors (*Familismo OR Family Influence OR Peer Influence OR Perceived Norms OR Acculturation OR Subgroup OR Population Group OR Origin Country OR Nativity*)
3. College Students (*College OR University OR Higher Education*)
4. Alcohol Use (*Alcohol drinking OR alcoholic beverages OR alcoholic intoxication OR alcohol consumption OR alcohol misuse OR alcohol abuse OR alcohol use OR alcohol-related problems OR problem drinking OR binge drinking OR drunk*).

Database searches identified *white* literature, and literature outside of the commercially published landscape, *gray* literature, was also identified to add comprehensibility to major themes and unique samples (Paez, 2017). Gray literature searches were carried out in February 2022. To date, there is no official database to support the gray literature search. Thus, sources were hand searched and collected from the Center for First-Generation Student Success, the Alcohol Research Group (ARG) and several news reporting agencies (e.g., USA Today, Texas Public Radio). Dissertations were considered in gray literature searches. Sources were selected based off their relevancy to unique peer, family, or cultural themes in U.S. Hispanic college students.

Eligibility Criteria and Screening

Articles from PubMed and PsychINFO databases were only considered if they were published in English and available in full text. Given the growth of Hispanic Americans in the past two decades, literature published from 2000 to the date of search were included. Secondary screening identified all relevant articles in white literature with guidance based on definitive inclusion criteria related to the study aims. There is much heterogeneity among the U.S. Hispanic population in nativity status with a variety of labels. Therefore, articles were included if and only if they specified a Latino/Latina(x)/Hispanic sample or ethnic subgroup (e.g., Mexican American, Puerto Rican). Articles only directed at determining the prevalence of alcohol use or related consequences without indicating analysis of biological or behavioral predictors were excluded. Articles that studied an intervention to reduce alcohol use or consequences in the study population were also excluded as the focus of this search was etiological. Only articles that studied alcohol use and related consequences in 4-year U.S. college samples were included, excluding studies that were completed in foreign colleges, or cross-sectional studies that did not conduct independent analyses for current college attendees in results. Given the lack of peer review process, theses and dissertations were not included from white literature, but if relevant, were considered as gray literature. Literature reviews were included to consider the strengths and limitations identified by past researchers.

Extracting Procedure

If all inclusion and exclusion criteria were met during screening, the articles were then summarized using the extraction fields in excel by publication year, sample size, target

population, college status, mean age of sample, and location of sample. Study design, type of influence (peer, family, cultural, sex, gender, ethnicity), and measurement of alcohol use were also recorded. If studies did not explicitly measure biological sex assigned at birth, the terminology *gender* was used. Finally, a critical appraisal to assess the quality of research methods used by the studies included in this review was not performed.

Results

Key Findings of White Literature

The final search resulted in 272 articles, of which 46 were included. Figure 2 displays screening and article selection guided by the Preferred Reporting Items for Systematic Review and Meta-Analyses (PRISMA). Pertinent information about the study designs and major themes related to study aims of included articles can be found in Appendices A and B.

There were some considerations for terminology during the coding procedure. In terms of describing the population, studies that addressed the Hispanic population in collapsed subgroups (“traditional Hispanic”) were deciphered from studies that focused on within Hispanic ethnic subgroups. The type of influences (e.g., peer, family, culture) were identified based on relevance to factors identified in *a priori* research in accordance with the SEM (see Table 1). Only influences that directly addressed a Hispanic sample in the results or discussion were included. Only one studied measured multidimensional domains of *gender identity* (e.g., cisgender, transgender, non-binary), but there was not enough statistical power to analyze invariance across three or more groups, cisgender male and female, and nonbinary/gender fluid (Bacio, 2021).

Table 1: Coding of Influence(s) in Included Studies

Cultural Influences	Peer Influences	Familial Influences
Cultural congruity, acculturation, enculturation, ethnic identity, individualistic/collectivistic values, religion, perceived ethnic discrimination, acculturative stress	Alcohol expectancies, attitudes and motives, injunctive and descriptive norms of peers, stress (general), protective behavioral strategies	Academic motives, <i>familism</i> , parenting style, generational status, childhood experiences

Table 2: Study Design Breakdown

Study Design	Number of Studies	Percentage of Total Studies
<i>Cross Sectional</i>	39	84.80%
<i>Longitudinal</i>	5	10.90%
<i>Literature Review</i>	2	4.30%

Majority of the studies included in this scoping review were cross-sectional, except five longitudinal studies established directionality and causality in various predictors. Two literature reviews provided context of strengths and limitations of a subset of articles included in this review. These literature reviews focused on acculturation and enculturation (Zamboanga et al.,

2014, 2017), but other articles outside of these reviews also provided comprehensibility to other cultural influences outlined in Table 1 (e.g., cultural congruity, religion). The number of publications has increased over time, with a greater quantity of studies published from 2010-2021 compared to 2000-2009.

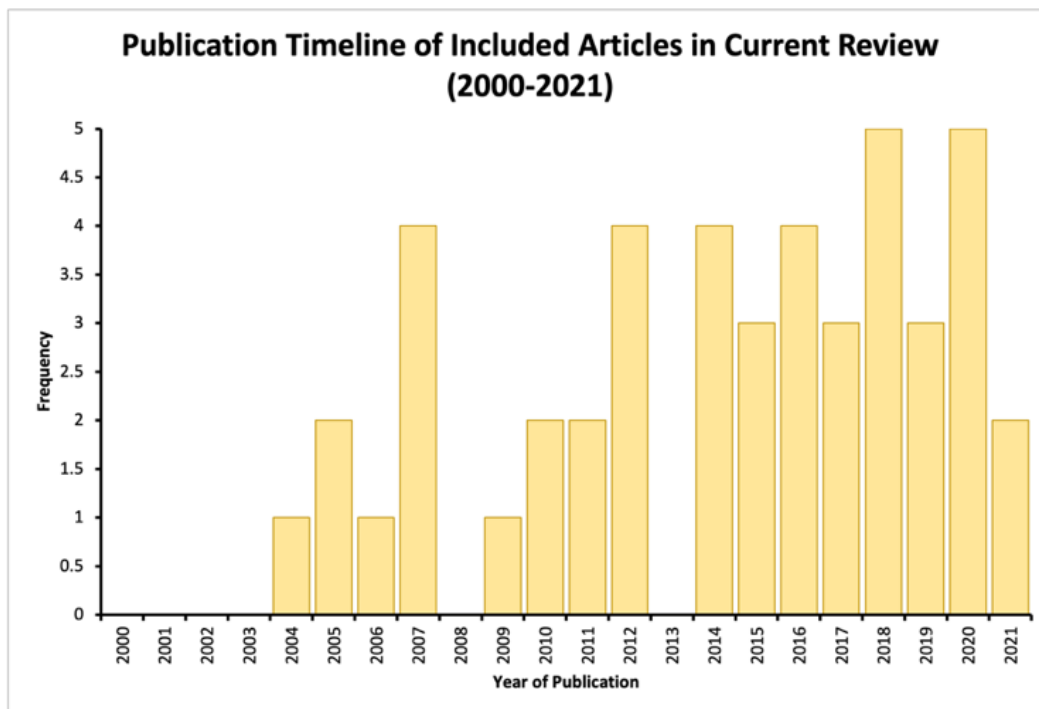


Figure 1: Publication Timeline

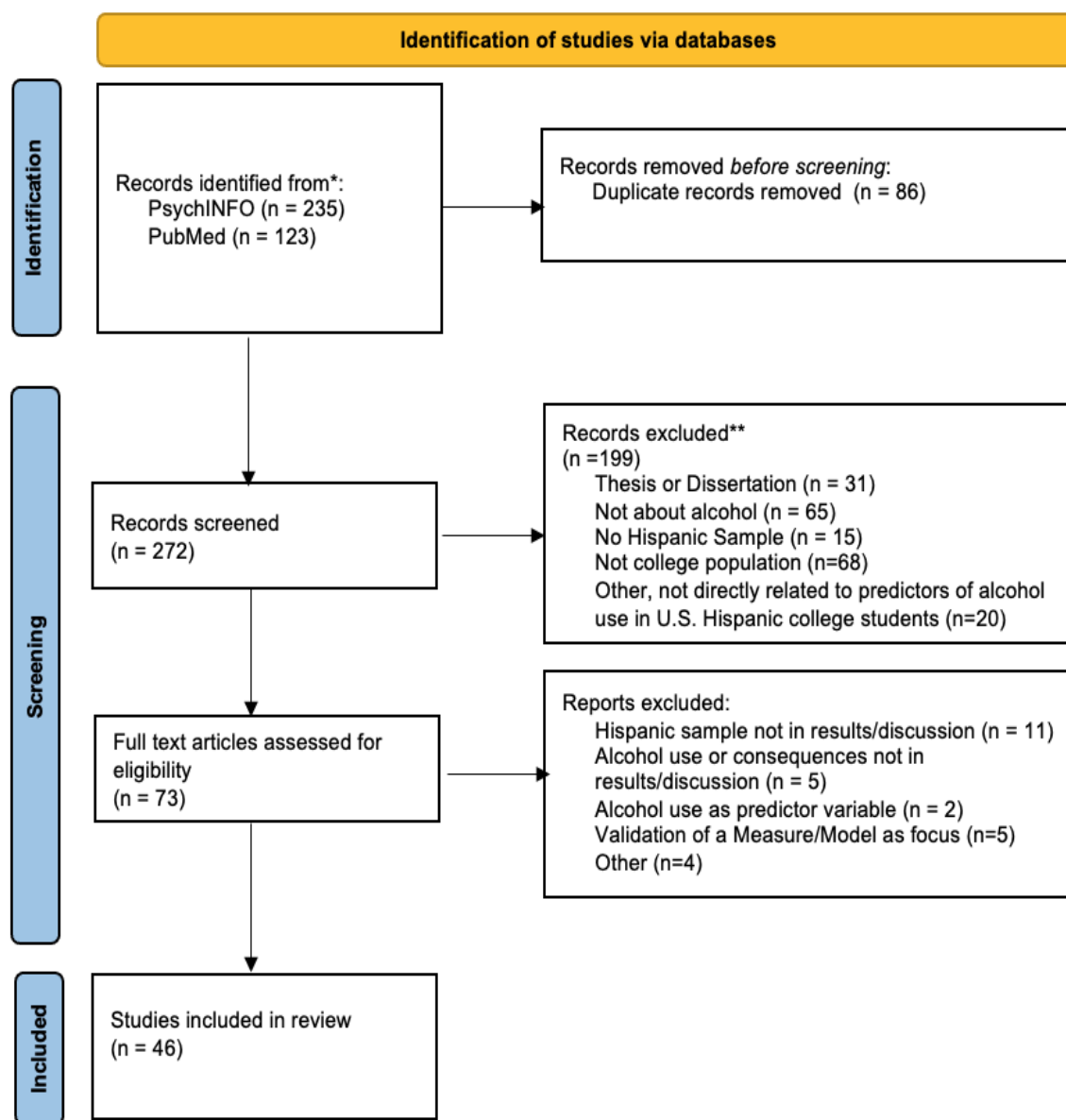


Figure 2: Record Identification and Screening Process in the PRISMA 2020 Flow Diagram for New Systematic Reviews (adapted from Page et al., 2021)

Aim 1: Predictors of Hispanic College Student Drinking

Cultural Influences and Related Stress – Identity, Practices and Behaviors

Of the articles in this review, 33% (n=15) directly studied the interplay of cultural influences in traditional Hispanic samples (see Table 1). One literature review by Zamboanga et al. (2017) had major implications for the field of acculturation and alcohol use research in Hispanic college students. Between 1979 to 2015, 14 articles were included in Zamboanga's et al. (2017) review, eight of which also surfaced in the present review between 2000-2015 (Cano, de Dios, et al., 2015; Ceballos et al., 2012; Des Rosiers et al., 2013; Safer & Piane, 2007; Schwartz et al., 2011, 2014; Venegas et al., 2012; Zamboanga et al., 2014). From 2015 to date, 11 articles were published: five that focused on Mexican American samples (Lee et al., 2018; Mercado et al., 2017; Montoya et al., 2016; Orona et al., 2007; Perrotte, et al., 2020) and six included traditional Hispanic samples (Cano, de Dios, et al., 2015; Cheng & Mallinckrodt, 2015; Conn et al., 2017; Jankowski, Meca, Lui, et al., 2020; Pham et al., 2021; Shields et al., 2016).

Prior to 2016, major conclusions in the acculturation literature were complex and indefinite. Zamboanga et al. (2017) addressed that might be due to inconsistent sample demographics (e.g., age, collapsed subgroups), dimensionality of measures (unidimensional vs. bidimensional), and variability in alcohol use measures. These studies suggest acculturation is associated with alcohol use, but it is important to note the inconsistencies in measures and validity. In the 11 recent studies that surfaced after this review, some of these shortcomings were addressed.

Pham et al. (2021) expands upon previous literature (pre-2015), as it considers ethnic cultural retention and U.S. cultural immersion as separate variables by studying enculturation, acculturation, and the interaction between enculturation and acculturation. Results indicated

distinguishable patterns, such that Hispanic college students who did not identify strongly with either culture (U.S. or Hispanic), were less likely to consume alcohol (Pham et al., 2021). Separately, low enculturation was associated with social drinking and related consequences, while high acculturation was not associated with consequences but was a relevant predictor of alcohol consumption (Pham et al., 2021). Religiousness has been identified as a moderator of cultural orientation, stress, and hazardous alcohol use (Jankowski et al., 2020). High levels of religiousness paired with low acculturation or high enculturation were associated with alcohol use, but students with higher acculturation were protected by religiousness through lowered positive alcohol expectancies (Jankowski et al., 2020). Cano et al. (2015) distinguished behavioral (e.g., language use, type of cuisine) and affective (e.g., agreement with values, practices, ideas) indices of acculturation in their potential association with alcohol use. Although behavioral and affective proxies were both associated with depressive symptoms, affective acculturation emerged as the only index positively associated with alcohol use severity, through an indirect path via perceived ethnic discrimination (Cano et al., 2015). Longitudinally, evidence suggests increased perceived ethnic discrimination is a direct predictor of maladaptive alcohol use as a coping mechanism (Cheng & Mallinckrodt, 2015). However, an interaction between depressive symptoms, enculturation, and acculturation in the association with alcohol use and related problems emerged (Cano et al., 2015; Conn et al., 2017).

Studies published since the review by Zamboanga et al. (2017) provide context to the emerging risk of binge drinking with drinking games (Schwartz et al., 2014; Shields et al., 2016). Shields et al. (2016) found that compared with non-Hispanic, White students, Hispanic students tended to agree more often with the statements *binge drinking is part of my race/culture* and *no one ever died as a result of binge drinking*. Despite binge drinking behaviors not differing across

groups, binge drinkers in general had higher accepting attitudes of this behavior, thus warranting a potential elevated risk for Hispanic students in this sample (Shields et al., 2016). Identification with U.S. practices was also positively associated with alcohol consumption in drinking games for women and general alcohol consumption in men revealing both U.S. and Hispanic cultural risk pathways (Schwartz et al., 2014).

Peer Influences - Motives, Expectancies, Attitudes and Norms

Peer influence on alcohol use and related consequences was frequently discussed relative to intrapersonal characteristics (e.g., attitudes, motives, expectancies), via the saliency of social environments (Bacio, 2021; Ceballos et al., 2012; Quintero et al., 2005; Safer & Piante, 2007). Positive attitudes of drinking (e.g., to “feel effects,” and “get drunk;” Hatchett & Holmes, 2004) were frequently addressed with “facilitating social interactions” and “having fun” (Quintero et al., 2005). Drinking for social reasons was the most frequently endorsed motive (e.g., enhancement, coping, conformity; Bacio, 2021), and compared with their Mexican college student counterparts, this endorsement was significantly higher in Hispanic U.S. college students (Ceballos et al., 2012a).

Vaughan et al. (2009) found the association between social motives and alcohol use was stronger for Hispanic college students compared to other minority groups (e.g., Asian Americans). However, Lui et al. (2020) did not find evidence supporting this association. Instead, there was full support that coping (e.g., beliefs alcohol would induce risk taking, forgetting, and worsening of self-perception) and conformity (e.g., drinking to avoid social rejection) motives were associated with problematic drinking and consequences (Bacio, 2021; Cooper, 1994; Lui et al., 2020). Positive (e.g., social, tension reduction) and negative (e.g.,

behavioral impairment, negative self-perception) expectations were indirectly associated with problematic drinking via intentions to avoid negative affect (Bacio, 2021). Further, stress had an indirect effect on problematic drinking through negative expectancies, but not through positive expectancies (Bacio, 2021). Jankowski et al. (2020) found the path of increased stress to increased positive expectancies was associated with alcohol use, but this was inhibited when students had high religiousness and high U.S. orientation. Cumulatively, students under lower stress (general or acculturative) seem to be protected from the indirect pathway of coping motives, negative or positive expectancies, and conformity motives to engage in problematic drinking (Bacio, 2021; Conn et al., 2017; Jankowski et al., 2020).

Descriptive norms were frequently addressed throughout the literature (Rice, 2006; Safer & Piane, 2007; Vaughan et al., 2015). Safer & Piane (2007) found no significant variance between Hispanic and non-Hispanic samples for perceptions of frequency, quantity, or related problems of peer drinking for both *friends* and *students* as referent groups of perceptions. In contrast, Rice (2006) found Hispanic students had the highest rate of reporting their peers (*typical student at school*) drank more than them personally compared to other ethnic groups. Only one study examined injunctive norms and found no effect of friends' approval of drinking on problematic drinking, despite an effect of injunctive norms on enhancement motives (Bacio, 2021). Additionally, social media use has been found to increase binge drinking among Hispanic students (Ceballos et al., 2018).

In Hispanic students, the positive association between estimated peer alcohol use and personal alcohol use was supported (Varvil-Weld et al., 2014; Vaughan et al., 2018; Zamboanga et al., 2006), but a potential moderating role of ethnicity emerged (LaBrie et al., 2012; McCabe et al., 2019; Rice, 2006; Vaughan et al., 2015). Measuring the perceptions of *typical student*

drinking suggest the magnitude of this association with personal alcohol use is smaller for Hispanic students compared with non-Hispanic, white students (McCabe et al., 2019; Rice, 2006). Variance in ethnicity-specific norms emerged in LaBrie et al. (2012) where personal alcohol use in Hispanic students had a greater positive association with general *student norms* than with *ethnicity-specific norms*, and a campus site (HSI vs. non-HSI) interaction was present. Hispanic students attending HSIs compared with non-HSIs did not significantly differ on *typical student* drinking norms, but the association of drinking norms and alcohol consumption was greater for Hispanic college students attending non-HSIs versus HSIs (Vaughan et al., 2015). Taken together, when Hispanic students attending an HSI had perceptions based on *typical norms*, and those attending a non-HSI had perceptions based on *ethnicity-specific norms*, peer norms appeared to be less risky in the association with alcohol use (LaBrie et al., 2012; Vaughan et al., 2015). In contrast to the evidence above Edwards et al. (2019) found an association of alcohol use with perceptions of *close friend* drinking norms, but did not find this association to significantly differ across Hispanic and non-Hispanic college students.

A longitudinal study at a large southwestern non-HSI university concluded that perceptions of *typical college student* drinking formed during their final year of high school was not predictive of alcohol use for Hispanic freshman, while it was predictive for non-Hispanic, White freshman (Stappenbeck et al., 2010). Further, both Hispanic and non-Hispanic, White freshman generally selected social groups that matched their beliefs of alcohol use prior to college, and perceived norms of greater alcohol use in these social groups (*principal group of friends*) was significantly associated with sophomore alcohol use for both groups (Stappenbeck et al., 2010).

Family Influences – Familism, Generational Status and Parents

Familism was directly studied across three articles, each using different scales and collectively providing mixed support for its' protective role in alcohol use and consequences (Bacio, 2021; DiBello et al., 2016; Venegas et al., 2012). DiBello et al. (2016) found a significant interaction between ethnicity and familism, such that *familism* was protective against alcohol consumption in Hispanic students, but not non-Hispanics students. Other studies found *familism* did not directly protect students from engaging in heavy episodic drinking, and it indirectly acted as a risk factor for problematic drinking via social and conformity motives (Bacio, 2021; Venegas et al., 2012). Living at home with family and commuting to college from home significantly decreased the likelihood of alcohol consumption in Hispanics compared to those living away from home, and this same effect was not observed for non-Hispanic, white students (Cacciola & Nevid, 2014).

While not equivalent to *familism*, immigrant generational status may provide more context for the influence of family for some Hispanic college students. Generational status was measured as a continuum with first generation students born outside the U.S., second generation students born to parents who had immigrated to the U.S., and later generations following this pattern (Bacio, 2021; Greene & Maggs, 2018). The protective role of lower generational status was significant in predicting frequency of alcohol use, binge drinking episodes, and alcohol related consequences, and did not deteriorate throughout college (Alamilla et al., 2020; Greene & Maggs, 2018). Bacio (2021) confirmed that drinking motives as a pathway to problematic drinking was a model applicable from first to second-and later generational status. Conversely, once other characteristics were considered (e.g., enculturation, acculturation, familism,

acculturative pressures, perceived discrimination, religiosity), the association of alcohol consumption and generational status was no longer significant (Alamilla et al., 2020).

Parental roles were explored by Varvil-Weld, et al. (2014), who found maternal permissiveness was associated with higher levels of drinking and consequences and parental communication was negatively associated with alcohol related consequences. Vaughan et al. (2009) studied family history of alcohol use and its corresponding impact on drinking, but no significant effects were detected for the Hispanic students. Protective effects of academic motives against alcohol-related problems freshman year were stronger for Hispanic students compared to non-Hispanic, White students (Vaughan et al., 2009). Lastly, Hispanic students with adverse childhood experiences and family stressors were more likely to drink heavily, compared to their non-Hispanic White counterparts (Forster et al., 2019).

Aim 2: Demographic Differences in Alcohol Use

Sex, Gender, and Ethnic Subgroup Differences

As noted above, there were no studies that provided context for sex differences in predictor variables for Hispanic students. However, across the studies addressed above, some found patterns that did not vary by gender (Bacio, 2021; Des Rosiers et al., 2013; Pham et al., 2021; Venegas et al., 2012), while others detected gender differences (Cano, Vaughan, et al., 2015; Ceballos et al., 2012; DiBello et al., 2016; Hatchett & Holmes, 2004; Safer & Piane, 2007; Schwartz et al., 2014; Vaughan et al., 2018).

Vaughan et al. (2018) found a stronger association between perceived drinking norms and substance use for males than females. Hatchett & Holmes (2004) indicated that the nature of

injunctive drinking norms (what is accepted by peers) may vary by gender, as both male and female Hispanic college students (61.7%) agreed they would lose respect for a woman who spends time in a bar (compared to 42.7% for men). U.S. college students did not differ by gender in positive social expectations of drinking, but U.S. female college students have significantly more positive social expectations of drinking than Mexican female college students (Ceballos et al., 2012). Self-schema of being a non-drinker was protective against heavy drinking in Mexican American women, had a stronger influence than acculturation and Mexican American cultural values, and mediated the protective effects of spirituality (Lee et al., 2018).

Further, behavioral acculturation (i.e., language, heritage of friends) was significantly associated with positive endorsements of alcohol use, greater number of perceived peers drinking, and heavy drinking for females but not males (Safer & Pianne, 2007). Raffaelli et al. (2007) also found a positive association of behavioral acculturation with binge drinking and frequency of drinking in Mexican American females, but the association reversed for males. Cano et al. (2015) discovered that gender also moderated the association between perceived *cultural congruity* (fit between the student and academic environment) and alcohol use severity, such that perceptions of alignment were protective against alcohol use severity for men, but not women. After accounting for gender differences, DiBello et al. (2016) found that *familism* was negatively associated with drinking for Hispanic men, but not Hispanic females.

There were two studies that explicitly looked at traditional gender role beliefs (TGRB) and alcohol use in traditional Hispanic college student samples (Perrotte et al., 2018, 2021). In female students, Perrotte et al. (2021) measured protective behavioral strategies and engagement in risky drinking behaviors in relation to a range of traditional *marianismo* beliefs (e.g., virtuosity and chaste, family role, spiritual obligations in family, subordinacy to others, silencing

of self needs). Drinking quantity (*drunkenness*) was negatively associated with virtuosity and chaste, and this was likely an outcome of *manner of drinking* protective behavioral strategies (Perrotte et al., 2018, 2021). In observing the interaction of stress, alcohol use and TGRB, Perrotte et al. (2018) also found *positive marianismo* (virtuosity and chaste, family pillar, spiritual pillar) was protective of binge drinking at low stress levels but this protective effect diminished as stress increased. Although endorsing *caballerismo* (chivalry and respect) was protective for males, endorsement of *traditional machismo* (dominance and toughness) was associated with greater binge drinking without an interaction of perceived stress (Perrotte et al., 2018). No aspects of *marianismo* beliefs were protective against frequency of drinking (Perrotte et al., 2021), and endorsement of *positive marianismo* increased the association of stress and overall consumption (Perrotte et al., 2018). Overall consumption in males did interact with stress, such that males endorsing *traditional machismo* were at risk at low stress and protected at high stress (Perrotte et al., 2018).

Although 20% (n=9) of the articles that surfaced in this review had enough statistical power to consider within-group ethnicity in Hispanic college students, 100% of these articles focused on the Mexican American (MA) ethnic subgroup (Lee et al., 2018; Mercado et al., 2017; Montoya et al., 2016; Orona et al., 2007; Perrotte et al., 2020a; Raffaelli et al., 2007; Schweizer et al., 2011; Zamboanga, 2005; Zamboanga et al., 2006).

Although these studies could not be compared with other ethnic subgroups, there were some trends that opposed findings in *traditional* Hispanic student samples (Mercado et al., 2017; Orona et al., 2007; Perrotte et al., 2020b; Schweizer et al., 2011; Zamboanga et al., 2006). In *traditional* samples, higher levels of some measures of acculturation were associated with drinking (Cano, de Dios, et al., 2015; Pham et al., 2021), but acculturation was not associated

with increased alcohol consumption in MA students (Mercado et al., 2017; Orona et al., 2007), and in one study was protective (Montoya et al., 2016). Patterns of behavioral acculturation by gender appeared to parallel traditional samples (Raffaelli et al., 2007; Safer & Piane, 2007). MA students had a stronger positive association between ethnic identity and heavy alcohol use in men, but not women (Perrotte et al., 2020; Zamboanga et al., 2006). The association with behavioral enculturation (language) was indirect, via depressive symptoms (Perrotte et al., 2020). Despite one study by Zamboanga (2005) supporting the association of positive sociability expectancies and heavy drinking in MA students, another revealed progression to problem drinking was not associated with alcohol use expectancies (Schweizer et al., 2011).

Key Findings of Gray Literature

Outside of the commercially published and peer reviewed landscape, nine additional sources were identified with relevance to this scoping review. Among these sources, a major theme of family influence emerged as a strength and weakness for Hispanic college students in the U.S. Through surveys and focus groups, Unidos U.S., a civil rights organization, reported the parents of Hispanic college students highly valued and encouraged their kid's college attendance at similar levels of other ethnic groups (Phillips, 2021). Unmatched, were the students' value of maintaining a close family bond even while away at college, which often paralleled a strong desire to financially support the family (Lincoln, n.d.; Phillips, 2021; Quintana, 2021; Santiago, 2011). In one survey sample, 55% of Hispanic students reported using a portion of their paycheck to contribute to family bills (Phillips, 2021). Discussion of how financial or familial stressors could impact physical health outcomes, such as alcohol use or related consequences, was not thematic across these articles.

One sub-population of Hispanic college students are those of first-generation student status. Parents of Hispanic college students, especially first-generation students, may experience language and knowledge barriers of college, which combined with lowered *social and cultural capital* may also result in feelings of disconnect with the university community (Carballo, 2022; Phillips, 2021). In Garza's (2021) dissertation, seeking this connectedness via peer networks, was operationalized as an alcohol-related expectancy to cope with stress, and significantly associated with binge drinking. Beyond parental language and knowledge barriers, alcohol protective communication with emerging adults was also a relevant theme across dissertations (Reid-Quinones, 2012; Varvil-Weld, 2015) Specifically, after controlling for *familism*, religious commitment, acculturation, and other variables, Reid-Quinones (2012) found different types of

messages associated with different substance use outcomes, with messages about respecting parents associated with higher risk. Varvil-Weld (2015) did not observe maternal alcohol-specific communication to be significantly associated with drinking or consequences, but this communication did not include respect for parents and was operationalized differently from (Reid-Quinones, 2012).

Another theme across gray literature was the examination of cultural influences to predict alcohol outcomes in Hispanic college students. Using a variety of indexes for acculturation and enculturation, behavioral enculturation (Spanish language retention) emerged as a significant predictor of greater alcohol consumption (Cano, 2012). Varvil-Weld (2015) also viewed acculturation as a multi-dimensional construct in college students through parent-child cultural profiles and found no differences in drinking or consequences of the mismatched (via ethnic identity and *familismo*) parent-child profile, from both marginalized and both bicultural Hispanic profiles.

Discussion

Aim 1: Predictors of Hispanic College Student Drinking

The measures adopted by literature in this scoping review clarified cultural profiles by using multidimensional measures of cultural orientation (*acculturation and enculturation*) (Cano et al., 2015; Cano, de Dios, et al., 2015; Des Rosiers et al., 2013; Jankowski et al., 2020; Pham et al., 2021; Zamboanga et al., 2017). One of these measures, the ARISMA-II, adapted two subscales to represent Mexican Orientation and Anglo Orientation as orthogonal measures of enculturation and acculturation, respectively (Jones & Mortimer, 2014). Some measures also decipher cultural practices (e.g., *immersion in the mainstream U.S. culture or their heritage culture*; Stephenson Multigroup Acculturation Scale (Stephenson, 2000)), cultural values (e.g., individualism vs. collectivism, self-construal; Self Construal Scale (Singelis, 1994)), and cultural identifications (Multi-Group Ethnic Identity Measure; (Phinney, 1992)). The benefits of this are reflected in the finding that different cultural profiles, composed of low enculturation or high enculturation, and low acculturation or high acculturation, are each differentially associated with alcohol use outcomes (Cano et al., 2015; Jankowski et al., 2020; Pham et al., 2021). First, highly acculturated individuals were more likely to consume alcohol, but not experience consequences (Pham et al., 2021). This is a drinking pattern characteristic of socially motivated drinkers (Cooper et al., 2016), and consistent with Hispanic students who frequently endorsed drinking for social motives (Bacio, 2021; Ceballos et al., 2012; Quintero et al., 2005; Vaughan et al., 2009). Social drinking and related consequences were also prevalent when loss of ethnic heritage had occurred (Pham et al., 2021). Loss of Hispanic heritage may tap into other pathways, such as coping and conformity motives that were salient in their association with problematic drinking and consequences (Bacio, 2021; Lui et al., 2020).

Stress and coping motives to drink are consistent predictors of drinking related problems among college students (Neighbors et al., 2007; Park & Levenson, 2002; Russell et al., 2017), which seems to hold true for Hispanic students with the added risk of perceived ethnic discrimination (Cheng & Mallinckrodt, 2015; Conn et al., 2017; Jankowski et al., 2020). Regardless of low or high ethnic orientation, if the student perceives ethnic discrimination, this increased cultural stress may render alcohol an attractive coping mechanism due to the pharmacological ability of alcohol to reduce an organism's response to stress (Cheng & Mallinckrodt, 2015; Park & Levenson, 2002). Given that negative cultural experiences may negatively affect health outcomes (Lazarus, 1997), it is possible that low ethnic orientation makes the student more vulnerable to perceiving ethnic discrimination resulting in greater social drinking related consequences (Pham et al., 2021). Both positive and negative expectancies were indirectly related to problematic drinking suggesting that negative expectancies (e.g., cognitive, and behavioral impairment) tap into cultural or peer related stressors, while positive expectancies address the sociability expectations of college student drinking (Bacio, 2021).

Applying social, conformity, and coping motives to drink with unique cultural profiles may help clarify why students with low U.S. + low Hispanic orientations were not at risk for alcohol consumption (Pham et al., 2021). Since Cano et al. (2015) observed students with higher perceived intragroup marginalization were not at risk for alcohol use severity it is possible this group was composed of students with low U.S. and Hispanic orientation (Cano et al., 2015; Pham et al., 2021). Individuals experiencing isolation may have less opportunities for elevated descriptive norms or manifestation of socially motivated drinking at college parties where high risk drinking frequently occurs (DuRant et al., 2008; Marzell et al., 2015; Wechsler & Nelson, 2008). Alternatively, lack of strong identification with either culture could induce a different

experience such as *bicultural identity* individuals who tend to have a greater sense of self, less perceived stress, higher exercise of personal choice and higher self-construal (Bennett, 2014; Markus & Kitayama, 1991; Yamaguchi et al., 2016). Without feeling pressure or lack of congruity to either culture, these students may be protected against perceived ethnic discrimination, and therefore do not turn to coping or conformity motives to drink (Cheng & Mallinckrodt, 2015).

In addition to an increase in multi-dimensional studies, the presence of multi-domain measurements of Hispanic and U.S. orientations reflects Bronfenbrenner's (1994) evaluation of the socio-ecological model. For example, descriptions of acculturation or enculturation took the form of behavioral practices (e.g., language use, heritage of friends; Raffaelli et al., 2007; Safer & Piane, 2007), psychological domains (e.g., identification, values, beliefs; Shields et al., 2016), demographic factors (e.g., generational status, minority status/attendance at HSI or PWI) or a combination of all three (Cano et al., 2015; Edwards et al., 2019; Schwartz et al., 2014). In using psychological and behavioral proxies, Cano et al. (2015) deciphered affective and behavioral acculturation, as only low affective acculturation was protective in its indirect association with alcohol use severity. Conversely, this finding indicates that high affective acculturation is a risk factor, which may also tie back to coping or conformity motives to drink via stressors related to perceived discrimination and depressive symptoms (Cano et al., 2015; Cano et al., 2015; Cheng & Mallinckrodt, 2015a). Given acculturation and enculturation had no effect on drinking after controlling for depressive symptoms, findings by Cano et al. (2015) signal that perhaps only specific dimensions of culture that manifest through these stressors are associated with alcohol use outcomes. Overall, these findings reinforce that distinguishing intrapersonal from interpersonal components helps elucidate mixed findings in the acculturation and alcohol use

literature (Bronfenbrenner, 1994; Thomson & Hoffman-Goetz, 2009). Future research of Hispanic college student drinking should continue assess variables at multiple levels (e.g., demographic, behavioral, psychological) to account for the unique cultural factors that influence beliefs, values, and attitudes (Bronfenbrenner, 1994; Thomson & Hoffman-Goetz, 2009).

Overall, *familism* and generational status were not directly or entirely protective of alcohol use (Bacio, 2021; DiBello et al., 2016; Venegas et al., 2012). *Familism* was a potential risk factor of alcohol use by its positive association with social and conformity motives to drink (Bacio, 2021; Conn et al., 2017; Lui et al., 2020). As stress was a risk factor for problematic drinking via coping motives (Bacio, 2021), maybe *familism* was not consistently protective due to family's potential to act as a source of financial stress in Hispanic college students, a theme commonly observed throughout gray literature (Phillips, 2021; Santiago, 2011). This stress may interact with *familism* through parental communication, which also was not entirely protective against alcohol use in Hispanic samples (Reid-Quinones, 2012; Varvil-Weld, 2015), despite being generally regarded as protective against alcohol use behaviors in other populations (Abar et al., 2012; Abar & Turrisi, 2008; Cleveland et al., 2013; Kuntsche & Kuntsche, 2016; Litt et al., 2020). Research has shown that cumulative or frequent stress to a point of overstimulation, or *allostatic load*, can lead to a dysfunctional stress responses (McEwen, 1998; McEwen & Seeman, 1999). Given stressors can lead to maladaptive alcohol use in Hispanic students (Cheng & Mallinckrodt, 2015), it is possible that some factors that are usually regarded as protective, such as *familism*, may instead contribute to this *allostatic load*, when family communication is rooted in requesting respect or helping with finances (Bacio, 2021; Lincoln, n.d.; Phillips, 2021; Quintana, 2021; Reid-Quinones, 2012; Santiago, 2011). Another factor that could be embedded in family dynamic, religiousness, also protected against drinking when U.S. cultural orientation

was high (Jankowski et al., 2020; Mahoney et al., 2003; Pham et al., 2021). Religion and communication that co-occur with *familism* and generational status should be considered to help outline more informative pathways to alcohol use in Hispanic students. To tailor culturally sensitive interventions for Hispanic families, it could be beneficial to assess the family's knowledge of typical experiences and stressors at U.S. colleges as this may help guide successful and protective communication.

Risk factors of college student alcohol use present in the non-Hispanic literature, such as adverse childhood experiences (Windle et al., 2018), parental permissiveness of alcohol use (Varvil-Weld et al., 2014), and overestimation of peer norms (Borsari & Carey, 2003), also surfaced in literature of Hispanic college students (Forster et al., 2019; LaBrie et al., 2012; McCabe et al., 2019; Rice, 2006; Varvil-Weld et al., 2014). The strength of these associations varied across ethnicity, and evidence suggests adverse childhood experiences may have more influence on harmful alcohol use in Hispanic students (Forster et al., 2019). Additionally, perceptions of peer drinking are, in general, less predictive of personal alcohol use and consequences for Hispanic students (LaBrie et al., 2012; McCabe et al., 2019; Rice, 2006). Descriptive norms may not be predictive of Hispanic college student alcohol use, because the referent group measured is not appropriate and therefore this association of Hispanic students actual drinking and perceptions will not reflect the actual association (LaBrie et al., 2012; Vaughan et al., 2015a; Hummer et al., 2012; Neighbors et al., 2010). Further, it seems that the terminology of referent group (e.g., *ethnicity-specific*, *general student* or *typical student*) is a source of variance in the magnitude of associations, with *typical* being protective when Hispanic students are non-minority, and *ethnicity-specific* protective when these students are a minority population at the university (LaBrie et al., 2012; Vaughan et al., 2015a). To unravel the precise

direction and magnitude of such trends, future longitudinal research should ensure their measures differentiate the *type of student* in the referent group, but also the *type of student* of whom participants are most likely to form their alcohol-related perceptions from.

Aim 2: Demographic Differences in Alcohol Use

Evaluating the predictors above by gender and subgroup helped clarify discrepancies in the alcohol use literature among Hispanic U.S. college students. Despite agreement with “drinking’s importance to socializing as a custom in America,” disapproval towards female Hispanic college student drinking still exists in the U.S. (Ceballos et al., 2012; Hatchett & Holmes, 2004). Studies show that as behavioral acculturation and stress increases in females, so does binge drinking, and endorsement of *positive marianismo* loses its protectiveness (Perrotte et al., 2018; Safer & Piane, 2007). If female students adopt U.S. cultural behaviors such as social motives to drink, but this is perceived as disapproved behavior, this could lead to higher stress and a maladaptive stress response via coping or conformity motivated drinking (Cheng & Mallinckrodt, 2015; Hatchett & Holmes, 2004; Perrotte et al., 2018; Safer & Piane, 2007). Research tends to support the mediating role of protective behavioral strategies in drinking motives and alcohol consumption, so future interventions should continue to reinforce manner of drinking PBS in female Hispanic students (Perrotte et al., 2018; LaBrie et al., 2011; Osberg et al., 2010). Under high stress, stopping/limiting drinking strategies may be particularly important to prevent binge drinking episodes in females, who are biologically at higher risk than males for harmful blood alcohol concentrations (Julien et al., 2014; Thomasson, 1995).

Gender differences due to perceived traditional gender role beliefs may also elaborate the construct of *familism*, which received contradictory support for its protectiveness (Bacio, 2021;

DiBello et al., 2016; Venegas et al., 2012). Perrotte et al. (2021) supports that it is not family role or religion, but instead high levels of *virtuosity and chaste* that protect females from drinking (*drunkenness*). Despite family role and religiousness constructs of *marianismo* not appearing as risk factors for drinking (Perrottes et al., 2021), under high stress, positive marianismo is a risk for specifically binge drinking (Perrotte et al., 2018). Since spirituality and family role were grouped together with purity in this finding, maybe the protectiveness of purity was cofounded by the risk associated with high levels of spirituality or family role when under stress. This further validates inferences of *familism* above relating to stress and drinking among Hispanic students but indicates a pathway specific to females. Additionally, when under stress, this study finds even more support that endorsing family role or *familism*, is going to put Hispanic females at higher risk for frequency of drinking.

In males, where there was support for familism as protective (DiBello et al., 2016), the pathway to binge drinking appears to be less related to stress, maybe indicating that male Hispanic college students are less impacted by financial stressors of family or have other means of coping with this stress (Lincoln, n.d.; Phillips, 2021; Quintana, 2021; Santiago, 2011). Through dominance and toughness of *traditional machismo*, research supports alcohol-specific norms are linked to greater binge drinking without interaction of stress (Perrotte et al., 2018, 2020; Cano et al., 2015). Since drinking increased in males who did not perceive fitting-in with their academic environments (*cultural congruity*), future research could explore the interaction of *cultural congruity* and *traditional machismo* in their association with drinking outcomes. The stronger association of peer norms and positive sociability expectations with alcohol use in males (Ceballos et al., 2012; Vaughan et al., 2018), also suggests that stressors in the social environment may impact males more than their female counterparts.

Lastly, the aim to examine ethnic subgroup heterogeneity of Hispanic college students received minimal support given 100% of these studies included only Mexican American samples. The main difference emerging in Mexican American students was the lack of association of acculturation with increased drinking outcomes (Mercado et al., 2017; Montoya et al., 2016; Orona et al., 2007), which may be a reflection of protection from perceived ethnic discrimination, given Mexican Americans are the largest Hispanic subgroup in the U.S., (Cheng & Mallinckrodt, 2015; Krogstad & Noe-Bustamante, 2021).

Limitations

The present scoping review was not conducted without limitations. This review was conducted independently with a lack of scholar committee leading to exclusion of a third database such as the Cumulative Index to Nursing and Allied Health Literature (CINAHL). Inclusion of this additional database may have benefitted this review through identification of additional primary studies to further synthesize qualitative evidence (Wright et al., 2015). Further, many studies used multi-dimensional proxies to determine associations of predictor variables and alcohol outcomes. Given the heterogeneity across various trends, quantitative results from this study may have benefitted from a meta-analysis to identify homogenous associations.

One of the major aims of this review was to clarify sex differences across trends in the literature. Despite a large amount of literature observing independent trends for male and female Hispanic students, *gender* was either measured dichotomously or the study lacked statistical power to observe these trends nominally (e.g., cisgender male, transgender male, nonbinary). The results of these articles were still valuable to observe variance in trends for Hispanic males

and females, so for the purpose of this study, gender was considered as a marker for sex differences. In January 2016 the NIH made a call to action to change the wording for grants away from *gender* when dichotomous birth *sex* was used (NIH, 2015). Taken together, a limitation of this literature review reflects the terminology of past literature that did not decipher *sex* and *gender* as variables, which future research should address.

Further limited was the external validity of some themes identified in this review given the low volume of studies that distinguished Hispanic ethnic subgroups in results. To avoid lack of statistical power for smaller subgroups, future research should oversample subgroups such as Cuban, Puerto Rican, Dominican etc. For existing studies, researchers should be cautious when interpreting trends from *traditional samples*, as geography may greatly influence the ethnic makeup of these study populations. For example, research by Corbin et al. (2008) on peer norms was conducted at a large Texan university where most of the student population is in-state, and given Mexican American's represented 76% of the Texan Hispanic population at the time, the Hispanic population in this sample was likely majority Mexican (U.S. Census Bureau, 2003). Given that the geography of and ethnic makeup of Texas varies from that of other regions (e.g., Cuban Americans in Florida) these results may not be externally valid for Hispanic samples across the country. Regional differences in drinking could further complicate the studies within the same ethnic subgroup, as Caetano & Galvan (2001) noted variation in drinking patterns for Mexican American samples across the U.S., that resembled the "wet" or "dry" environment of that region.

Conclusions

This scoping review culminated trends in cultural, peer and familiar influences that may protect or add risk to alcohol use and related consequences among Hispanic U.S. college students. The literature from 2000 to present day reveals that a multi-dimensional (e.g., heritage and dominant cultural) and multi-domain (e.g., practices, beliefs, attitudes) approach to study acculturation provides clarity in identification of at-risk Hispanic college students. Moreover, terminology such as *acculturation* or *enculturation* in general, are insufficient to determine health outcomes among this population. A better target to prevent alcohol use and related outcomes in these students may be through identification of exposure to specific peer or cultural stressors, which generally manifest in conformity and coping motives to drink. Peer-related stress may be more relevant than injunctive and descriptive norms, since studies that ask this population to compare themselves to the *typical student*, may be inappropriate indicators that do not align with the actual referent group of their immediate social circles. Like acculturation and enculturation, *familism*, *marianismo* and *machismo* should be used with caution in identifying risk of alcohol use, because the dimensions of each construct seem to operate differently for frequency of alcohol use and quantity on occasion. *Familism*, measured by components such as obligations to family, could operate differently for males and females. Given *familism* was protective for males, it is possible males do not identify with obligations to financial support or if they do, this does not induce stress that would lead to coping motivated drinking. In females, where *familism* was not protective, maybe these obligations manifest in coping, social or conformity motivated drinking. This review also identified emerging areas of influence especially relevant to Hispanic students, such as increased risk from adverse childhood events, increased protection of low identification with U.S and Hispanic culture, and protection via high

levels of religiousness. Although only the Mexican American subgroup was addressed in the volume of college research, inclusion of this subgroup indicates that patterns observed in *traditional* Hispanic samples, may not be homogenous across individual ethnic groups given diversity in social and cultural contexts in the U.S. Identification of cultural, peer and familial influences encompassed a range of variables tied to alcohol use and related consequences in Hispanic U.S. college students, emphasizing the need to consider both the quality and quantity of measurements in conducting future research and tailoring interventions.

Appendix A Description of Study Demographics

Article number	Title	Publication Year	Sample Size	Target Population in Results/Discussion	College Status	Mean age of sample	Location of Sample
1	A cultural and social cognitive model of differences in acculturation orientations, alcohol expectancies, and alcohol-related risk behaviors among Hispanic college students	2012	1527	only traditional Hispanic	currently enrolled undergraduates	20.35	30 universities, both PWI and HSI
2	Academic and social motives and drinking behavior	2009	1447	traditional Hispanic + other ethnic samples	transition from high school to second year of college	n/a	University of Texas, Austin
3	Acculturation and alcohol use among Hispanic and Asian American college students: What do we know and where could we go?	2017	n/a	traditional Hispanic + other ethnic samples	currently enrolled undergraduates	n/a	n/a
4	Acculturation and substance use in a Mexican American college student sample	2017	1,494	Mexican-American	currently enrolled undergraduates	22.86	South Texas, HSI
5	Acculturation profiles and alcohol use among Hispanic Americans	2021	348	only traditional Hispanic	currently enrolled undergraduates	21.82	university in the southwestern region of the United States
6	Acculturation status and heavy alcohol use among Mexican American college students: investigating the moderating role of gender	2006	126	Mexican-American	currently enrolled undergraduates	24.7	four Midwestern post-secondary institutions
7	Acculturation, gender, and alcohol use among Mexican American college students	2007	148	Mexican-American	currently enrolled undergraduates	23.05	three state universities in California and Texas
8	Acculturative stress as a moderator of the effect of drinking motives on alcohol use and problems among young adults	2017	600	traditional Hispanic + other ethnic samples	currently enrolled undergraduates	21.62	Urban University

Article number	Title	Publication Year	Sample Size	Target Population in Results/Discussion	College Status	Mean age of sample	Location of Sample
9	Adverse Childhood Experiences, Ethnicity, and Substance Use among College Students: Findings from a Two-State Sample	2019	7,148	traditional Hispanic + other ethnic samples	currently enrolled undergraduates	22.27	Colleges in Minnesota and California
10	Alcohol consumption in relation to residence status and ethnicity in college students	2014	991	traditional Hispanic + other ethnic samples	currently enrolled undergraduates	19	large, urban, private Catholic university located within a major metropolitan area in the northeastern United States.
11	Alcohol expectancies and drinking behaviors in Mexican American college students	2005	107	Mexican-American	currently enrolled undergraduates	25	Four Midwestern postsecondary institutions
12	Alcohol use among Hispanic college students along the US/Mexico border	2016	296	Mexican-American	currently enrolled undergraduates	21.2	Texas/Mexico border university
13	Alcohol Use Severity Among Hispanic Emerging Adults in Higher Education: Understanding the Effect of Cultural Congruity	2015	167	only traditional Hispanic	currently enrolled undergraduates	20.24	n/a
14	Alcohol use severity and depressive symptoms among late adolescent Hispanics: Testing associations of acculturation and enculturation in a bicultural transaction model	2016	129	only traditional Hispanic	currently enrolled undergraduates	19.41	n/a
15	Analysis of acculturation, sex, and heavy alcohol use in Latino college students	2007	218	traditional Hispanic + other ethnic samples	currently enrolled undergraduates	20.6	California State University, Long Beach
16	Association of acculturation with drinking games among Hispanic college students	2014	1,397	only traditional Hispanic	currently enrolled undergraduates	n/a	30 universities, both PWI and HSI
17	Attitudes of College Students in a Predominately Hispanic University Regarding Alcohol Use	2004	1,256	traditional Hispanic + other ethnic samples	currently enrolled undergraduates	25	Hispanic-serving institution at the US/mexico border
18	Binge-drinking attitudes and behaviors among hispanic and non-hispanic college students: Suggestions for tailoring health campaign messages	2016	413	traditional Hispanic + other ethnic samples	currently enrolled undergraduates	22.71	large public Hispanic-serving university in the Southwestern United States

Article number	Title	Publication Year	Sample Size	Target Population in Results/Discussion	College Status	Mean age of sample	Location of Sample
19	Blood is thicker than booze: Examining the role of familism and gender in alcohol use and related consequences among Hispanic college students	2016	623	only traditional Hispanic	currently enrolled undergraduates, who heavy drinking criteria	20.55	3 regionally diverse U.S. universities
20	College drinking among Latinos(as) in the United States and Mexico	2012	376	only traditional Hispanic	currently enrolled undergraduates	22	cross-national, Mexico and US
21	Collegiate Binge Drinking and Social Media Use Among Hispanics and Non-Hispanics	2018	424	traditional Hispanic + other ethnic samples	currently enrolled undergraduates	n/a	Hispanic Serving Institution in Central Texas
22	Demographic differences in perceived social norms of drug and alcohol use among Hispanic/Latinx and non-Hispanic White college students	2019	1,550	traditional Hispanic + other ethnic samples	currently enrolled undergraduates	19.47	large Southwestern university
23	Dimensions of acculturation: Associations with health risk behaviors among college students from immigrant families	2011	3,251	traditional Hispanic + other ethnic samples	first-second generation currently enrolled undergraduates	20.22	30 universities, both PWI and HSI
24	Does ethnicity moderate the link between drinking norms and binge drinking in college students?	2019	18,748	traditional Hispanic + other ethnic samples	currently enrolled undergraduates	n/a	national sample of multiple colleges
25	Drinking motives, cultural orientations, and alcohol use among hispanic college students at the u.S.-mexico border	2020	219	only traditional Hispanic	currently enrolled undergraduates	20.14	public, Hispanic-serving, commuter university at the U.S.-Mexico border
26	Enrollment in Hispanic Serving Institutions as a Moderator of the Relationship Between Drinking Norms and Quantity of Alcohol Use Among Hispanic College Students	2015	4,336	only traditional Hispanic	HSI enrolled vs. non HSI enrolled undergraduates	n/a	117 postsecondary institutions (HSI and non-HSI)
27	Ethnicity specific norms and alcohol consumption among Hispanic/Latino/a and Caucasian students	2012	5,369	traditional Hispanic + other ethnic samples	currently enrolled undergraduates	19.9	two west coast U.S. universities
28	Examining Drinking Consequences and Reasons for Drinking in a Bilingual College Sample	2007	155	Mexican-American	Spanish/English bilingual currently enrolled undergraduates	21.89	university in the Southwestern United States

Article number	Title	Publication Year	Sample Size	Target Population in Results/Discussion	College Status	Mean age of sample	Location of Sample
29	Explaining the Immigrant Paradox: The Influence of Acculturation, Enculturation, and Acculturative Stress on Problematic Alcohol Consumption	2020	1,153	traditional Hispanic + other ethnic samples	currently enrolled undergraduates	20	30 universities, both PWI and HSI
30	Gender as a Moderator of Descriptive Norms and Substance Use among Latino College Students	2018	4,336	only traditional Hispanic	currently enrolled undergraduates	20.13	117 post-secondary institutions
31	Immigrant paradox? Generational status, alcohol use, and negative consequences across college	2018	689	traditional Hispanic + other ethnic samples	First year college students	18.5	a college in the Northeastern US
32	Maternal and peer influences on drinking among Latino college students	2014	362	only traditional Hispanic	First year college students	18.54	a large public university located in the southeastern United States
33	Misperception of college drinking norms: Ethnic/race differences	2007	1,201	traditional Hispanic + other ethnic samples	currently enrolled undergraduates	24	large urban university in the southeastern United States (Minority serving)
34	Motivational pathways to problematic drinking among Latinx college drinkers	2021	264	only traditional Hispanic	currently enrolled undergraduates, who met drinking criteria	n/a	highly selective PWIs in southern California
35	Perceived norms for drinking in the transition from high school to college and beyond	2010	2,247	traditional Hispanic + other ethnic samples	transition from high school to second year of college	18.41	large, public, southwestern university (non-HSI)
36	Perceptions of drinking among Hispanic college students: how qualitative research can inform the development of collegiate alcohol abuse prevention programs	2005	59	only traditional Hispanic	currently enrolled undergraduates, who met regular drinking criteria	23	state institution for higher learning in the American Southwest
37	Potential cultural predictors of heavy episodic drinking in Hispanic college students	2012	160	only traditional Hispanic	currently enrolled undergraduates	19.9	university at the Texas/Mexico border
38	Progression to problem drinking among Mexican American and White European first-year college students: a multiple group analysis	2011	198	Mexican American + other ethnic sample	First year college students	n/a	large public university in the southwestern United States near the Mexico–U.S. border
39	Protective strategies and alcohol use among college students: ethnic and gender differences	2010	567	traditional Hispanic + other ethnic samples	currently enrolled undergraduates	20.23	large southeastern university

Article number	Title	Publication Year	Sample Size	Target Population in Results/Discussion	College Status	Mean age of sample	Location of Sample
40	Racial/ethnic discrimination, posttraumatic stress symptoms, and alcohol problems in a longitudinal study of Hispanic/Latino college students	2015	203	only traditional Hispanic	currently enrolled undergraduates	24.06	HSI in the southwest United States
41	Religiousness and acculturation as moderators of the association linking acculturative stress to levels of hazardous alcohol use in college students	2020	1,072	traditional Hispanic + other ethnic samples	currently enrolled undergraduates	19.7	30 universities, both PWI and HSI
42	Self-schema as a non-drinker: a protective resource against heavy drinking in Mexican-American college women	2018	477	Mexican-American Women	currently enrolled undergraduates	19.8	Arizona and Michigan
43	Surveying the literature on acculturation and alcohol use among Hispanic college students: we're not all on the same page	2014	n/a	n/a	currently enrolled undergraduates	n/a	n/a
44	The combined relations of gender, enculturation, and depressive symptoms with health risk behaviors in Mexican-Americans: a moderated mediation analysis	2020	677	Mexican-American	currently enrolled undergraduates	21	4 universities, in California, Florida, New York, and Texas
45	Traditional feminine gender roles, alcohol use, and protective behavioral strategies among Latina college students	2020	405	only female traditional Hispanic	currently enrolled undergraduates	18.65	a southwest university
46	Traditional Gender Roles and the Stress-Alcohol Relationship among Latina/o College Students	2018	248	only traditional Hispanic	currently enrolled undergraduates	19.02	Hispanic-serving (HSI) southwest university

Appendix B Study Influence(s) Related to Scoping Review Aims

Article Number	Publication Year	Peer Influence	Familial Influence	Cultural Influence	Demographic Differences (sex, gender, ethnic subgroup)	Measurement of Alcohol Use and/or consequences
1	2012			The Stephenson Multigroup Acculturation Scale		frequency of hazardous alcohol use (Alcohol Use Disorders Identification Test (AUDIT), binge drinking, sexual activity under the influence of alcohol, driving under the influence of alcohol, and riding with a drunk driver
2	2009	Social motives and behaviors	Family History of Alcohol Use, academic motives			Typical quantity and frequency of alcohol use (Daily Drinking Questionnaire (DDQ-R) and two indices of heavy drinking, and alcohol related problems (The Rutgers Alcohol Problem Index (RAPI))
3	2017	literature review, multiple dimensions	literature review, multiple dimensions	literature review, multiple dimensions	literature review, multiple dimensions	multiple studies
4	2017			cultural orientation, Vancouver Index of Acculturation (VIA)	MA subgroup	Short Alcohol Dependence Data Questionnaire (SADD)
5	2021			Stephenson Multigroup Acculturation Scale (SMAS)		alcohol use severity (AUDIT) and College Alcohol Problems Scale—Revised (CAPS-r)
6	2006			acculturation (ARSMA-II) and ethnic identity (MEIM)	MA subgroup	heavy alcohol use, peer alcohol use
7	2007		social facilitation and family drinking	Linguistic acculturation (5-item Language Use factor of the Short Acculturation Scale for Hispanics (SASH))	MA subgroup	frequency of alcohol use last month, last year and number of heavy drinking episodes in past month
8	2017	drinking motives		acculturative stress		alcohol consumption (Daily Drinking Questionnaire (DDQ) and/or drinking-related problems (The Rutgers Alcohol Problem Index)
9	2019		adverse childhood experiences (ACE)			Past 30-days alcohol use, and past 2-week binge drinking
10	2014		living situation (at home or at school)			quantity, frequency of drinking and frequency of binge drinking

Article Number	Publication Year	Peer Influence	Familial Influence	Cultural Influence	Demographic Differences (sex, gender, ethnic subgroup)	Measurement of Alcohol Use and/or consequences
11	2005	alcohol expectancies			MA subgroup	heavy drinking, alcohol consequences (risk behaviors)
12	2016			acculturation (ARSMA-II)	MA subgroup	alcohol consumption (The Behavioral Risk Factor Surveillance System Questionnaire)
13	2015			behavioral acculturation (Anglo Orientation Subscale (AOS) of the ARISMA-II), behavioral enculturation (Mexican Orientation Subscale (MOS) of the ARISMA-II), cultural congruity, depressive symptoms	gender difference	alcohol use severity (AUDIT)
14	2016			Behavioral acculturation and enculturation (AOS and MOS), affective acculturation and enculturation (ANGMAR and MEXMAR), all of the ARSMA-II, depressive symptoms, perceived ethnic discrimination, intragroup marginalization		alcohol use severity (AUDIT)
15	2007	perceived norms of alcohol use, attitude toward alcohol use		language at home vs. language with friends + heritage of friends	gender difference	heavy drinking (binge drinking in past 2 weeks)
16	2014			cultural practices (Stephenson Multigroup Acculturation Scale), cultural values (individualism and collectivism) and cultural identifications (Multi-Group Ethnic Identity Measure) and heritage and US identifications (American Identity Measure)		drinking games participation, general alcohol consumption (AUDIT), negative drinking consequences (AUDIT)
17	2004	drinking related attitudes (acceptable levels and situational alcohol use)			gender difference	Attitudes of alcohol use (The Attitudes of College Students Regarding Alcohol Use Survey)
18	2016			attitudes towards drinking regarding culture		frequency of alcohol use, drinks at a time, what type of alcohol, where it was obtained, participation in binge drinking, where they participated in binge drinking

Article Number	Publication Year	Peer Influence	Familial Influence	Cultural Influence	Demographic Differences (sex, gender, ethnic subgroup)	Measurement of Alcohol Use and/or consequences
19	2016		Attitudinal Familism		gender difference	alcohol consumption (DDQ) and alcohol related problems (Rutgers Alcohol Problems Index (RAPI))
20	2012	alcohol expectancies, positive (sociability, tension reduction, liquid courage, sexuality) and negative (cognitive/behavioral impairment, risk/aggression, and self-perception)		the Multiphasic Assessment of Cultural Constructs- Short Form (MACC-SF) (cognitive referents of familism, fatalism, personalismo, and machismo) and the behavioral AOS and MOS scales of the ARISMA-II	gender difference	drinking prevalence and drinking frequency (The Comprehensive Effects of Alcohol Questionnaire (CEAQ))
21	2018	social media use (which platforms, intensity, addiction)				alcohol use (Quantity Frequency Index (QFI) and family history of alcohol use
22	2019	perceptions of peer use (close friend of the same gender and age attending the university and acquaintance of the same gender and age attending the university)				personal alcohol use (frequency in past 12 months)
23	2011			cultural practices (Stephenson Multigroup Acculturation Scale), cultural values (operationalized cultural values in terms of individualism and collectivism, Self-construal (24-item Self-Construal Scale) and cultural identifications (Multi-Group Ethnic Identity Measure)		hazardous alcohol use and negative consequences (Alcohol Use Disorders Identification Test (AUDIT))
24	2019	perceived alcohol use norms				self reported binge drinking (past 2 weeks)

Article Number	Publication Year	Peer Influence	Familial Influence	Cultural Influence	Demographic Differences (sex, gender, ethnic subgroup)	Measurement of Alcohol Use and/or consequences
25	2020	Drinking motives and cultural orientations				alcohol consumption (DDQ) and alcohol related problems (Rutgars Alcohol Problems Index (RAPI))
26	2015	Perceived Drinking Norms and enrollment at HSI				quantity of alcohol use
27	2012	Perceived norms				alcohol consumption (DDQ)
28	2007		generational status	Arisma-II and The Razones del Consumo de Alcohol (RCA) (to measure reasons for drinking but in spanish language)	MA subgroup	drinking consequences (RAPI)
29	2020		Familism, religiosity in values, beliefs and practices, and generational status			problematic alcohol consumption (Alcohol Use Disorders Identification Test (AUDIT))
30	2018	perceived norms			gender difference	quantity of alcohol consumed
31	2018		generational status			alcohol use, quantity and consequences
32	2014	friend descriptive norms	maternal influences: monitoring, positive communication, permissiveness, modeling			students peak drinking (QFP), weekly drinking (DDQ), and alcohol-related consequences (YAACQ)
33	2007	perception of the norm for "typical" student drinking				alcohol use (The National College Health Assessment self-report questionnaire), and quantity of alcohol use
34	2021	Drinking motives, alcohol expectancies, injunctive drinking norms (of peers), stress, the brief sensation seeking scale, perception of campus climate	familismo, ancestry, generational status and first generation college student status			drinking consequences (RAPI)

Article Number	Publication Year	Peer Influence	Familial Influence	Cultural Influence	Demographic Differences (sex, gender, ethnic subgroup)	Measurement of Alcohol Use and/or consequences
35	2010	descriptive norms of drinking				Daily Drinking Questionnaire (DDQ)
36	2005	aspects of alcohol through free list: (1) What are all the positive things about drinking? 2) What are all the negative things about drinking?				free listing of positive and negative experiences of alcohol (determines salient factors)
37	2012		Familism	Bicultural identity (The Biculturation Identity Integration Scale, Version 1) to measure cultural conflict and cultural congruency		heavy episodic drinking (Daily Drinking Questionnaire (DDQ))
38	2011	Impulsivity, temperamental negative affectivity, alcohol use expectancies		cultural orientation (ARISMA-II)	MA subgroup	alcohol related consequences (Young Adult Alcohol Problems Screening Test (YAAPST)) and alcohol use (Timeline Followback Procedure)
39	2010	Protective Behaviors				getting drunk status (frequency in past week)
40	2015			ethnic discrimination (The General Ethnic Discrimination scale) and post traumatic stress symptoms (The Posttraumatic Stress Disorder Checklist—Civilian (PCL-C))		alcohol use severity (AUDIT)
41	2020	alcohol expectancies		acculturation orientation (Stephenson Multigroup Acculturation Scale) and the Multi-Group Ethnic Identity Measure (MEIM), acculturative stress and perceived discrimination		hazardous alcohol use (AUDIT)
42	2018		familism	acculturation (ARSMA-II), ethnic identity (MEIM), acculturative stress	MA subgroup	alcohol use and heavy drinking (Ecological momentary assessment (EMA))

Article Number	Publication Year	Peer Influence	Familial Influence	Cultural Influence	Demographic Differences (sex, gender, ethnic subgroup)	Measurement of Alcohol Use and/or consequences
43	2014	literature review, multiple dimensions	literature review, multiple dimensions	literature review, multiple dimensions	literature review, multiple dimensions	multiple studies
44	2020			enculturation (The Bidimensional Acculturation Scale for Hispanics) and depressive symptoms	MA subgroup	health risk behavior, that includes self reported frequency of alcohol use in past 30 days (but not separated from marijuana use and number of sex partners)
45	2020	protective behavioral strategies			traditional gender roles (TGRB)	general alcohol use (DDQ-R) and self report of drunkenness
46	2018	perceived stress			traditional gender roles (TGRB)	self reported alcohol use in past 90 days and binge drinking

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ACADEMIC VITA

Sophia Ko

Education

The Pennsylvania State University, University Park, PA / *Pending Graduation: May 2022*

Eberly College of Science | Bachelor of Science in General Science

College of the Liberal Arts | Bachelor of Science in Italian

Research Experience

Prevention Research to Optimize Health Lab, The Pennsylvania State University / *September 2021 – Present*

Undergraduate Research Assistant

- Analyze motivational interviewing techniques to assess reliability of parent-based interventions in substance abuse research
- Review literature landscape of behavioral variables and health outcomes related to alcohol consumption and consequences in the emerging adult population

Janssen Pharmaceutical Company of Johnson and Johnson, Remote / *June 2021 – August 2021*

Clinical Scientist Intern

- Engaged in a daily intern lecture series to gain a holistic understanding of the bench to bedside process of research and drug development in the pharmaceutical industry, specifically centered around the field of Oncology
- Assessed select patient data in the iDARTs information system to ensure alignment of clinical research participant's medical history and a phase 3 clinical trial protocol inclusion and exclusion criteria
- Remodeled a multi-functional team approach to streamline an engagement plan directed at inactive clinical research sites in attempt to boost study enrollment of a time-sensitive trial
- Revised scientific literature drafts and clinical trial investigational product materials for publication

Awards and Honors

The Pennsylvania State University Department of Spanish, Italian and Portuguese / *March 2021*

Josephine Rhea Award, Irving L. Foster Memorial Award

The Schreyer Honors College / *August 2018 – August 2020*

Wiggins Family Honors Scholarship, Academic Excellence Scholarship, Ridge Riley Alumni Scholarship

Other Involvement

Alternative Fundraising Committee for Penn State Dance MaraTHON, University Park, PA

Alumni Relations Chairman / *May 2021 – February 2022*

- Allocated responsibilities to a 6-membered team to organize a monthly THON newsletter that incentivized involvement and monetary donation of 200+ alumni to reach \$410,000 total in one year
- Implemented an alumni database to effectively maintain communication across team members and alumni

General Member / *May 2020 – May 2021*

- Promoted donations and raise awareness for the largest student run philanthropy in the world dedicated to pediatric cancer
- Contributed to fundraising efforts for the top donating organization of the past 29 years for the 46-hour dance marathon

Student Red Cross Club – University Park, PA

Public Relations Director / *December 2019 – February 2022*

- Launched initiatives to increase Red Cross blood donations and awareness by other organizations on campus
- Designed printed materials and organize online campaigns to communicate philanthropic purpose of the club

On-Site Coordinator / *September 2019 – Present*

- Volunteer to manage blood donor sign in and oversee the process of donor recovery
- Direct and support blood drive volunteers during donor registration and recovery