

PATTERNS OF ALCOHOL CONSUMPTION AND PSYCHOLOGICAL DISTRESS: AN
EXAMINATION OF THE PREVALENCE AND THE RELATION AMONG
RACIALLY/ETHNICALLY DIVERSE OLDER ADULTS

by

AMI BRYANT

GIYEON KIM, COMMITTEE CHAIR
MARTHA CROWTHER
MICHAEL ROBINSON

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ABSTRACT

The differences in psychological distress among older adults of varying racial/ethnic backgrounds, varying alcohol consumption patterns, and the interaction between these variables were examined. Data were obtained from the 2009 California Health Interview Survey (CHIS). Participants aged 60 and older who were not missing data on any of the study variables were included ($n= 19,925$). The racial/ethnic composition of the sample was 82% White, 4% Black, 8% Asian, 1% American Indian/ Alaska Native, and 5% Latino.

Hierarchical multiple regression analyses were conducted in order to test the main effects of race/ethnicity, past year alcohol consumption, frequency of binge drinking, and the interaction of race/ethnicity with the alcohol consumption variables.

Main effects for race/ethnicity indicating that Blacks and Asians experienced significantly less psychological distress than Whites were found. A significant main effect was also found for frequency of binge drinking indicating that an increased frequency of binge drinking significantly predicted an increase in psychological distress.

These results indicate that older adults of certain racial/ethnic groups may be less vulnerable to psychological distress as compared to Whites. The results also indicate that older adults who binge drink more frequently may experience increased levels of psychological distress which provides further evidence for the negative effects of binge drinking on the mental health of this age group. These results indicate that the development of binge drinking interventions for older adults may be an important step in improving the mental health of this age group.

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1. Introduction

Unhealthy alcohol consumption, including binge drinking, is an area of concern among older adults as it is associated with many health problems and may be associated with poor mental health status and psychological distress among this age group (Graham, 1997; Okoro, 2004). Compounding the magnitude of the effects of binge drinking is the finding that 54% of Americans who partake in binge drinking at least once a week are alcohol dependent (Dawson, 1999). It has been estimated that by 2020 the number of substance dependent and abusing adults ages 50 and older will have grown to 4.4 million from 1.7 million in 2001 (Gfroerer, Penne, Pemberton, & Folsom, 2003). The fact that alcohol is the primary substance of abuse for older adults, as it accounts for 76% of substance abuse admissions for individuals 65 and older, is also notable (SAMHSA, 2007). These statistics combined suggest that a drastic increase in the number of older adults in need of alcohol related treatment is imminent. This finding suggests that a greater understanding of alcohol use among older adults is becoming more pertinent and that understanding binge drinking behavior may allow more individuals who are in need of alcohol related treatment to be identified and treated.

Binge drinking is one alcohol consumption pattern that is of particular concern given that this age group has an increased sensitivity to alcohol due to changes in body composition and the high likelihood of medication interactions (Blow & Barry, 2000). For example, among older adults, binge drinking has been found to be associated with increased risk for unintentional injuries (increased risk for falls), intentional injuries (i.e., domestic violence), sexually transmitted diseases, high blood pressure, stroke, other cardiovascular diseases, liver disease, neurological damage, poor mental functioning and poor control of diabetes (e.g., Blow, et al., 2000; Bryant & Kim, in press; CDC, 2008; Sacco, Bucholz, & Spitznagel, 2009; Sorock, Chen,

Gonzalgo, & Baker, 2006). Making this issue more pressing is the finding that binge drinking is an alcohol consumption pattern that often goes unnoticed and unaddressed by older adults' physicians (Blazer & Wu, 2009).

As our nation is becoming more diverse, older alcohol abusers are also becoming racially/ethnically diverse. While racial/ethnic differences in the relation between psychological distress and alcohol consumption patterns including binge drinking have not been previously examined, the relation between alcohol use disorders (AUDs) and mental health has been, and suggests pronounced differences in the impact that alcohol use has on members of different races/ethnicities. It should be mentioned that no such study has been conducted among an older adult specific population. This leaves large gaps in the literature pertaining to older adult alcohol use and psychological distress.

Specific Aims

Given the problems stated above, this thesis has three specific aims.

Aim 1: To examine the effect of race/ethnicity on psychological distress among racially/ethnically diverse older adults.

Aim 2: To examine the effect of past year alcohol consumption and frequency of binge drinking on psychological distress among racially/ethnically diverse older adults.

Aim 3: To test the interaction effect of past year alcohol consumption, frequency of binge drinking, and race/ethnicity on psychological distress.

As such a study has not been previously conducted, this study is exploratory in nature. Expected findings include differences in the frequency of alcohol consumption and bingeing, as well as the presence of psychological distress among older adults of different races/ethnicities. It is also expected that a relation between alcohol consumption, binge drinking and psychological

distress will be found. Significant differences in this relation between racial/ethnic groups are also expected to emerge.

Theoretical Framework

While studies have consistently found a relation between heavy alcohol use and psychological problems, including psychological distress and specific psychiatric disorders, the nature of the relation is somewhat unclear (Bott et al., 2005; Encrenaz, Kovess-Masfesty, Sapinho, Chee, & Messiah, 2007; Graham & Schmidt, 1997; Koopman, Wanat, Whitsell, Westrup, & Matano, 2003; SAMHSA, 2007; Smith et al., 2006; Warheit & Auth, 1984). Although some have suggested that the common co-occurrence of heavy drinking and indicators of psychological distress, such as depression, may be attributable to common genetic and environmental factors, research has shown that this is not the case (Kendler, Heath, Neale, Kessler, & Eaves, 1993; Kuo, Gardner, Kendler, & Prescott, 2006; Prescott, Aggen, & Kendler, 2000). Conversely, research has suggested that there is a causal relation between heavy alcohol use and indicators of psychological distress (Grant & Hartford, 1995; Hasin & Grant, 2002; Kuo, Gardner, Kendler, & Prescott, 2006; Wang & Patten, 2001; Wang & Patten, 2002). However, the direction of this relation is not entirely clear.

One commonly cited theory on the relation between alcohol use and psychological distress is the self medication hypothesis which purports that individuals with psychiatric disorders drink alcohol to relieve symptoms of the disorders (Harris & Edlund, 2005a; Mueser, Drake, & Wallach, 1998). This hypothesis suggests that psychological distress precedes heavy alcohol use. It has also been suggested the heavy alcohol use may precede psychological distress or that the relation is reciprocal (Fergusson, Boden, & Horwood, 2009; Wang & Patten, 2001; Wang & Patten, 2002). However, many of the studies examining these theories have serious

limitations, including the use of cross-sectional data and/or retrospective reports of alcohol consumption and indicators of psychological distress. A recent study examining the direction of the relation between alcohol abuse/dependence and major depression avoided these shortcomings but relying on longitudinal data (Fergusson et al., 2009). Through the use of structural equation modeling, Fergusson and colleagues (2009) found that alcohol abuse/dependence precedes major depression, which may be conceptualized as an indicator of psychological distress. The exact mechanism of this relation has yet to be determined. Theories include alcohol use as a trigger of a genetic predisposition for psychological distress, alcohol's depressant effects causing a depressed affect in drinkers, and psychological distress resulting from the problems that heavy alcohol use cause in one's life. The present study does not attempt to ascertain the mechanism of the causal relation that has been found between alcohol abuse/dependence and major depression. However, the present study does intend to expand on these findings as they pertain to varying alcohol use patterns, including binge drinking, and a more broad mental health variable, psychological distress.

This study substantially contributes to the literature for the following reasons. An examination of the racial/ethnic specific differences in the relation between alcohol consumption, binge drinking, and psychological distress among diverse elders has not been previously conducted. Not only does this study allow for racial/ethnic specific results to be determined, but it also provides more information on the relation between alcohol consumption, binge drinking, and psychological distress among this age group. This information is essential to effectively intervene in unhealthy alcohol consumption among older adults as it may encourage those on the front lines of health care to target this unhealthy drinking behavior. Results also may be used to further intervention research for older alcohol consumers, including binge drinkers.

2. Literature Review

Alcohol use, misuse, and abuse by older adults are topics that warrant close examination as this group has greater sensitivity to alcohol due to physiological changes that accompany the aging process (Smith, 1995). There are a variety of consequences and correlates of older adult alcohol consumption, both positive and negative, largely depending on alcohol use patterns. It should be noted that the focus of this study is psychological distress which may be viewed as an aspect of mental health. Given that much of the relevant literature focuses on mental health and not psychological distress specifically, the term mental health will be used instead of psychological distress when discussing studies that have relied on such variables.

The National Institute on Alcoholism and Alcohol Abuse (NIAAA) recommends that adults aged 65 and older consume no more than one drink a day, a maximum of two drinks on any occasion, and that women should have even lower limits (NIAAA, 2005). It has been found that consuming alcohol within these recommended age specific guidelines may have positive effects on both physical and mental health (Graham & Schmidt, 1997; Mishara & Kastenbaum, 1980; O'Connell, 2006; Tait & Hulse, 2006). However, it has also been found that consuming alcohol in excess of the recommended frequencies and/or quantities may adversely affect the physical and mental health of this age group (Graham & Schmidt, 1997; Moore et al., 2006; Sacco, Bucholz & Spitznagel, 2009; Waern, 2003). For example, older adults who drink alcohol at limits above the recommended guidelines have a higher mortality rate and are at greater risk for suicide (Moore et al., 2006; Waern, 2003). While it is known that health problems, such as increased risk for mortality, are correlated with drinking, it is not clear exactly what alcohol consumption patterns put one at risk for such problems. This is why binge drinking, which has

been under-researched in this age group, needs to be examined more closely as it relates to both the mental and physical health of older adults.

Binge drinking is defined as the consumption of 5 or more (4 or more for females) alcoholic drinks in one sitting (NIAAA, 2000). It should be acknowledged that while older adults have greater sensitivity to alcohol and thus lower alcohol consumption guidelines, an adjusted definition of binge drinking has not been developed for this age group (Blow, 2000). Using the generic definition, it has been found that up to 13% of the older adult population may participate in binge drinking (Blazer & Wu, 2009; Merrick et al., 2008; SAMHSA, 2005; Serdula, et al., 2004). It has also been found that there are racial/ethnic differences in both the prevalence and correlates of binge drinking among older adults (Bryant & Kim, in press).

Race/Ethnicity and Psychological Distress

Findings regarding the relation between race/ethnicity and psychological distress have been somewhat inconsistent. However, multiple studies have found that as compared to Whites, Black adults experience less psychological distress (Bratter & Eschbasch, 2005; Schulz et al., 2000; Ulbrich, Warherit, & Zimmerman, 1989). Findings on Hispanics are somewhat more complicated given the heterogeneity of this group (Bratter & Eschbasch, 2005). In general, results indicate that Mexican Americans and Cubans tend to have similar or lower levels of psychological distress as compared to Whites, (Bratter & Eschbasch, 2005; Shrout et al., 1992) while Puerto Ricans tend to have higher levels of psychological distress as compared to Whites (Bratter & Eschbasch, 2005). Research on Asians is somewhat limited, however, results tend to indicate that Asians experience similar levels of psychological distress as compared to Whites (Bratter & Eschbasch, 2005). AIANs are a group that has consistently been found to have higher

levels of psychological distress as compared to Whites (Bratter & Eschbasch, 2005; Manson, 2000).

A study conducted by Kim et al. (in press) examined the prevalence of serious psychological distress (indicated by a score of 13 or higher on the K6 scale) among adults aged 65 and older. Results from this study have some similarities with previous research examining general psychological distress in an adult population not restricted to older adults. It was found that Asians (2.61%) experienced the lowest rate of serious psychological distress, however, the rate was highly similar to the rate found in the White sample (2.93%). Following the White and Asian sample was the Hispanic sample (3.31%) with the third highest rate of serious psychological distress. It should be noted that higher rates of serious psychological distress among older Hispanics as compared to Whites have been found in previous research as well (Pratt et al., 2007). This was followed by the Black sample (4.80%). A drastic difference was found between the group with the highest rate of serious psychological distress, AIANs, and the other groups as 18.23% of this sample was identified as experiencing serious psychological distress. This finding combined with the findings from non-older adult specific research implies that AIANs may experience greater psychological distress than other racial/ethnic groups regardless of age.

Racial/Ethnic Variations in Alcohol Use Patterns

Racial/ethnic differences in alcohol use patterns have been thoroughly examined in the adult population as a whole. It has been consistently found that Whites are the most likely to use any amount of alcohol while Asians are the least (Chartier & Caetano, 2010; SAMHSA, 2007). Both American Indians/Alaskan Natives (AIANs) and Hispanics are likely to display high-risk drinking patterns, with AIANs being the most likely to binge drink (Chartier & Caetano, 2010;

Moore et al., 2006; SAMHSA, 2007). There is evidence that the AIAN population may have more unique drinking patterns than other racial/ethnic groups (O'Connell, 2006). There is also evidence for within-racial/ethnic group differences, especially for heterogeneous groups such as Asians and Hispanics (Chartier & Caetano, 2010).

Older Adult Specific Racial/Ethnic Variations in Alcohol Use Patterns

There is a dearth of older adult specific information available on this topic. Limited literature has suggested that Whites are still the most likely to use any amount of alcohol (Blazer & Wu, 2009). Older Asians are less likely to be moderate or high risk drinkers than members of other racial/ethnic groups (Sacco, Bucholz & Spitznagel, 2009). In a recent study, Bryant and Kim (in press) reported that Whites (11.9%) are the most likely to binge drink followed by Hispanics (10.8%), AIANs (9.8%), Blacks (8.0%), and Asians (4.2%). These findings suggest that the racial/ethnic patterns of binge drinking vary between older and younger adults. For example, among older adults AIANs are the 3rd most likely to binge drink while among younger adults AIANs are the most likely (Bryant & Kim, in press; Chartier & Caetano, 2010; Moore et al., 2006; SAMHSA, 2007).

Alcohol Use and Mental Health

Findings regarding the relation between alcohol use and mental health are mixed. There is evidence that individuals that consume alcohol within recommended guidelines may have better mental health than their abstaining counterparts (O'Connell, 2006; Tait & Hulse, 2006). However, a negative relation between mental health and heavy alcohol use has been consistently found (e.g., Bott et al., 2005; Encenaz, Kovess-Masfesty, Sapinho, Chee, & Messiah, 2007; Graham & Schmidt, 1997; Warheit & Auth, 1984). This relation between alcohol use and risk for poor mental health has been explained as a J shaped curve, with individuals at either extreme of

alcohol consumption being at higher risk for poor mental health status as compared to those who consume alcohol within healthy limits. There is evidence that the same J shaped curve exists in the older adult population (Resnick et al., 2003). For example, adults who are high risk or heavy drinkers tend to score higher on depression, anxiety, and psychosocial dysfunction (Bott et al., 2005; Encrenaz, Kovess-Masfesty, Sapinho, Chee, & Messiah, 2007; Graham & Schmidt, 1997; Warheit & Auth, 1984). However, some studies have produced results conflicting with this idea (e.g., Blow et al., 2000; Fingerhood, 2000). For example, Blow and colleagues (2000) found that older abstainers had better mental health scores than those who drink regularly and Fingerhood (2000) found that among older adults even moderate alcohol use is associated with depression.

While the findings regarding alcohol use and mental health from a broad perspective have been somewhat inconsistent, findings pertaining to alcohol use and psychiatric disorders using strict criteria have been more uniform. A clear relation has been found between AUDs and other psychiatric disorders, specifically mood and anxiety disorders (Encrenaz et al., 2007; Koopman et al., 2003; SAMHSA, 2007; Smith et al., 2006). For example, Reiger and colleagues (1990) found that 13.4% of individuals with an AUD met criteria for a diagnosis of a comorbid lifetime mood disorder, and 19.4% met the criteria for a comorbid lifetime anxiety disorder. Similarly, using National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) data, Smith et al. (2006) reported that 18.9% of individuals with 12 month AUDs have a co-occurring mood disorder, and 17.1% have a co-occurring anxiety disorder. It has consistently been found that individuals with psychiatric disorders are more likely to be diagnosed with an AUD (Encrenaz et al., 2007; Grant et al., 2004). It has also been found that individuals who do not utilize mental health care are more likely to be heavy drinkers (Harris & Edlund, 2005b).

Alcohol Use and Mental Health - Psychological Distress

The relation of alcohol use and psychological distress has been examined directly. A number of studies have found a positive relation between alcohol use and indicators of psychological distress (Freed, 1978; Neff, 1986; Neff & Husaini, 1982; Pearlin & Radebaugh, 1976). It has also been found that among alcohol-dependent individuals who receive treatment, psychological distress is a risk factor for relapse (Sander & Jux, 2006). In terms of racial/ethnic specific findings, Neff (1986) found that among Whites and Blacks ages 25-75, alcohol consumption was related to indicators of psychological distress while the opposite was true for Hispanics. However, a higher quantity of alcohol consumption (as opposed to a higher frequency) was associated with higher levels of depression and lower levels of well being (indicators of psychological distress) for all racial/ethnic groups. This suggests that high quantity or binge drinking may be an alcohol consumption pattern that puts all racial/ethnic groups at risk of psychological distress. However, it should be noted that this study did not include Asians or AIANs. Therefore, it is hard to speculate if the same relation exists among these understudied racial/ethnic groups.

Alcohol Use and Mental Health among Older Adults

Among older adults in particular, heavy drinkers tend to report higher levels of loneliness, less social support, fewer social resources, lower social integration, lower satisfaction with social relationships, and more social isolation (Brennan & Moos, 1990; Graham & Schmidt, 1997; Hanson, 1994; Meyers, Hingson, Mucatel, & Goldman, 1982; Schonfeld & Dupree, 1991). Older adults classified in the high-risk drinking group have higher rates of past year depression and are more likely to have mental health disability (Sacco, Bucholz, & Spitznagel, 2009). While

there are many studies done with regard to the relation between alcohol use and mental health status, little is known about how these relations vary by race/ethnicity (Smith et al., 2006).

Binge Drinking and Mental Health

Binge drinking in particular has been found to correlate with indicators of poor mental health. Among college students binge drinking is related to interpersonal, educational, safety, and health problems (Okoro et al., 2004; Wechsler, Davenport, Dowdall, Moeykens, & Castillo, 1994; Wechsler, Kuo, & Dowdall, 2000; Wechsler, Moeykens, Davenport, Castillo, & Hansen, 1995). A study conducted by Okoro and colleagues (2004) found that among all adults, frequent binge drinking (3 or more episodes in the past month) is associated with lower health-related quality of life, higher levels of stress, higher levels of depression, more mentally unhealthy days, and more emotional problems.

Binge Drinking and Mental Health among Older Adults

Okoro and colleagues (2004) found that women and adults 55 and older who binge drink, regardless of frequency, are more likely to experience 14 or more mentally unhealthy days a month. There is more evidence for the relation between high quantity drinking and poor mental health among older adults (Wiscott, Kopera-Frye, & Begovic, 2002). Among older adults, binge drinking is positively correlated with greater amounts of alcohol consumption per week, as well as more alcohol related problems as measured by the Drinking Problems Index (Wiscott, Kopera-Frye, & Begovic, 2002). It has been found that larger the quantities of alcoholic drinks consumed per drinking day is significantly associated with being unmarried, living alone, reporting less satisfaction with family relationships, higher levels of depression, and a lower sense of coherence (Graham & Schmidt, 1997). It is worth mentioning that the same study (Graham & Schmidt, 1997) found the relation between depression and alcohol consumption to be

the strongest when more than 2 drinks were consumed per drinking day, suggesting that negative mental health correlates may become apparent at lower levels of alcohol quantity consumption than in younger adults. This finding supports the idea that an adjusted definition of bingeing is needed for older adults as the current definition used may not be sensitive enough to identify high quantity consumption effects (Graham & Schmidt, 1997).

Racial/Ethnic Variations: Relation between Alcohol Use and Mental Health

Using data obtained from the NESARC, Smith and colleagues (2006) conducted the first study to compare the relation between alcohol consumption and mental health among the United State's five largest racial/ethnic groups (Asians, Blacks, Hispanics, Native Americans, and Whites). However, this study framed alcohol use and mental health in terms of psychiatric disorders which may be limiting, especially when examining older adults as the use of strict criteria and cut offs may eliminate individuals who are still experiencing psychological distress. Results showed that AIANs were the most likely to have an AUD, mood disorder, or anxiety disorder, while Asians were the least likely to have any of the disorders. For most racial/ethnic groups, alcohol dependence was significantly related to mood disorders, such as major depressive disorder (Smith et al., 2006). However, regardless of the high rate of occurrence of disorders among AIAN's, alcohol dependence was not associated with any specific mood disorder for this group. The relation between AUDs and anxiety disorders showed variability by race/ethnicity. More specifically, alcohol abuse was significantly related to Specific Phobia for Asians, and Panic Disorder as well as Agoraphobia for Blacks. Alcohol dependence was related to specific anxiety disorders for all racial/ethnic groups except AIANs. For example, among Hispanics alcohol dependence was significantly associated with both Specific Phobia and Generalized Anxiety Disorder (Smith et al., 2006). While Smith's study did provide much need

information, there are still large gaps in this literature pertaining to this topic. It is also unknown if similar patterns will be found when alcohol use and mental health are not framed in terms of strict psychiatric disorders.

Future Research Needs

Given the proceeding review, some research suggestions can be made. First, racial/ethnic comparisons need to be made for the relation between alcohol use and mental health outside of the context of disorders as the use of strict cut offs is being reconsidered and the field is considering shifting towards a dimensional view of psychiatric disorders. Also, research has shown that among certain racial/ethnic groups there is low congruency between self-ratings of mental health and results of diagnostic tools (including DSM-IV criteria for psychiatric disorders) (Kim et al., 2011). This need for use of variables outside of strict psychiatric disorders also encompasses alcohol use which should be examined in terms of drinking patterns, not just AUDs, including binge drinking. Also, this relation needs to be examined in the older adult population. Second, more information is needed on the alcohol use mental health relation among AIANs as they have the highest rate of AUDs and other psychiatric disorders, yet the relation between these that has been found for other racial/ethnic groups has not been recognized in this population (Bryant & Kim, in press). Thus, this thesis study addresses some of these research needs by examining the alcohol use and psychological distress relation in an older adult population that includes various racial/ethnic groups, and by relying on variables more broad than those that defined by strict DSM-IV cutoffs.

3. Methods

Sample

Data from the California Health Interview Survey (CHIS) 2009 were used, as this is the most recently released publically available data. The CHIS is a biannual telephone survey conducted in the state of California. The survey is geographically stratified and focuses on the health of residents of California. The methodology for the CHIS 2009 has yet to be released. However, it is reasonable to assume that it is similar to the CHIS 2007 which contains three samples. The samples include the following: (1) individuals selected through the use of random digit dialing (RDD) technology supplemented with a surname sample to increase Vietnamese and Korean respondents; (2) cell phone numbers that were randomly drawn from a bank of numbers; and (3) an area probability sample of households in Los Angeles County. The survey was conducted in 6 difference languages (English, Spanish, Cantonese, Mandarin, Korean, and Vietnamese) in order to capture as diverse of a sample as possible (CHIS, 2007).

Selection criteria for the data set were as follows: (1) variables relevant to alcohol consumption and binge drinking and psychological distress; (2) racially/ethnically diverse sample; and (3) a large sample of adults 60 and older.

Other datasets considered were the Behavioral Risk Factor Surveillance System (BRFSS), the National Epidemiological Survey on Alcohol and Related Conditions (NESARC), the National Health Interview Survey (NHIS), and the National Latino and Asian American Survey (NLAAS). However, these data sets did not meet the above listed inclusion criteria.

This study included adults aged 60 and older who were not missing data on any of the study variables. The racial/ethnic categories included are based on the UCLA Center for Health Policy research definitions and include Latinos ($n=1,008$; 5.1%), AIANs ($n=203$; 1.0%), Asians ($n=1,506$; 7.6%), Blacks ($n=802$; 4.0%), and Whites ($n=16,406$; 82.3%). Due to the small sample size ($n=22$), Pacific Islanders were be combined with the Asian sample. Individuals falling

within the Other category ($n=736$) were excluded due to the probable great heterogeneity of this population. This left a total sample size of 19,925 older adults.

Measures

Outcome Variable: Psychological Distress

The main outcome variable, psychological distress was assessed with the K-6 scale (Kessler et al., 2002). The K-6 is a brief assessment instrument used to identify psychological distress that contains 6 questions (Kessler et al., 2002). Scores on the K-6 scale range from 0-24 with scores of 13 or higher indicating very high risk for psychological distress (i.e., serious psychological distress; SPD). The K-6 variable in the 2009 CHIS was computed based on respondents answers to the following: During the past 30 days, how often have you felt: nervous, hopeless, restless, depressed, as though everything was an effort, and worthless. The internal consistency for each racial/ethnic group included in 2009 CHIS was examined and found to be satisfactory ($\alpha = .93$ for Whites, $\alpha = .94$ for Blacks, $\alpha=.93$ for Asians; $\alpha = .93$ for American Indians/Alaska Natives; $\alpha = .93$ for Latinos).

Independent Variables

Alcohol Consumption & Binge Drinking. Alcohol consumption has been assessed dichotomously based on whether participants consumed any alcohol in the previous year. Binge drinking has been assessed categorically. The categorical binge drinking variable contains the following classifications: (1) no binge drinking in the past year, (2) binge drank once in the past year, (3) binge drank more than once but less than monthly in the past year, (4) binge drank monthly in the past year, (5) binge drank more than monthly but less than weekly in the past year, and (6) binge drank weekly or daily in the past year.

Race/Ethnicity. Race/ethnicity was measured via self-report based on the UCLA Center for Health Policy research's definitions. Categories used include Latino, AIAN, Asian, Black, and White.

Covariates

Demographic Variables. Age and annual household income were measured continuously and were used as such. Sex was measured dichotomously. Marital status was dichotomized into married and not married. Educational attainment was divided into the following 3 categories: less than a high school education, a high school education, and more than a high school education.

Physical Health Variables. Self-rated general health condition was measured using a single item question—"How would you rate your general health condition?"—on a 5-point Likert scale with 1 being excellent and 5 being poor. Number of chronic conditions was calculated based on whether respondent's report being diagnosed with any of the following: diabetes, asthma, high blood pressure, or heart disease, values ranged from 0-4. Disability was computed into a dichotomous variable, disability present or not present, based on the presence of the following six items: (1) blind, deaf, or has severe hearing impairment, (2) has difficulty learning, remembering or concentrating, (3) has difficulty dressing, bathing, or getting around, (4) has difficulty going outside home alone, (5) has difficulty working at a job (measures only among those 65 and older), and (6) has a condition that limits basic physical activity.

Data Analysis

Analyses conducted on the publically available CHIS data are preapproved by the University of Alabama's institutional review board (IRB). To begin data analysis, descriptive statistics were computed for demographic and physical health variables by race/ethnicity. Mean K6 scores, frequency of alcohol consumption, and binge drinking were computed by

race/ethnicity. In order to examine significant differences in these variables between racial/ethnic groups, one-way analyses of variance (ANOVAs) and chi-square tests were conducted as appropriate. To examine relations between independent variables, as well as to check for multicollinearity, bivariate correlations were conducted using Pearson's correlation coefficients. It was determined that multicollinearity was not present among variables.

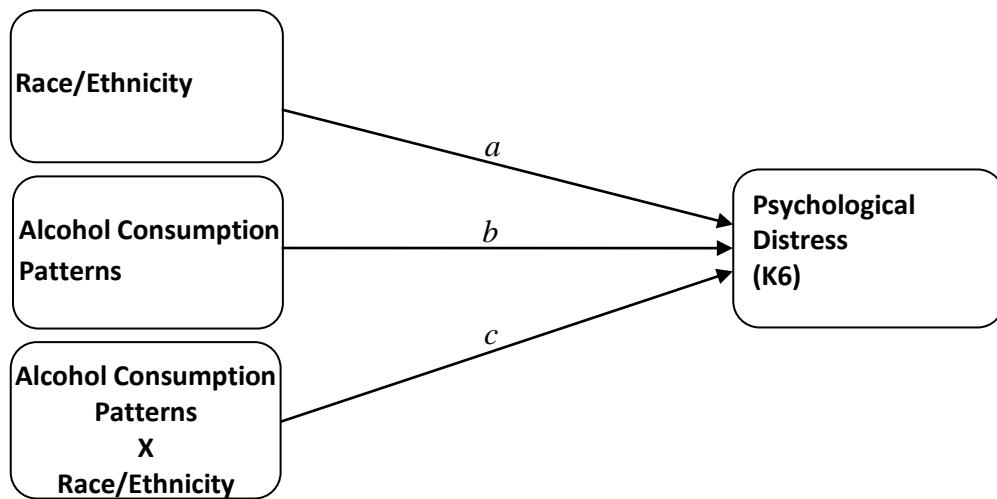
All assumptions of regression were examined. The assumption of homoscedasticity was checked by examining the plot of the residuals and predicted psychological distress scores. The assumption appeared to be met. The assumption of absence of specification of errors appeared to be met as all study variables significantly correlated with psychological distress. The principle of accurate measure of IVs and DVs is also believed to have been met given the nature of the IVs and the strong psychometric properties of the K6 scale.

Multiple regression analyses were conducted in order to test the effect of alcohol consumption, varying frequencies of binge drinking, and race/ethnicity on psychological distress. For the purpose of analyses race/ethnicity was dummy coded into four variables: AIAN, Asian, Black, and Latino, with Whites as the reference group (due to the large sample size). This allowed for the main effects of alcohol consumption, frequency of binge drinking, and race/ethnicity, as well as the interaction of these variables to be examined. Model 1 contained demographic and health variables in block one (in order to control for these covariates), racial/ethnic variables and past year alcohol consumption in block two in order to test the main effects of these variables, and the interaction terms of racial/ethnic variables and past year alcohol consumption in block 3. All interaction terms were created using centered variables. Model 2 contained the same covariates in block 1, racial/ethnic variables and frequency of binge

drinking in block two, and the interaction of the racial/ethnic variables and frequency of binge drinking in block three. SPSS version 19 was used for all analyses.

Figure 1 demonstrates the conceptual model that was tested. Step *a* tested for the main effect of race/ethnicity on psychological distress and addresses specific aim 1 (to examine the effect of race/ethnicity on psychological distress among diverse older adults). Step *b* tested for the main effect of alcohol consumption patterns on psychological distress and addresses specific aim 2 (to examine the effect of past year alcohol consumption and frequency of binge drinking on psychological distress among diverse older adults). Step *c* tested the interaction effect of race/ethnicity and alcohol consumption patterns on psychological distress and addresses specific aim 3 (to test the interaction effect of past year alcohol consumption, frequency of binge drinking, and race/ethnicity on psychological distress).

Figure 1. Conceptual Model for the Moderating Effect of Race/Ethnicity on the Association Between Alcohol Consumption Patterns and Psychological Distress.



Notes: *Step a tests the main effect of race/ethnicity on psychological distress (specific aim 1)*
Step b tests the main effect of alcohol consumption patterns on psychological distress (specific aim 2)
Step c tests the interaction effect of race/ethnicity and alcohol consumption patterns on psychological distress (specific aim 3)

4. Results

Characteristics of the Sample

Demographic and Physical Health Variables

As displayed in Table 1, the overall sample varied significantly by race/ethnicity on all demographic and study variables. The mean age of the sample was 71.66 ($SD=8.05$), with Whites being the oldest group ($M=72.04$) and AIANs being the youngest ($M=69.68$). The majority of the sample was female (61.0%). While close to half of the overall sample was married (48.1%), there was large amounts variability between groups with only 33.7% of Blacks being married while 63.0% of Asians were married. The mean annual household income was \$62,039 ($SD=57,031$) with Whites having the highest income (\$66,378) and Latinos having the lowest (\$31,897). The majority of the sample had educational attainment beyond a H.S. diploma (70.0%). However, the Latino group was a notable exception to this as 46.4% had less than a H.S. diploma. Near half of the sample had a disability present (47.8%) with AIANs being the most likely to have a disability (65.5%). The mean number of chronic conditions was 1.44 ($SD=1.19$). Blacks had the most chronic conditions ($M=1.82$) and Asians had the least ($M=1.40$). The average self-rated health of the sample was between very good and good ($M=2.62$, $SD=1.14$). The White sample had the best self-rated health ($M=2.50$) and the Latino sample had the worst ($M=3.31$).

Alcohol and Psychological Distress Variables

Table 1 also displays that the majority of the sample had consumed alcohol in the previous year (67.2%) with Whites being the most likely to have consumed alcohol (71.8%) and Asian the least (44.5%). However, the majority of the sample had not participated in binge

drinking in the previous year (88.4%). Whites were the most likely to have participated in binge drinking (11.6%) and Asian were the least (5.2%). Among those that did participate in binge drinking a variety of patterns of frequency were found throughout the groups. The most common frequency of binge drinking found was “more than once a year but less than monthly” in all groups with the exception of AIANs. “Daily or weekly” binge drinking was the most common pattern among AIANs (2.5%). Psychological distress as measure by the K6 scale had a mean of 2.24 for the overall sample ($SD=3.17$). Latinos reported the highest level of psychological distress ($M=3.31$, $SD=4.23$) and Whites and Blacks reported the least psychological distress, both having an average K6 score of 2.15 ($SD=3.0$, $SD=3.2$). Following Whites and Blacks was Asians reporting a mean K6 score of 2.50 ($SD=3.77$) and then AIANs reporting a mean K6 score of 3.0 ($SD=4.0$).

Table 1. Characteristics of the Sample and Study Variables (n=19,925)

Characteristic	Total Sample (n=19,925) % or M±SD	White (n=16,406) % or M±SD	Black (n=802) % or M±SD	Asian (n=1,506) % or M±SD	AIAN (n=203) % or M±SD	Latino (n=1,008) % or M±SD	X ² or (F)
Age^{a,b,c,d,g,i}	71.66 ± 8.05	72.04 ± 8.12	70.79 ± 7.74	70.10 ± 7.45	69.68 ± 7.51	69.99 ± 7.19	(56.91) **
Male^{a,b,g,i}	39.0%	38.9%	34.0%	43.7%	37.4%	37.5%	23.49 **
Married^{a,b,e,f,g,h,i}	48.1%	47.3%	33.7%	63.0%	48.3%	49.7%	206.06 **
Employed^a	26.2%	26.6%	21.2%	24.5%	25.1%	25.9%	14.60 **
Annual Income^{a,b,c,d,g,i,j}	62,039 ± 57,031	66,378 ± 58,142	43,507 ± 42,992	46,636 ± 51,452	48,536 ± 42,992	31,897 ± 37,499	(149.96) **
Educational Attainment^{a,b,c,d,e,f,g,h,i,j}							2,534.50 **
<H.S. Diploma	8.0%	4.6%	11.5%	15.4%	21.2%	46.4%	
H.S. Diploma	22.0%	21.8%	22.8%	23.8%	26.1%	22.0%	
>H.S. Diploma	70.0%	73.6%	65.7%	60.8%	52.7%	31.5%	
Disability Present^{c,d,f,h,i,j}	47.8%	47.3%	50.5%	45.2%	65.5%	53.8%	48.14 **
# of Chronic Conditions^{a,c,e,g,h,j}	1.44 ± 1.19	1.42 ± 1.20	1.82 ± 1.10	1.40 ± 1.16	1.78 ± 1.31	1.48 ± 1.15	(26.25) **
Self Rated Health (1-5)^{a,b,c,d,e,g,h,j}	2.62 ± 1.14	2.50 ± 1.09	3.05 ± 1.11	3.24 ± 1.22	2.91 ± 1.25	3.31 ± 4.23	(285.25) **
Past year alcohol consumption^{a,b,c,d}	67.2%	71.8%	49.9%	44.5%	47.3%	44.9%	880.66 **
Frequency of Binge Drinking^{a,b,h}							94.90 **
None ¹	88.4%	87.6%	91.1%	94.8%	93.6%	88.8%	
Once a year ¹	1.4%	1.4%	1.0%	1.1%	0.0%	1.8%	
> Once a year, < Monthly ¹	5.3%	5.7%	4.6%	2.2%	1.0%	5.3%	
Monthly ¹	1.6%	1.7%	1.0%	0.6%	1.5%	1.5%	
>Monthly, <Weekly ¹	1.3%	1.4%	0.5%	0.5%	1.5%	1.1%	
Daily or Weekly ¹	2.1%	2.2%	1.7%	0.9%	2.5%	1.6%	
Psychological Distress (K6)^{b,c,d,f,g,h}	2.24 ± 3.17	2.15 ± 3.0	2.15 ± 3.32	2.50 ± 3.77	3.0 ± 4.0	3.31 ± 4.23	(37.30) **

Notes: AIAN= American Indian/Alaska Native

¹Frequency of binge drinking, Superscript letters (^{a, b, c, d, e, f}) indicate a significant group difference based on Bonferroni post-hoc analysis.

^a= Whites–Blacks; ^b= Whites–Asians; ^c= Whites–AIANs; ^d= Whites–Latinos; ^e= Blacks–Asians; ^f= Blacks–AIANs; ^g= Blacks–Latinos;

^h= Asians–AIANs; ⁱ=Asians–Latinos; ^j=AIANs–Latinos

Correlations between Study Variables and with Psychological Distress

As displayed in Table 2, a high level of multicollinearity between all covariates and all study variables was not present as all correlations between covariates and study variables were below .50. As displayed in Table 3, the overall sample significantly correlated with psychological distress on all covariates and study variables. Past year alcohol consumption was negatively correlated with psychological distress among all racial/ethnic groups. This correlation was significant for Whites ($r=-.07, p<.01$) and Latinos ($r=-.01, p<.01$). Frequency of binge drinking was positively correlated with psychological distress for all groups with the exception of AIANs. This correlation was only significant among the White sample ($r=.02, p<.01$).

Table 2. Bivariate Correlations of Study Variables (n=19,925)

Variables	1	2	3	4	5	6	7	8	9	10
1. Age	-									
2. Male	-.05 **	-								
3. Married	-.19 **	.26 **	-							
4. Employed	-.39 **	.09 **	.09 **	-						
5. Annual Income	-.21 **	.17 **	.32 **	.26 **	-					
6. Educational Attainment	-.11 **	.06 **	.07 **	.14 **	.30 **	-				
7. Disability Present	.23 **	.04 **	-.12 **	-.21 **	-.20 **	.13 **	-			
8. # of Chronic Conditions	.17 **	.01	-.05	-.15 **	-.11 **	-.09 **	.22 **	-		
9. Self-Rated Health (1-5)	.10 **	.01	-.08 **	-.19 **	-.26 **	-.25 **	.42 **	.34 **	-	
10. Past Year Alcohol Consumption	-.09 **	.11 **	.08 **	.11 **	.23 **	.22 **	-.13 **	-.09 **	-.22 **	-
11. Frequency of Binge Drinking	-.16 **	.13 **	.03 **	.08 **	.10 **	.03 **	.06 **	-.01	.06 **	.23 **

Notes: * $p < .05$, ** $p < .01$

Table 3. Bivariate Correlations of Psychological Distress (n=19,925)

Variables	Total Sample (n=19,925)	White (n=16,406)	Black (n=802)	Asian (n=1,506)	AIAN (n=203)	Latino (n=1,008)
Covariates						
Age	-.07 **	-.07 **	-.05	-.05	-.05	-.07 *
Male	-.06 **	-.06 **	-.05	-.05 *	.12	-.09 **
Married	-.10 **	-.10 **	-.13 **	-.09 **	-.13	-.10 **
Employed	-.04 **	-.03 **	-.07	-.03	-.15 *	-.08 *
Annual Income	-.14 **	-.13 **	-.18 **	-.15 **	-.12	-.16 **
Educational Attainment	-.10 **	-.06 **	-.17 **	-.06 *	-.07	-.13 **
Disability Present	.24 **	.27 **	.31 **	.20 **	.34 **	.30 **
# of Chronic Conditions	.11 **	.11 **	.14 **	.06 *	.15 *	.19 **
Self-Rated Health (1-5)	.32 **	.32 **	.32 **	.26 **	.36 **	.35 **
Alcohol Consumption						
Past year alcohol consumption	-.07 **	-.07 **	-.01	-.05	-.13	-.01 **
Frequency of binge drinking	.02 **	.02 **	.04	.12	-.07	.04

Notes: AIAN= American Indian/Alaska Native

* $p<.05$, ** $p<.01$

Multiple Regression of Psychological Distress

After ensuring that a high level of multicollinearity did not exist, two multiple regression analyses examining psychological distress were conducted.

Multiple Regression Model of Psychological Distress: The Effect of Alcohol Consumption

Model 1 tested covariates, race/ethnicity, and past year alcohol consumption. As displayed in Table 4, covariates were entered in block 1. All covariates were significant with the exception of employment status and educational attainment. In terms of demographics, individuals who were of a younger age ($p<.001$), were female ($p<.001$), were unmarried ($p<.001$), and who had a lower annual income ($p<.001$) were found to experience greater levels of psychological distress. In terms of health variables, individuals who had a disability present ($p<.001$), had more chronic conditions ($p<.05$), and worse self-rated health ($p<.001$) were found to experience increased levels of psychological distress.

Main effects of race/ethnicity and past year alcohol consumption were entered in block 2. In terms of race/ethnicity, the Asian ($p<.05$) and Black ($p<.001$) variables were both found to be significant indicating that both of these racial/ethnic groups were predicted to experience significantly lower levels of psychological distress as compared to Whites. Interactions of race/ethnicity and past year alcohol consumption were entered in block 3. No race/ethnicity alcohol consumption interactions were found to be significant.

While no interactions were found to be significant, one interaction was found to be marginally significant. The interaction of AIAN and past year alcohol consumption indicates that past year alcohol consumption may have less of an impact on psychological distress in AIANs as compared to Whites ($p=.08$).

Multiple regression Model of Psychological Distress: The Effect of Binge Drinking

Model 2 tested covariates, race/ethnicity, and frequency of binge drinking. Again, the first block contained the covariates as entered in the first model. As displayed in Table 5, the same pattern of covariate significance was found with all covariates other than employment status and educational attainment being significant. The same direction was found for all covariates indicating that individuals who were of younger age ($p<.001$), were female ($p<.001$), were unmarried ($p<.001$), had lower annual incomes ($p<.001$), had a disability present ($p<.001$), had more chronic conditions ($p<.05$), and had worse self-rated health ($p<.001$) were likely to experience higher levels of psychological distress.

The second block tested the main effects of frequency of binge drinking and race/ethnicity. Frequency of binge drinking ($p<.001$) was found to be significant such that individuals who participated in binge drinking more frequently were predicted to experience higher levels of psychological distress. In terms of racial/ethnic variables, only the Black variable ($p<.01$) was found to be significant indicating that older Blacks were less likely to experience psychological distress than the reference group, older Whites. None of the race/ethnicity frequency of binge drinking interactions were found to be significant.

Again, no interactions were found to be significant. However, one marginally significant interaction was found. Similarly, it indicates that frequency of binge drinking may have less of an impact on psychological distress among AIANs as compared to Whites ($p=.08$).

Table 4. Hierarchical Multiple Regression Model of Psychological Distress: The Effect of Alcohol Consumption (n=19,925)- Model 1

Predictor	B	SE B	t	P
Block 1- covariates				
Age	-.06	.00	-21.45	<.001
Male	-.27	.05	-5.87	<.001
Married	-.39	.05	-8.44	<.001
Employed	.03	.05	.59	.55
Annual Income	-	.00	-6.65	<.001
Educational Attainment	-.03	.04	-.74	.46
Disability Present	.96	.05	20.07	<.001
# of Chronic Conditions	.04	.02	2.26	.02
Self-Rated Health (1-5)	.72	.02	31.87	<.001
Block 2 – main effects				
Past year alcohol consumption	.05	.05	.95	.34
Race/Ethnicity (Referent: Whites)				
AIAN	-.06	.23	-.25	.81
Asian	-.21	.09	-2.37	.02
Black	-.63	.11	-5.52	<.001
Latino	.18	.11	1.63	.10
Block 3- interactions				
AIAN x Past year alcohol consumption	-.73	.42	-1.73	.08
Asian x Past year alcohol consumption	.17	.16	1.02	.31
Black x Past year alcohol consumption	.10	.22	.47	.64
Latino x Past year alcohol consumption	-.30	.19	-1.54	.12

Notes: AIAN= American Indian/Alaska Native

Table 5. Hierarchical Multiple Regression Analysis of Psychological Distress: The Effect of Binge Drinking (n=19,925)- Model 2

Predictor	B	SE B	t	p
Block 1- covariates				
Age	-.06	.00	-20.63	<.001
Male	-.29	.05	-6.34	<.001
Married	-.38	.05	-8.24	<.001
Employed	.04	.05	.64	.52
Annual Income	-	.00	-6.77	<.001
Educational Attainment	-.02	.04	-.55	.58
Disability Present	.96	.05	20.10	<.001
# of Chronic Conditions	.04	.02	2.13	.03
Self-Rated Health (1-5)	.72	.02	32.07	<.001
Block 2- main effects				
Frequency of binge drinking	.10	.02	4.48	<.001
Race/Ethnicity (Referent: Whites)				
AIAN	-.53	.42	-1.28	.20
Asian	-.08	.16	-.47	.64
Black	-.56	.21	-2.72	.01
Latino	-.03	.19	-.15	.88
Block 3- interactions				
AIAN x Frequency of binge drinking	-.74	.42	-1.75	.08
Asian x Frequency of binge drinking	.19	.16	1.15	.25
Black x Frequency of binge drinking	.10	.22	.48	.63
Latino x Frequency of binge drinking	-.32	.19	-1.63	.10

Notes: AIAN= American Indian/Alaska Native

5. Discussion

The purpose of the present study was to examine how psychological distress varies by race/ethnicity, alcohol consumption patterns including both past year alcohol consumption and frequency of binge drinking, as well as the interaction of race/ethnicity and these consumption patterns. The study was conducted among a diverse sample of older adults as there is a lack of literature pertaining this group.

Race/Ethnicity & Psychological Distress

Significant racial/ethnic differences were found in psychological distress. In particular, both regression models found that Blacks were significantly less likely to report psychological distress as compared to Whites. This finding is consistent with findings from literature examining a non-older adult specific sample indicating that Blacks experience less psychological distress than Whites (Bratter & Eschbasch, 2005; Schulz et al., 2000; Ulbrich, Warherit, & Zimmerman, 1989). However, these findings conflict with the older adult specific findings of Kim et al. (2011) who found that older Blacks have a higher rate of serious psychological distress than Whites. One reason for this inconsistency could be that the present study examined psychological distress as opposed to serious psychological distress. As this study did not utilize the K6 score of 13 cut off (indication of serious psychological distress), it is possible that differences in K6 scores under the serious psychological distress cutoff of 13 could account for the difference in findings. It has been hypothesized that Blacks may experience lower levels of psychological distress because they may have coping strategies specific to their culture that help reduce psychological distress in the face of hardships (Bratter & Eschbasch, 2005).

The regression model examining the effect of alcohol consumption (Model 1) found that Asians were significantly less likely to report psychological distress than Whites. The finding

pertaining to Asians is consistent with both the non-older adult specific and the older adult specific research, indicating that Asians experience similar level or less psychological distress as compared to Whites (Bratter & Eschbasch, 2005; Kim et al., 2011).

Alcohol Consumption Patterns & Psychological Distress

Two different alcohol consumption patterns were examined in relation with psychological distress. First, no significant main effect was found for alcohol consumption. However, it is worth discussing that both the correlation between psychological distress and alcohol consumption as well as the direction of the regression coefficient indicate that past year alcohol consumption is related to lower levels of psychological distress. Previous research on the relation between alcohol consumption and psychological distress has been inconsistent (Blow et al., 2000; Fingerhood, 2000; O'Connell, 2006; Tait & Hulse, 2006). However, results from certain previous studies have found similar results indicating that individuals who drink alcohol within healthy limits experience better mental health and/or less psychological distress (O'Connell, 2006; Tait & Hulse, 2006).

Second, a significant main effect was found for frequency of binge drinking indicating that increased binge drinking predicted an increase in psychological distress. This is consistent with previous research among both adults of all ages and older adults specifically (Graham & Schmidt, 1997; Okoro et al., 2004; Wiscott, Kopera-Frye, & Begovic, 2002). However, this study is one of the first to directly examine the link between binge drinking and psychological distress among older adults (as opposed to examining other mental health indicators). This finding is significant as it provides more evidence for binge drinking's negative effects on mental health among older adults.

The opposing directions of the relations between psychological distress and past year alcohol consumption versus psychological distress and frequency of binge drinking should be highlighted. This indicates that alcohol consumption in moderation may be related to reduced levels of psychological distress among older adults. It appears as though it is not until alcohol consumption reaches amounts and frequencies over recommended guidelines that it negatively impacts mental health in terms of increased psychological distress. This implies that alcohol can be used in a way that is safe for mental health among older adults if consumed in moderation. However, excessive consumption, such as binge drinking, may be related to increases psychological distress. Previous research has found similar results indicating that alcohol consumption may be safe or even beneficial for mental health in moderate amounts, but excessive consumption may negatively impact mental health (Graham & Schmidt, 1997; Mishara & Kastenbaum, 1980; Moore et al., 2006; Waern, 2003).

No significant interactions were found between alcohol consumption patterns and race/ethnicity. One possible reason for this is the limitations of the variables used. It is possible that if the general alcohol consumption variable included a frequency element, as opposed to being dichotomous, significant interactions may have been found. It is also possible that increased sample sizes in some of the underrepresented minority groups could have resulted in the finding of significant interactions. Another possibility for the lack of significant interactions is the manner in which the data was analyzed. Relying on the use of a White reference group could have caused the lack of significant findings. However, the properties of the data required that it was analyzed in such a way. Lastly, it is also possible that there are simply not significant differences in the effects that alcohol consumption and frequency of binge drinking have on psychological distress among older adults of varying race/ethnicities.

Marginally significant interactions were found for both AIAN x past year alcohol consumption and AIAN x frequency of binge drinking. The direction of these interactions indicates that both alcohol consumption and binge drinking have less of an impact on level of psychological distress for AIANs as compared to Whites. It is possible that AIANs are more tolerant to alcohol consumption and binge drinking as compared to whites. For example, certain AIAN tribes may find it to be more socially acceptable for members of the group to participate in certain alcohol consumption patterns (Mail & Johnson, 1993), including binge drinking, and they therefore may experience less negative social effects as a result of binge drinking and thus not have the same increase in psychological distress as seen in Whites.

Clinical Implications

Understanding both the benefits and negative effects of varying alcohol consumption patterns is becoming increasingly important given both the increase in older adults and the predicted increase in alcohol consumption among this age group. The finding pertaining to predicted increased psychological distress among those who binge drink more frequently has significant clinical implications. Not only does this finding provide more evidence for the relation between excessive alcohol consumption and poor mental health, but it specifies a particular type of excessive consumption that may be hazardous for mental health. Specification of alcohol consumption patterns that put one at risk for negative mental health effects is important as it is currently unclear how much alcohol consumption is too much. Given the prevalence rate of binge drinking among this population, this information is highly valuable. This information may provide healthcare providers with more knowledge on who is at risk for increased psychological distress. It also highlights the need to adopt binge drinking interventions for this age group as a more regular practice. Moreover, it emphasizes the negative effects of

binge drinking on mental health which does not only highlight the importance of intervention by health care providers but should also be brought to the attention of older alcohol consumers who may not be aware of the effects of binge drinking on mental health.

Limitations

The present study does have limitations. One such limitation is the coding of the frequency of binge drinking variable. The coding scheme contained uneven spacing in terms of frequency between levels of the variable. While this variable was appropriate for the study, it was not coded in an ideal manner. A continuous variable would have been best. Another limitation is the self-report nature of the alcohol consumption variables. It is possible that alcohol consumption was underreported or not reported accurately. It is also possible that differences in accuracy of reporting exist between the varying race/ethnicities. Another limitation was the use of the White reference group as this limited the racial/ethnic comparisons. However, as previously mentioned the nature of the data required that it was analyzed in this way. The disproportionate sample sizes of the varying racial/ethnic groups are another limitation. Ideally there would have been larger sample sizes of the groups that were underrepresented in the study such as the AIAN group. It should also be noted that subgroup differences were not taken into account. Given that certain racial/ethnic groups, such as the Asian and Hispanic groups, have been found to be highly heterogeneous (Borrell, 2005; Kim, Chiriboga, Jang et al., 2010; Sadler et al., 2003), significant subgroup differences may exist. It should also be mentioned that gender differences were not examined. It is possible that gender differences exist in both alcohol consumption and psychological distress and examination of genders separately could yield interesting findings. Additionally, geographic limitations do exist as the data were collected in the state of California the findings may not be generalizable to the older adult US population as a

whole. It is also possible that the K6 scale may have measurement bias across racial/ethnic groups. While no research examining the racial/ethnic equivalence of the K6 scale among older adults of varying racial/ethnic groups was found, research suggests that measurement bias may exist in similar scales such as the Center for Epidemiologic Studies Depression Scale (CES-D) across different racial/ethnic groups (Kim, Chiriboga, & Jang, 2009).

Future Research Directions

Future studies may find it useful to utilize a more precise binge drinking variable. Using data from a more nationally representative sample may also be useful in order to be able to generalize findings. It may also be important to examine underrepresented racial/ethnic groups more closely. For example, collection of data pertaining to the drinking behaviors and mental health correlates of AIANs (the most underrepresented group in the present study) could yield interesting findings. Similarly, an examination of subgroup differences within the racial/ethnic groups could be important. Also, a longitudinal study would be useful in order to determine a causal relation between binge drinking and psychological distress. An examination of mental health service utilization patterns among older adult binge drinkers could also provide interesting insight into this group of older adults.

Summary

The present study found that older Whites were likely to experience significantly higher levels of psychological distress than both Blacks and Asians. This information may be helpful in order to identify those experiencing high levels of psychological distress and intervene when necessary. It was also found that while alcohol consumption was negatively correlated with psychological distress, increased frequency of binge drinking was a significant predictor of increased levels of psychological distress. This finding indicates that psychological distress may

increase with frequency of binge drinking for older adults. This finding is important as it is more evidence for the negative effects of binge drinking on the mental health of older adults. This stresses the importance of targeting this alcohol consumption behavior in order to improve the mental health of this age group.

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