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## Ethnic Differences in Depressive Symptoms and Risky Behaviors Among Hispanics and Non-Hispanic Whites

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ETHNIC DIFFERENCES IN DEPRESSIVE SYMPTOMS AND RISKY BEHAVIORS  
AMONG HISPANICS AND NON-HISPANIC WHITES

By

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Honors Thesis submitted in partial fulfillment

for the designation of Department Honors

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### Abstract

There is limited research on Hispanics in regards to experiencing depressive symptoms and the risk factors that accompany it. Understanding how these symptoms manifest in different ethnic groups can lead to the development of appropriate interventions to lower diagnoses. The purpose of this study was to examine ethnic differences in depressive symptoms, ethnic differences in risky behaviors, and to see if the association between depressive symptoms and risky behaviors differs by ethnicity. There were 401 young participants, ages 18 to 25; however, because of the goals of the study we only analyzed the data of 312 participants. Of the participants who reported their gender and ethnicity, 33% were male, 37% were Hispanic and 63% were non-Hispanic White. The General Behavior Inventory (GBI) measured depression. The Alcohol Use and Disorders Identification Test (AUDIT), the Deliberate Self-Harm Inventory (DSHI), and the YRBSS measured risky behaviors. There was no significant difference in depressive symptoms between Hispanics and non-Hispanic Whites; however, females experienced more depressive symptoms than males in both ethnic groups. Ethnic differences were observed for risky behaviors. Hispanics were more likely to be suicidal, but less likely to misuse alcohol than non-Hispanic Whites. Ethnicity was not associated with NSSI or risky sexual behavior. Depressive symptoms were associated with alcohol misuse, suicidality, and NSSI, but not with risky sexual behaviors. Our findings suggest that that the relationship between depressive symptoms and risky behaviors is moderated by ethnicity.

*Keywords:* depression, risky behavior, youth, ethnic differences

ETHNIC DIFFERENCES IN DEPRESSIVE SYMPTOMS AND RISKY BEHAVIORS  
AMONG HISPANICS AND NON-HISPANIC WHITES

Hispanics are the fastest growing ethnic minority group in the United States. Currently, there are approximately 4 million Hispanics in the United States, and as a group they are expected to grow to 17.5 million by 2050 (Guzman, Woods-Giscombe, & Beeber, 2015). By 2060 Hispanics will make up one-third of the U.S. population. The Hispanic population is increasing at a rapid rate; however, the research on mood symptoms among Hispanics is still very limited (Aguinis & Joo, 2014).

Minority groups such as Hispanics experience higher stress levels than non-Hispanic Whites (Pole, Gone, & Kulkarni, 2008). *Hispanic stress* refers to stress in Hispanics, and it involves economic, marital, immigration, and family stressors. Hispanics may experience higher levels of stress because they are less likely to receive treatment for mental health illnesses due to financial concerns, language barriers, and not having culturally similar providers (National Center for Biomedical Information, 2001). High stress levels impact different aspects of life such as functioning and overall well-being (Vaughn-Coazum, Mair, & Weisz, 2015). Moreover, a positive relationship between stress and depressive symptoms has been observed; this is also true for Hispanics (Vermeesch et al., 2013). Increased life stress, both chronic and acute, is associated with the development of depressive symptoms and other psychiatric disorders (Bradley, 2003; Hatzenbuehler, Nolen-Hoeksema, & Erickson, 2008; Vermeesch et al., 2013).

With the Hispanic population growing rapidly, understanding mental health needs among Hispanics is necessary to develop culturally-sensitive interventions (National Center for Biomedical Information, 2001). But research on the Hispanic population is limited, which creates a challenge for mental health professionals to properly treat this population (Guzman et

al, 2015). Consequently, Hispanics are more likely to experience adverse mental health outcomes, such as depression (Guzman et al., 2015; National Center for Biomedical Information, 2001).

This study will specifically look at Hispanics and non-Hispanic White individuals. The purpose of the current study is to see if (a) there are ethnic differences in depressive symptoms, (b) if there are any ethnic differences in risky behaviors, and (c) if the association between depression and risky behaviors differs by ethnicity. We will test interaction effects in exploratory ways. If the relationship between risky behaviors and depressive symptoms is consistent between Hispanic and non-Hispanic populations, then depressive symptoms and the burden of depression are expected to be similar among Hispanics and non-Hispanic Whites. This provides encouraging evidence to test treatments for depression that are well-studied in the non-Hispanic populations to the Hispanic population.

### **Literature Review**

Major depression is a mood disorder that is characterized by having five of the following symptoms nearly every day for a period of at least two weeks (except weight change and suicidal ideation): depressed mood for most of the day, loss of interest in all activities, weight change of at least 5% and/or change in appetite, insomnia, experiencing psychomotor agitation, feeling fatigued, guilty or worthless (American Psychiatric Association, 2013). Young adults who are experiencing depressive symptoms may also have a difficult time concentrating and making decisions (American Psychiatric Association, 2013). Moreover, a hypomanic and manic episode needs to be absent, and the symptoms experienced cannot be better explained by other medical conditions (American Psychiatric Association, 2013).

Depression is a common mental health disorder in the general population (Cuijpers, Muñoz, Clarke, & Lewinsohn, 2009). It is also among the most burdensome health concerns because it is the leading cause of disability and is associated with high mortality rates (Cuijpers et al., 2009; Dunlop et al., 2003). Depressive symptoms impair daily functioning and consequently decrease quality of life for both the individuals experiencing depressive symptoms and for their family as well (Cuijpers et al., 2009; Dunlop et al., 2003). Despite the high burden and impairment associated with depression, it is treatable (Vaughn-Coazum et al., 2015). However, to adequately treat depression among diverse individuals further research needs to be done on how depression affects people of different ethnicities.

### **Ethnic Differences in Depression**

Before proceeding to the association between depression and ethnic differences it is important to explain specific terminology. *Ethnicity* is a term associated with culture. An ethnic group shares a specific language, religion, and some traditions. *Hispanic* is an ethnic term used to identify a person who lives within the United States and who is Spanish-speaking, especially one descending from Latin America where romance languages are spoken (i.e. Spanish, French, and Portuguese). *Non-Hispanic White* is a term used to identify a person who is living within the United States whose ancestors originate from Europe.

There is limited research on Hispanics in regards to the prevalence of affective disorders (Jones, Gray, & Parson, 1983; Myers et al., 2002). Existing research provides conflicting findings on the rates of depression between Hispanics and non-Hispanic Whites (Dunlop et al., 2003; Vermeesch et al., 2013). Depressive symptoms are relatively universal among all ethnic groups (Myers et al., 2002), but are more common among females than males (Nolen-Hoeksema, 2001; Parker, Gordon, & Brotchie, 2010). Dunlop and colleagues (2003) also looked at ethnic

differences in rates of depression and found that with Hispanics and non-Hispanic Whites the severity of depressive symptoms does not differ by ethnicity. However, there is research saying that the severity of depressive symptoms does differ by ethnicity and that depressive symptoms are more severe in Hispanics than non-Hispanic Whites (Stein et al., 2010; Waldman et al., 2009). It is important to note that most research and current information is on non-Hispanic White samples, and not Hispanics, which may explain some of the inconsistencies in rates of depression in Hispanics (Stein et al., 2010). It is important to continue to study depression among the Hispanic population in order to improve the effectiveness of treatments for depressed individuals of different ethnicities (Myers et al., 2002).

Ethnicity may impact depressive symptoms because of cultural differences among different ethnic groups. For instance, in the Hispanic culture family ties are emphasized, and most Hispanics have extended family structures which provide great social support for family members (Croyle, 2007). These strong family networks might protect against the development of depressive symptoms (Zhang & Snowden, 1999). If this is the case then Hispanic individuals are expected to experience fewer depressive symptoms compared to their non-Hispanic White counterparts.

Minority groups receive less treatment for depressive symptoms, which may explain why some researchers have found higher rates of depressive symptoms in Hispanics compared to non-Hispanic Whites (Cummings & Druss, 2011). Additionally, having a lower socioeconomic status, which is where most Hispanics fall under, is associated with having a major depressive illness (Jones et al., 1983; Whaley & Noel, 2012). The language spoken by individuals and their socioeconomic status determines how depressive symptoms are reported because this influences their assessment and diagnosis (Whaley & Noel, 2012). Hispanics are more likely to express

depressive symptoms as somatic complaints than non-Hispanic Whites (Whaley & Noel, 2012). These somatic symptoms include heart palpitations, fainting and dizziness, numbness, paralysis, trembling, and having difficulty breathing (Whaley & Noel, 2012). Therefore, it might not be that Hispanics experience greater depressive symptoms, it may just be that Hispanics experience greater somatic symptoms than non-Hispanics Whites.

The label that different ethnic groups place on mental illness greatly influences how members of these ethnic groups perceive and express an illness. In some cases it influences whether or not mental health services are pursued (Cummings & Druss, 2011; Whaley & Noel, 2012; Zhang & Snowden, 1999). For example, if people perceive mental illness negatively they are less likely to seek professional assistance. This may account for differences in depression rates among different ethnicities because it is unknown if people are not suffering from a mental illness or if they are just avoiding treatment because of their negative views on mental health services (Whaley & Noel, 2012).

These opposing findings on the prevalence of depressive symptoms among Hispanics and non-Hispanic Whites serve as evidence that this topic needs to be investigated further. Conducting more research on the Hispanic population will help us understand how depression manifests by ethnicity.

### **Ethnic Differences in Risky Behaviors**

Risky behaviors are behaviors that have negative health consequences that may result in death and/or injury (Fitzpatrick, Choudary, Kearney, & Piko, 2013). An association has been observed between ethnicity and risky behaviors such as alcohol misuse, non-suicidal self-injury, suicidality, and risky sexual behavior where ethnicity predicts the risky behaviors ethnically diverse people engage in (Fitzpatrick et al., 2013).

Hispanics are more likely than non-Hispanic Whites to engage in behaviors that damage health (Fitzpatrick et al., 2013). This may be because Hispanic parents monitor their children less than their non-Hispanic White counterparts (Chun, Fairlie, Hernandez, Spirito, & Eaton, 2010). Parent monitoring is a protective factor against risky behaviors such as consuming alcohol (Chun et al., 2010). There is research that has found no overall difference in alcohol consumption among Hispanics and non-Hispanic Whites (Chun et al., 2010). But there is also research saying that Hispanics consume alcohol at higher rates than non-Hispanic Whites (Clark, 2014; Fitzpatrick et al., 2013). An association has been established between depression and alcohol misuse; however, how these two constructs are related by ethnicity requires further investigation as the prevalence of alcohol consumption in Hispanics and non-Hispanic Whites is inconsistent.

Non-suicidal self-injury (NSSI) is the intentional destruction of the body as a form of regulating negative emotions such as depression (Claes et al., 2015). It involves carving letters on the skin, cutting different areas of the body, and burning or hitting oneself (Croyle, 2007; Knorr, Jenkins, & Conner, 2013). Typically, this behavior is performed without the intention of committing suicide, but practicing it may sometimes result in death, depending on the NSSI behavior (Croyle, 2007; Scott, Pilkonis, Hipwell, Keenan, & Stepp, 2015). NSSI has been studied in both the Hispanics and non-Hispanic Whites; overall there is no difference in rates of NSSI between these two ethnicities (Croyle, 2007). The types of self-harming behaviors practiced are also similar. The top three most common NSSI behaviors for Hispanics are carving symbols on the skin, burning, and cutting (Knorr, Jenkins, & Conner, 2013). Among Hispanics, cultural modification and increased levels of acculturation to the U.S. culture is associated with increases in NSSI (Croyle, 2007).

Suicidality is a term that integrates both suicide ideation and suicide behavior (Croyle, 2007). Most research on suicidality has been conducted on non-Hispanic Whites, but an increasing number of Hispanic individuals are being studied (Frank & Lester, 2001). Existing research shows that suicidality differs among different ethnic groups; overall Hispanics have lower rates of suicidality than non-Hispanic Whites (Hovey & King, 1997; Oquendo et al., 2001). As acculturation to the American culture increases among Hispanics so does suicidality. This association is stronger for females than males and starts being apparent in early adolescence (Lorenzo-Blanco, Unger, Baezconde-Garbanati, Ritt-Olson, & Soto, 2012). Less acculturation is a protective factor for Hispanics living in the United States because if they maintain their roots and take advantage of the support provided by their strong family networks they will be less likely to be suicidal (Croyle, 2007; Coatsworth, Pantin, & Szapocznik, 2002; Rasmussen, Negy, Carlson, & Burns, 1997).

Risky sexual behaviors consists of engaging in sexual activity with various partners, being sexually active at an early age, and not using adequate methods to protect oneself. Taking part in risky sexual activity is associated with high rates of sexually transmitted infections (STIs), sexually transmitted diseases (STDs), and unplanned pregnancies (Carlson, McNulty, Bellair, & Watts, 2014). Individuals are more likely to engage in risky sexual behaviors if they live in poverty, have a mental illness, or if they have experienced sexual abuse (Carlson et al., 2014; Edwards, Fehring, Jarrett, & Haglund 2008). This is especially true for females. Existing research suggests that Hispanics are more likely than non-Hispanic Whites to become sexually active as adolescents and to have multiple sexual partners (Carlson et al., 2009; Fitzpatrick et al., 2013). Hispanics are less likely to use contraceptives when sexually active (Trejos-Castillo & Vazsonyi, 2009). The more Hispanics become acculturated, the more they will engage in risky

sexual behavior. High stress levels in Hispanics are also believed to account for high levels of risky sexual behaviors; engaging in sexual behavior reduces stress and increase social standing and self-esteem (Hatzenbueler et al., 2008; Moreno & Baer, 2012). Therefore, higher stress levels in Hispanic individuals may be positively correlated with risky sexual behavior.

### **Depression and Risky Behaviors**

Depression is associated with risky behaviors. The more depressed a person is, the more likely they are to engage in risky activity (O'Donnell et al., 2004). The risky behaviors that depressed individuals may engage in are alcohol misuse, suicide related behaviors, non-suicidal self-injury, and risky sexual behavior (Fitzpatrick et al., 2013). The association between depression and each of the aforementioned risky behaviors will be discussed.

Existing research establishes a relationship between depression and substance use (Chinet et al., 2006). However, there is little research on how these two concepts are related to one another. Some research studies found that alcohol misuse is positively correlated with depressive symptoms, but this association needs to be studied more to see if depression and alcohol consumption differs among Hispanics and non-Hispanic Whites (Chinet et al., 2006; Cummings & Druss, 2011).

Depression is a risky factor for non-suicidal self-injury (Martin et al., 2015). The more depressed a person is, the more likely they are to engage in NSSI. Rates of self-harm do not differ between Hispanic and non-Hispanic White individuals (Croyle, 2007). However, the association between depression and NSSI needs to be studied more to see if depression and NSSI differ among Hispanics and non-Hispanic Whites (Croyle, 2007; Martin et al., 2015).

Depression is a risk factor for suicidality (O'Donnell et al., 2004). Hispanics are likely at higher risks for engaging in negative health behaviors such as suicidality if they also experience

depressive symptoms, stress, or if they have negative peer groups (Plant & Ericsson, 2004). Hispanics have lower rates of suicidality if they maintain their roots (Croyle, 2007). In other words, having a strong support system is a buffer against stress and ultimately depressive symptoms (Plant & Ericsson, 2004). This topic needs to be researched more in order to have a greater understanding of how suicidality and depression are associated with each other, and if this association differs by ethnicity.

Depression increases the risk for engaging in risky sexual behaviors (O'Donnell et al., 2004; Vermeesch et al., 2013). Hispanics are more likely to experience depressive symptoms and thus may be at higher risks of engaging in risky sexual behavior. There is no agreement as to why depressed people are motivated to engage in risky sexual activity (Moreno & Baer, 2012). More research should be conducted to see if depressive symptoms and risky behaviors are associated with one another, and to see if the association between these two constructs differs by ethnicity.

### **Summary of Literature Review**

There is an increased interest in how ethnicity is associated with psychiatric disorders such as depression. However, there is limited research that has investigated the association between ethnicity, depression, and risk behaviors. The U.S. population is becoming more diverse and understanding how depressive symptoms and risky behaviors associate with ethnicity will help develop effective interventions that reduce mental illnesses among Hispanics and other ethnic minorities.

This study will clarify (a) if there are ethnic differences in depressive symptoms, (b) if there are any ethnic differences in risky behaviors, and (c) if the association between depressive symptoms and risky behaviors differs by ethnicity. Gender differences will likely be observed.

Ethnicity and risky behaviors may affect depressive symptoms experienced by individuals. Recognizing the relationship between ethnicity, risky behaviors, and depressive symptoms will lead to better decision-making about what preventative interventions might be most appropriate for Hispanics relative to non-Hispanic Whites.

### **Expected Results**

#### **Hypotheses 1**

Hispanic individuals have strong family networks which may act as a buffer against experiencing depressive symptoms. Nevertheless, research shows that Hispanics experience higher stress levels than non-Hispanic White individuals and are less likely to receive treatment for mental health illnesses (National Center for Biomedical Information, 2001; Pole et al., 2008). Thus, while controlling for gender, it is predicted that there will be ethnic differences in depressive symptoms between Hispanic and non-Hispanic White participants. The following hypotheses are proposed. H1a hypothesizes that Hispanic participants will experience more depressive symptoms than non-Hispanic White participants. H1b hypothesizes that females will experience more depressive symptoms than males regardless of ethnicity.

#### **Hypothesis 2**

Research indicates that young Hispanics are more likely to engage in risky behaviors that can damage their health (Fitzpatrick et al., 2013). The following hypotheses are proposed. We hypothesize ethnic differences in risky behaviors. H2a hypothesizes that Hispanics will consume more alcohol than non-Hispanic White participants. H2b hypothesizes that Hispanics and non-Hispanic Whites will have similar levels of non-suicidal self-injuries (NSSI). H2c hypothesizes that Hispanics will be less suicidal than non-Hispanic White participants. H2d hypothesizes that Hispanics engage in higher rates of risky sexual behavior than non-Hispanic White participants.

### **Hypothesis 3**

The literature indicates that depressive symptoms are associated with risky behaviors such as, substance misuse, suicidality, NSSI, and risky sexual behaviors. We predict an association between depressive symptoms and risky behaviors. The following hypotheses are proposed. H3a hypothesizes that an increase in depressive symptoms will be positively associated with alcohol consumption for both Hispanic and non-Hispanic White participants. H3b hypothesizes that an increase in depressive symptoms will be positively associated with NSSI for both Hispanic and non-Hispanic White participants. H3c hypothesizes that an increase in depressive symptoms will be positively associated with suicidality for both Hispanic and non-Hispanic White participants. H3d hypothesizes that an increase in depressive symptoms will be positively associated with risky sexual behaviors for both Hispanic and non-Hispanic Whites.

### **Method**

#### **Participants**

Using a cross-sectional observational study, 401 young adults were recruited from the participant pool at the University of Nevada, Las Vegas. Participants other than non-Hispanic Whites and Hispanics were excluded due to the goals of the study. As a result, we only analyzed the data of 312 participants, 18 and 25 years of age ( $M = 20.17$ ,  $SD = 4.24$ ). Of all participants, 195 (48.6%) were Non-Hispanic White and 117 (29.2%) were Hispanic. Seventy-four (18.45%) participants reported more being more than one race. One-hundred thirty four (43%) participants were male. Fifty-two (12%) participants reported speaking Spanish at home, 345 (80%) reported speaking English at home, and 33 (8%) reported speaking another language other than English or Spanish at home. Exclusion criteria included the inability to speak English and not being at least eighteen years of age. Table 1 displays the demographic characteristics of the sample.

## Measures

### Depression

The General Behavior Inventory (GBI) is a self-reported questionnaire that consists of 73 items that measure mood disorders in individuals. Items are rated on a 4 point rating scale (0 – *Never to 3 - Always*). The GBI gives two scales: Depression and Hypomanic/Biphasic. The depression scale score is determined by the sum of 46 item for the Depression scale, Cronbach's alpha = .96, and 28 items for the Hypomanic/Biphasic scale, Cronbach's alpha = .89. Higher scores indicate higher severity of depressive symptoms.

### Alcohol Use

The Alcohol Use and Disorders Identification Test (AUDIT) is a screening test consisting of 10 questions that determine if participants have a problem with alcohol. This test specifically looks at the drinking behavior to identify alcohol dependence. The questions are rated on a scale from 0 to 4, 0 being never, 1 being monthly or less, 2 being 2 to 4 times a month, 3 being 2 to 3 times per week, and 4 being 4 or more times per week. Scores are determined by adding up the rated score for each question, Cronbach's alpha = .79. Scores can fall under four different zones. If the participant's scores fall under zone four they will be referred to a specialist.

### Non-Suicidal Self Injury

The Deliberate Self-Harm Inventory is a yes/no self-report questionnaire that consists of 17 item self-report that measures self-harm behavior. This questionnaire looks at demographic information, family relationships and family history of mental illnesses, religion, and history of self-harming behavior. It also collects data on history of medication, hospitalization, other forms of self-harming behavior, and measures the frequency of reported self-harming behavior. Scores range from 0 to 6. The NSSI scale will be dichotomized to look at history of self-harm and

frequency of self-harm separately. The participant's score is determined by summing up 16 of the items, Cronbach's alpha = .82. Higher scores indicate greater frequency of self-harming behavior.

### **Suicidality and Risky Sexual Behavior**

Youth Risk Behavior Surveillance System (YRBSS) is a survey that measures 6 different categories of health-risk behaviors that adolescents and young adults engage in. The YRBSS survey measures behaviors that may cause injuries, drug use, violence, and sexual behaviors that bring about unplanned pregnancies or sexually transmitted diseases (Kann et al., 2014). This survey consists of 89 items and measures the prevalence and co-occurrence of health risk behaviors, and if these behaviors change over time. The Youth Risk Behavior Surveillance System survey will be used to look at the prevalence of suicide, Cronbach's alpha = .01 and the prevalence of risky sexual behaviors, Cronbach's alpha = .79, among the participants. Scores are determined by adding up the rated score for each question in each of the 6 categories. Higher scores indicate a greater involvement in health risk behaviors.

### **Procedures**

The institutional review board of University of Nevada, Las Vegas approved all procedures used. Participants provided written consent prior to participation. Participants completed the questionnaires as part of a larger study examining the relationship between irritability, mood, and risky behaviors. Questionnaires were presented in random order across three separate blocks. Participants received three research credits for participating in the study.

### **Analyses**

A series of hierarchical multiple regressions were used to examine the relationship between ethnicity, depressive symptoms, and risky behaviors. First, I examined whether

ethnicity predicted depressive symptoms. Second, I examined whether ethnicity predicted risky behaviors. Finally, I examined whether depressive symptoms predicted risky behaviors. In the final set of analyses, depressive symptoms were entered on step 1, ethnicity on step 2, and the interaction between depressive symptoms and ethnicity was entered on step 3. Participant's age and gender was controlled for in all analysis by conducting two different regressions. One regression controlled for gender and one did not.

## Results

### Hypothesis 1

H1a hypothesized that Hispanic participants would have more depressive symptoms than non-Hispanic White participants. Regression analysis indicated no significant ethnic differences in depressive symptoms,  $F(1, 265) = .01, p = .93, r^2 = .00$ . After controlling for gender, there were no significant differences in depressive symptoms between Hispanic and non-Hispanic Whites,  $\Delta r^2 = .00, F(1, 264) = .00, p = .98$ . Therefore, H1a was not supported. Females had significantly more depressive symptoms than males, regardless of ethnicity,  $b = 13.74, \beta = .26, F(2, 264) = 9.39, p < .001$ . As such, hypothesis 1b was supported.

### Hypothesis 2

We hypothesized an association between ethnicity and risky alcohol consumption. H2a hypothesized that Hispanics would engage in more risky alcohol use than non-Hispanic Whites. Contrary to our hypothesis, regression indicated that Hispanic participants had significantly less risky alcohol use than non-Hispanic White participants,  $b = -1.14, \beta = -.15, F(1, 265) = 6.00, p = .02, r^2 = .02$ . After controlling for gender in the second regression we ran, Hispanic participants still trended towards less risky alcohol use than non-Hispanic White participants, but the overall model is not significant,  $b = -1.14, \beta = -.15, F(2, 264) = 2.99, p > .05$ . As such, hypothesis 2a was not supported.

We hypothesized no association between ethnicity and non-suicidal self-injuries (NSSI). H2b hypothesized that Hispanic and non-Hispanic Whites would have similar levels of NSSI. Logistic regression indicated no significant association between ethnicity and a person's history of NSSI,  $O.R. = .81$ , 95% C.I. = .49 – 1.34,  $\chi^2(1) = .69$ ,  $p = .41$ . After controlling for gender, ethnicity was still not associated with NSSI,  $O.R. = .79$ , 95% C.I. = .47 – 1.32. As such, hypothesis 2b was supported.

We hypothesized an association between ethnicity and suicidality. H2c hypothesized that Hispanic participants would be less suicidal than non-Hispanic White participants. Regression indicated that Hispanics participants endorsed more suicide-related behaviors than non-Hispanic White participants,  $b = .21$ ,  $\beta = -.15$ ,  $F(1, 265) = 5.98$ ,  $p = .02$ ,  $r^2 = .02$ . After controlling for gender, Hispanic participants remained more likely to endorse suicide-related behaviors than non-Hispanic White participants,  $b = .21$ ,  $\beta = .15$ ,  $F(2, 264) = 4.71$ ,  $p = .01$ ,  $r^2 = .03$ . As such, hypothesis 2c was not supported.

We hypothesized an association between ethnicity and risky sexual behaviors. H2d hypothesized that Hispanic participants would engage in more risky sexual behavior than non-Hispanic White participants. There was no significant difference in amount of risky sexual behavior engaged in between Hispanic and non-Hispanic White participants,  $F(1, 264) = .57$ ,  $p = .45$ . Even after controlling for gender, ethnicity and risky sexual behavior were not associated with each other,  $F(2, 263) = .29$ ,  $p = .75$ . As such, hypothesis 2d was not supported.

### **Hypothesis 3**

We hypothesized a positive association between depressive symptoms and risky behaviors such as alcohol misuse, NSSI, suicide-related behaviors, and risky sexual behavior.

We predicted that an increase in depressive symptoms would be associated with an increase in risky behaviors for both ethnicities.

Overall, the regression predicting alcohol misuse from ethnicity, depression, and the interaction between ethnicity and depression after controlling for gender was significant,  $F(4, 262) = 4.49, p < .01, r^2 = .06$ . Hierarchical linear regression indicated no significant main effect for gender or the interaction between ethnicity and depression,  $ps > .42$ . Being Hispanic was associated with significantly less alcohol consumption than being a non-Hispanic White,  $b = -1.15, \beta = -.15, p = .01$ . Additionally, the more depressed a person was, the more alcohol misuse a person endorsed for both ethnicities,  $b = .03, \beta = .18, p = .03$ . As such, hypothesis 3a was supported.

Overall, the binary logistic regression predicting history of NSSI from ethnicity, depression, and the interaction between ethnicity and depression after controlling for gender was significant,  $\chi^2(4) = 47.51, p < .001, \text{Cox \& Snell } r^2 = .16$ . Females were more likely to report a history of NSSI than males,  $\text{O.R.} = 2.19, 95\% \text{ C.I.} = 1.16 - 4.13$ . Being Hispanic was associated with a lesser history of NSSI than being non-Hispanic White,  $b = -.05, \beta = -.05, p = .37$ . Higher levels of depression were associated with significantly higher NSSI for both ethnicities,  $\text{O.R.} = 1.04, 95\% \text{ C.I.} = 1.04 - 1.20$ . As such, hypothesis 3b was supported.

Overall, the regression predicting suicide-related behaviors from ethnicity, depression and the interaction between ethnicity and depression after controlling for gender was significant,  $F(4, 262) = 10.37, p < .001, r^2 = .14$ . Gender was not related to suicide-related behaviors,  $b = -.04, \beta = -.03, p = .66$ . After controlling for gender, there was a main effect for ethnicity such that being Hispanic increased suicide-related behavior relative to non-Hispanic Whites,  $b = .21, \beta = .15, p = .01$ , and the more depressed a person was the less likely they were to endorse suicide-

related behaviors,  $b = -.01$ ,  $\beta = -.41$ ,  $p < .001$ . Additionally, as seen in Figure 1 there was an interaction between depression and ethnicity that indicated that the decrease in suicide-related behavior was significantly greater for non-Hispanic Whites as they became more depressed than it was for Hispanics,  $b = .01$ ,  $p < .05$ . As such, hypothesis 3c was not supported.

Overall, the regression predicting risky sexual behavior was not significant indicating that gender, ethnicity, depression and the interaction between ethnicity and depression were not associated with risky sexual behavior,  $F(4, 261) = .77$ ,  $p = .55$ . Higher levels of depression were not associated with risky sexual behaviors for either ethnicity. As such, hypothesis 3d was not supported.

### **Discussion**

Depressive symptoms occur universally across all cultures. However, specific symptom reports, incidence, and severity can vary by cultural factors (Myers et al., 2002). For instance, both Hispanics and non-Hispanic Whites experience major depression at similar incidence rates, but Hispanics are more likely to endorse somatic complaints and mildly more severe depression relative to non-Hispanic Whites (Mendelson, Rehkopf, & Kubzansky, 2008; Whaley & Noel, 2012). Additionally, depressive symptoms are more common among women than men.

The primary purpose of the current manuscript was to examine whether the relationship between depressive symptoms and risky behavior is moderated by ethnicity because both depressive symptoms and risky behaviors can vary by ethnicity. In doing so, we also examined whether risky behaviors and depressive symptoms varied by ethnicity. Studying depression and risky behaviors in Hispanics is important because understanding the mental health needs of the fastest growing ethnic minority group in the United States should allow systems of care to adapt to the specific needs of this population.

Prior work indicates that depressive symptoms differ between Hispanics and non-Hispanic Whites. Depressive symptoms are more severe in Hispanics relative to non-Hispanic Whites (Stein et al., 2010; Waldman et al., 2009). These differences are believed to be caused by cultural differences such as acculturation and enculturation. Acculturation is when a person identifies with another culture, whereas, the more enculturated, or the more a person they identify with their culture. The more acculturated a person is, the more likely they are to experience depression and psychological distress, and the more enculturated, the more likely they are to be satisfied with their life (Yoon et al., 2013).

We found no significant difference in depressive symptoms between Hispanics and non-Hispanic Whites. Both Hispanics and non-Hispanic Whites experienced similar levels of depressive symptoms in our study. This finding is inconsistent with prior research suggesting that specific symptoms might vary between Hispanics and non-Hispanic Whites (Stein et al., 2010; Waldman et al., 2009), but consistent with other research stating that the overall incidence and severity of depression does not differ by ethnicity (Myers et al., 2002). Hispanic participants in our study may have high levels of enculturation which could explain why depression did not differ among Hispanics and non-Hispanic Whites.

Gender differences were examined in depressive symptoms. Females experienced more depressive symptoms than males for both ethnicities, as observed in other studies (Waller et al., 2006). Depression occurred across ethnicity at similar severity levels; however, depressive symptoms were also dependent upon specific aspects of culture, such as gender.

Secondarily, we examined the association between ethnicity and risky behaviors. Risky behaviors, behaviors that increase the probability of injury or death, are more common in some ethnic groups than others. Like depressive symptoms, risky behaviors also differ by culture

(Fitzpatrick et al., 2013). For example, both Hispanics and non-Hispanic Whites engage in risky behaviors, but Hispanics are more likely to misuse alcohol (Clark, 2014; Fitzpatrick et al., 2013).

Alcohol consumption differed by ethnicity. We found that Hispanics consume less alcohol than non-Hispanic Whites. This finding is inconsistent with previous research that has found no overall difference in alcohol consumption between that Hispanics and non-Hispanic Whites (Chun et al., 2010). Increases in stress associate with increase of risky behaviors. It may be that Hispanic participants in our study were less stressed and therefore consume less alcohol. The more enculturated Hispanics are, the less they are to engage consume alcohol. Additionally, it may be that Hispanic participants have higher levels of enculturation which would explain for the lower levels of alcohol consumption in Hispanics.

Non-suicidal self-injuries (NSSI) did not differ among Hispanics and non-Hispanic Whites in our study. This finding is consistent with prior research that has found no differences in history of NSSI among ethnicities (Croyle, 2007). It may be that cultural differences in the sample we looked at do not extend to NSSI. This would explain for the results we obtained. Additionally, acculturation has been found to be positively associated with NSSI (Croyle, 2007). Other studies have found that culture and not ethnicity was most related to risky behavior. It may be that our Hispanic participants are more enculturated than the average Hispanic. If Hispanics in our study have high levels of enculturation they are less likely to have a history of NSSI. This could explain why NSSI may not differ among Hispanics and non-Hispanic Whites.

Suicidality differed by ethnicity. Hispanic participants endorsed more suicide-related behaviors than non-Hispanic Whites. This finding is inconsistent with prior research suggesting that Hispanics have lower rates of suicidality than non-Hispanic Whites (Croyle, 2007). Our finding may be related to support structures as the more social support a person receives, the less

likely they are to commit suicide (Ayub, 2015). It may be that the participants in our study did not receive a good amount of social support (i.e. friends, family, and professors). Other studies have found that as acculturation to the American culture increases, so does suicidality among Hispanics (Lorenzo-Blanco, Unger, Baezconde-Garbanati, Ritt-Olson, & Soto, 2012). It is also possible that the Hispanic participants in our study were more acculturated.

Risky sexual behavior did not differ by ethnicity. This finding is inconsistent with previous findings that have found that Hispanics are more likely to engage in risky sexual behaviors than non-Hispanic Whites (Trejos-Castillo & Vazsonyi, 2009). The more Hispanics become acculturated to the American culture, the more they are to engage in risky sexual behavior. It may be that Hispanics in our study have high levels of enculturation which could explain why Hispanics did not engage in more risky sexual activity than non-Hispanic Whites. It may also be that cultural differences do not extend to risky sexual behavior.

Lastly, we examined the association between depression and risky behaviors for both Hispanics and non-Hispanic White participants. Prior work indicates that depression is positively associated with risky behaviors for both Hispanic and non-Hispanic White individuals. For example, the more depressed a person is the more likely they are to consume alcohol regardless of ethnicity (Chinet et al., 2006; Cummings & Druss, 2011).

Depressive symptoms are associated with alcohol consumption for both Hispanics and non-Hispanic Whites. We found that the more depressed a person is, the more likely they are to misuse alcohol. This finding is consistent with previous research that has found that depressive symptoms are associated with risky behavior like alcohol misuse such that the more depressed a person is, the likely they are to misuse alcohol (O'Donnell et al., 2004).

Depressive symptoms are associated with NSSI in Hispanics and non-Hispanic Whites. We found that the more depressed a person is, the more likely they are to have a history of NSSI. This finding is consistent with previous research that has found that the more depressed a person is, the likely they are to have a history of NSSI (O'Donnell et al., 2004).

Depressive symptoms are associated with suicidality in Hispanics and non-Hispanic Whites. We found that the more depressed a person was less suicidal they were. This finding is inconsistent with previous research that has found that depressive symptoms are a risk factor for suicidality (O'Donnell et al, 2004). Strong support systems buffer against some of the negative effects of depression (Plant & Ericsson, 2004). It may be that the participants of this study have stronger support systems which could explain why the more depressed a person was, the less suicidal they became. Another possible explanation for this finding may be related to how participants reported depression and suicidality. We asked participants to report current levels of depression, but asked them about their lifetime history of suicidality. If this is the case, then it could be that our sample was experiencing higher levels of depression and this would explain for the relationship we observed.

Depression was not associated with risky sexual behavior in Hispanics or non-Hispanic Whites. Higher levels of depression were not associated with higher levels of risky sexual behavior. This finding is inconsistent with previous research that has found that the more depressed a person is, the more likely they are to engage in risky sexual behaviors (Moreno & Baer, 2012). The participants may have strong support networks which buffer against some of the negative effects of depression like engaging in risky sexual behavior.

In the process of examining differences between Hispanic and non-Hispanic White participants, we also examined gender differences because gender is related to depression and

risky behaviors. Females were more likely to engage in NSSI than males regardless of ethnicity. No gender differences were found for alcohol consumption, suicidality, or risky sexual behavior.

### **Strengths and Limitations**

The present work looked at both gender and ethnicity in relation to depression and risky behaviors. We measured depression with the General Behavior Inventory (GBI), a highly reliable and valid measure of depressive symptoms. The GBI measures a greater breadth of depression and associated features than more commonly used measures of depression such as the Beck Depression Inventory or the Center for Epidemiological Studies - Depression Scale. In addition, our sample was highly diverse because the student population we sampled closely reflects the same-age population in the local community in terms of ethnicity and socio-economic status. We were well-powered to see any differences in depression and risky behaviors in 18 to 25 year olds. For our analyses, we had greater than 80% power to find even small effects meaning that if there were real effects between the groups that were examined then 80 of 100 studies using our design and sample size should find statistically significant findings.

The primary limitation of this study was that all of our participants were college students. College students tend to be at greater risk for developing psychiatric disorders and engaging in risky behaviors than individuals not in college (Rivers et al., 2013; Taylor et al., 2011). As such, many worry that an academic sample will not provide enough cases of depression or the specific risky behaviors to accurately estimate the association between ethnicity, depression, and risky behaviors (Daughtry & Kunkel, 1993; Rivers et al., 2013). However, base rates of risky behaviors in our sample were similar to the base rates of risky behaviors in other epidemiological samples (Croyle, 2007; Oquendo et al., 2001).

Our sample of college students engaged in risky behaviors at high enough rates to statistically infer relationships. Low prevalence of risky behaviors did not account for the current findings. The measure of suicide-related risky behavior had an extremely low Cronbach's  $\alpha$  and this suggests that the measure lacked internal consistency. Therefore, the resulting negative correlation between depression and suicide-related behaviors might not represent a unified construct. Another limitation is we did not specifically measure the aspects of Hispanic culture that may be related to depression and risky behavior, such as acculturation. This is important because increases in acculturation are associated with a higher risk of developing psychological problems and engaging in more risky behaviors (Plant & Sachs-Ericsson, 2004). Since we did not measure acculturation we are unable to see if this construct is associated with risky behaviors among college students. Additionally, specific aspects of culture (e.g., acculturation) are likely more important than broad categories of culture such as ethnicity because within group differences are always greater than between group differences.

Another limitation of this study is that we also had participants who identified as being both Hispanic and White, but we grouped them together with the Hispanic group. Future studies should treat individuals who identify as both Hispanic and White as a separate group to see if the findings of this study still apply to them. Despite these limitations, our study indicated that ethnic differences exist in depressive symptoms and risky behaviors, and that the association between depression and risky behaviors varies by ethnicity. Future work should examine how acculturation relates to depression and risky behaviors, and if these findings apply to individuals across the entire age spectrum.

### **Conclusion**

The current work indicates that both Hispanics and non-Hispanic Whites experienced similar levels of depressive symptoms. This leads us to believe that similar treatment methods for depressive symptoms can be implemented for both Hispanics and non-Hispanic Whites. An association between depression and risky behaviors was observed in that the more depressed a person was, the more they would misuse alcohol and engage in risky sexual behavior regardless of ethnicity.

Gender differences were not observed for alcohol misuse, suicidality, or risky behaviors, however, females were significantly more depressed and were more to report a history of non-suicidal self-injury for both ethnicities. Overall, Hispanics had significantly less risky alcohol use, but endorsed more suicide-related behaviors than non-Hispanic Whites. Acculturation has been found to be a critical factor in predicting risky behaviors which may explain for our findings. This suggests that low levels of acculturation acts as a protective factor in Hispanics. The complexity of this relationship may be what explains for the inconsistent findings on the relationship between ethnicity, depression, and risky behaviors. Nevertheless, the findings of this study indicate that an association exists between ethnicity, depression, and risky behaviors.

Further investigation is required to see if similar findings are obtained for individuals who identify themselves as being both Hispanics and White. This work points out the importance of investigating ethnic differences in order to aid the development of effective interventions that reduce both risky behaviors and depression in Hispanics and other ethnic minorities.

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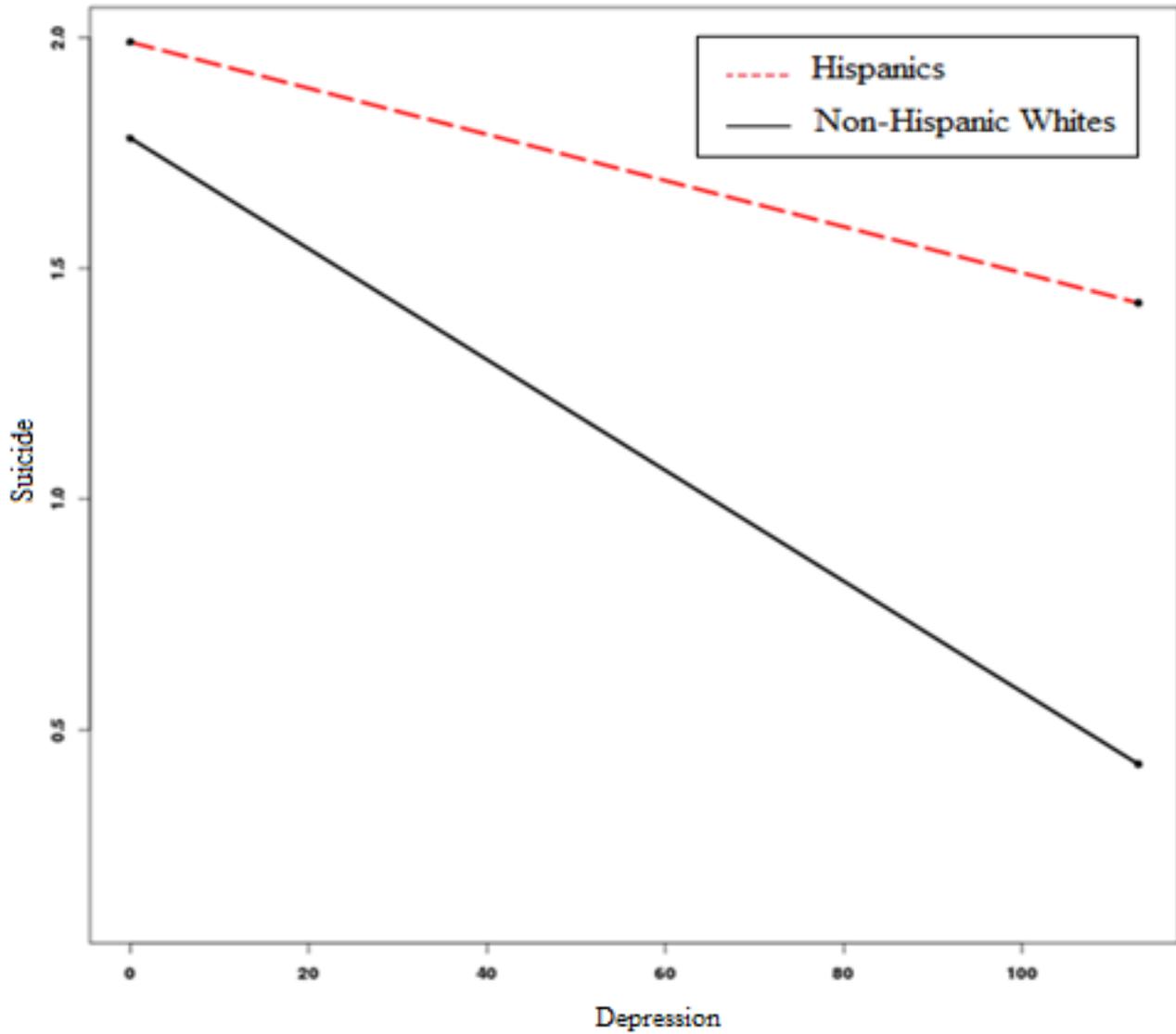
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Table 1  
*Participant Demographics*

	Participants (n = 401)
Age, y	
Median	20.17
Mean	19
Mode	18
Standard Deviation	4.24
Minimum-Maximum	18-25
Gender, <i>n</i> (%)	
Male	134 (33%)
Female	267 (67%)
Race, <i>n</i> (%)	
White	195 (48.6%)
Black	55 (13.7%)
American Indian	8 (2%)
Asian	111(27.7%)
Pacific Islander	23 (5.7%)
Other	83(20.7%)
Ethnicity, <i>n</i> (%)	
Hispanic	117 (29%)
Non-Hispanic	284 (71%)



*Figure 1.* A negative interaction was observed between depression and ethnicity. Decreases in suicide-related behavior were significantly greater for non-Hispanic Whites as they became more depressed than it was for Hispanics.