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Examining The Association Between Personality and Alcohol Use Among Mexican Americans: Acculturation and Gender as Moderators

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EXAMINING THE ASSOCIATION BETWEEN PERSONALITY AND ALCOHOL USE AMONG MEXICAN AMERICANS: ACCULTURATION AND GENDER AS MODERATORS

A Thesis

by

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ABSTRACT

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In this study the moderating effects of gender and acculturation on the association between personality traits and alcohol use among Mexican American adults were examined. Participants for this study were undergraduate students from a university in the southwestern USA (N=572, 94.5% Hispanic, 72.6% female). The sample completed self-report measures of personality, alcohol use, and acculturation. When using, regression analyses, alcohol use was found to be weakly yet negatively associated with Conscientiousness, weakly yet positively with Neuroticism, and statistically unrelated to Extroversion. The moderation hypotheses were not supported when utilizing a multiple regression analyses. However, a post-hoc analysis of variance involving only those participants with the highest and lowest scores in integration revealed statistically significant moderating effects for gender. Only females high in integration and low marginalization appeared to report lower alcohol use, confirming past studies. Implications of results are discussed.

DEDICATION

The achievement of this study and of this master's degree would have not been possible without the support and love of my mother, María de Jesús Saldaña Carranza de Reyes, who in many aspects has inspired, motivated and supported me to accomplish this degree. I would also like to dedicate this work to all my family who have supported throughout my education. Additionally, this work is dedicated to those who have perished and to those who are currently in need of effective and accessible therapy to deal with chemical dependency. We will find solutions.

ACKNOWLEDGMENTS

I am thankful for all the support, motivation, and mentoring that my thesis committee chair, Dr. Rogers, provided me during my graduate studies. Dr. Rogers not only help and guide me throughout my thesis, but also provide me research opportunities that allowed me to further my education and help me believe in myself. I would also like to thank Dr. Frederick Ernst, for supporting and encouraging me to apply to the graduate program and to begin this thesis. I would also like to acknowledge Dr. Montgomery and Dr. Mercado for their support, instruction and guidance in creating this thesis, as well as, throughout my graduate education. I am grateful to all of you for believing in me and allowing me to fulfill my goal of working on my own research and for providing me with priceless insight and knowledge. To these professors, thank you for being great mentors and role models.

TABLE OF CONTENTS

LIST OF TABLES

Page

LIST OF FIGURES

Page

CHAPTER I

INTRODUCTION

Substance abuse is multi-etiological, multidimensional, and a serious worldwide problem with high rate of incidence (Dubey, Arora, Gupta, & Kumar, 2010). An estimated 22.5 million Americans aged 12 or older report using an illicit drug during the past month (SAMHSA, 2011); approximately 58.3 million Americans aged 12 or older report participating in binge drinking— having five or more drinks on the same occasion— at least once in the past month; about 14 million young adults aged 18 to 25 report participating in binge drinking at least once in the past month; it has been estimated that 15.9 million young adults— aged 12 and older— engaged in heavy drinking or binge drinking at least 5 days in the past month. Additionally, epidemiological surveys have reported a lifetime prevalence of 10%-20% for DSM-IV-TR substance-related disorders in the general population (Jacobi et al, 2004; Kessler, 2005).

Several studies have indicated an association between personality and substance use (Caselles, Micó & Amigó, 2010). Researchers have suggested that there are personality traits that separate identifiable groups of people with certain substance abuse patterns (Schinka, Curtis, & Mulloy, 1994). There is also a body of research indicating an association between substance abuse and acculturation in United States mainstream society for Latino immigrants (Fosados et al, 2007; Amaro, Blake, Schwartz & Flinchbaugh, 2001; Vega, Gil, & Zimmerman, 1993). Moreover, several studies have suggested that while acculturation factors have been linked to

substance abuse, the association appears to be moderated by gender (Marsiglia, 2011; Fosados et al., 2007; Saint-Jean, 2010; Vaeth, Caetano & Rodriguez, 2012).

In order to understand the relationship between acculturation and other factors with substance abuse, it is important to study the Latino population as it has become the largest minority group in the United States (U.S. Census Bureau, 2011). It was estimated that in 2010, 16% of the United States population or 50.5 million people were of Hispanic/Latino origin; in 2010, people of Mexican origin comprised the largest Hispanic group, representing 63% of the total Hispanic population in the United States. It has been estimated that by the year 2060, 29%-31% of the U.S. population will consist of Latinos (U.S. Census Bureau, 2012). Therefore, the target population of this study is the Latino or Hispanic population of Mexican descent.

The purpose of this study is to improve our understanding of the connection between personality traits and substance use patterns—alcohol use in specific—among Mexican American college students at different acculturation levels while taking gender into consideration. In this way, it may be possible to identify personality traits that may be statistically associated with specific alcohol use patterns, as well as to understand how acculturation and gender variables moderate this relationship. Finding statistically significant associations may provide an etiological understanding of how substance-related disorders may be influenced by personality, while recognizing that alcohol use may also be sensitive to culture and gender; this, in turn, may have clinical, diagnostic, psycho-educational, and preventive implications. Clinicians may identify protective and risk factors in clients with substance-related diagnoses and, thus, take into consideration these risk and preventive factors as part of treatment.

Theory

In this study, personality will be an important area of investigation. A personality trait is a dimension of relatively stable individual differences and tendencies (Costa & McCrae, 1992a). The theoretical framework for personality in this study is the Five Factor Model (FFM). The FFM of personality is a trait taxonomy that began with the works of Allport and Odbert (1936). The Five Factor Model was developed through a process that began by identifying personality trait terms and then dividing them into groups of main traits. The FFM classifies personality dimensions into 5 broad domains, commonly labeled Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism (Costa & McCrae, 1992a; John & Srivastava, 1999). Openness refers to being intelligent, imaginative, curious, flexible, and broad-minded. Conscientiousness refers to striving for competence and achievement, and being self-disciplined, orderly, reliable, and deliberative. Extraversion refers to enjoying the company of others, and being active, talkative, assertive, and seeking stimulation. Agreeableness refers to being courteous, good-natured, cooperative, tolerant, and compassionate rather than antagonistic. Neuroticism refers to easily experiencing unpleasant and negative emotions, such as fear, anxiousness, pessimism, sadness, and insecurity. Extensive evidence supports the reliability and construct validity of these FFM dimensions of personality across ages and cultures (Costa & McCrae, 1992a; McCrae &Costa, 1997).

The second area to be studied is substance use. Substance use can be conceptualized as a dimension ranging from non-problematic use to substance abuse and substance dependence. Substance abuse is a maladaptive pattern of substance use leading to clinically significant impairment or distress, as manifested by one of the following: recurrent substance use resulting in a failure to fulfill major role obligations at work, school, or home; recurrent substance use in

situations in which it is physically hazardous; recurrent substance-related legal problems; occurring within a 12-month period (American Psychiatric Association, 2000). Subsequently, substance dependence is the use of alcohol or other drugs despite problems related to use of the substance; tolerance to the effect of the drug and withdrawal symptoms when use is reduced or stopped is common in this level of substance use (American Psychiatric Association, 2000).

The third domain that will be studied is acculturation. As defined by Berry (2005), in this study, acculturation can result from continuous, prolonged contact between two culturally distinct groups. There are two main models that describe the process of acculturation.

The Unidimensional versus Bidimensional Acculturation Model

The unidimensional model describes acculturation as the process of moving from one cultural identity (e.g., ethnic identity) to the other (e.g., mainstream cultural identity) over time (Gordon, 1964). Due to this, the unidimensional model is often called an assimilation model or bipolar model (Nguyen & von Eye, 2002). Although an advantage of the unidimensional model is its simplicity, this parsimony also makes the model vulnerable to criticism (Nguyen & von Eye, 2002). The major criticism of this model is that it assumes mutual exclusion of the two cultural identities (Rogler, Cortes & Malgady, 1991). This model does not allow ethnic minorities to hold complete bicultural identities, although many ethnic minorities describe themselves as doing so (e.g., Chinese Americans or Mexican Americans; Nguyen & von Eye, 2002).

Due to this limitation, the bidimensional model has become an alternative to the unidimensional model (Kang, 2006). The bidimensional model does not conceptualize the acculturation process as moving along a continuum of identity from one end to the other. Instead, it proposes that the maintenance of ethnic identity is independent from the development of

mainstream cultural identity. By proposing the independence of the two cultural identities, the bidimensional model is able to include not only individuals with bicultural identities but also people who are not attached to either culture; this flexibility is the major strength of the bidimensional model (Kang, 2006).

To date, most of the literature on acculturation has focused on unidimensional models that measure language preference. Although language use accounts for a considerable portion of the variance in several acculturation measures (Cuellar, Harris & Jasso, 1980; Epstein, Botvin, Diaz, 1996; Lessenger, 1997), acculturation is a complex process, involving multiple dimensions. Therefore, multidimensional models that measure biculturalism may be more accurate in assessing the experiences of individuals who identify with more than one culture (Coatsworth, Maldonado-Molina, Pantin & Szapocznik, 2005; Marsiglia & Waller, 2002; Unger et al., 2000). Additionally, multidimensional models do not assume the loss of the native culture once the new culture has been integrated (Oetting & Beauvais, 1990).

Typological Approach

The most influential version of the bidimensional model was conceptualized by Berry and his colleagues (1987; Berry, Kim, Power, Young, & Bujaki, 1989). Berry's model is based on the observation that ethnic/cultural minorities residing in multicultural societies should confront two essential questions: whether they will maintain their ethnic identities and whether they want to be actively involved in mainstream culture. Attitudes toward these two questions conjointly determine cultural orientations, and based on hypothetical responses to these two questions, Berry and his colleagues (1986) identified four types of acculturation style: integration (interest in maintaining both cultural identities), assimilation (only interest in maintaining

mainstream cultural identity), separation (only interest in maintaining ethnic cultural identity), and marginalization (little interest in maintaining either cultural identity).

CHAPTER II

LITERATUTE REVIEW

Personality and Alcohol Use

An increasing amount of research is indicating the relevance of personality factors for understanding and treating alcohol-related problems. Personality traits have been associated with substance use problems both concurrently (Brooner, Herbst, Schmidt, Bigelow, & Costa, 1993; Martin & Sher, 1994) and prospectively (Krueger et al., 1996; Shedler & Block, 1990; Sher, Bartholow & Wood, 2000). Of the Big Five factors, Conscientiousness and Neuroticism have received the most consistent support. High Conscientiousness has been associated with decreased alcohol consumption and substance use (Martin & Sher, 1994; Ruiz, Pincus & Dickinson, 2003; Kashdan, Vetter & Collins, 2005). High Neuroticism has been associated with increased alcohol consumption, alcohol-related problems, and binge drinking (Martin & Sher, 1994; Ruiz, Pincus & Dickinson, 2003; Benjamin & Wulfert, 2005; Ham, & Hope, 2003). Moreover, low Conscientiousness (e.g., impulsivity, disinhibition) and high Neuroticism (i.e., tendency to easily experiencing negative emotions) have consistently been associated with substance use disorders, whereas less consistent findings have been reported for Extraversion, the “sociability trait" (Cox, 1987; Sher, Trull, Bartholow & Vieth, 1999). Different aspects of Extraversion have been associated with both preventive and risky health behaviors. Extraversion, particularly the facet of activity, is positively associated with exercise engagement (Rhodes & Smith, 2006) but high

levels of Extraversion, particularly the facet of excitement seeking, have been associated with increased alcohol consumption, alcohol-related problems, binge drinking (Allsopp, 1986; Martsh & Miller, 1997; Benjamin & Wulfert, 2005), and cigarette smoking, (Spielberger & Jacobs, 1982). Some personality traits have been identified as risk factors for the development and maintenance of alcohol use disorders (Cloninger, 1987) and particular FFM personality traits have been associated with alcohol-related problems when tested within multifactorial models (Finn, Sharkansky, Brandt & Turcotte, 2000; Loukas, Krull, Chassin & Carle, 2000).

One study in India investigated personality traits by comparing a substance abuse group with a non-substance abuse group using the NEO-Five Factor Inventory (NEO-FFI; Dubey et al., 2010). The study showed that the substance abuse group scored higher on the Neuroticism dimension, whereas the non-substance abuse group significantly scored higher on the Conscientiousness dimension of the FFM. Ruiz, Pincus & Dickinson (2003) investigated the relationships between FFM domains, including their facets, and alcohol-related problems in 200 students (99 men and 101 women) aged 18 and older who had used alcohol in the past year. In this study, Neuroticism was positively and Conscientiousness negatively associated with alcohol-related problems; some facets of Extraversion and Agreeableness were also associated with alcohol-related problems.

Another study examined correlates for the NEO-PI-R, a FFM inventory (Costa & McCrae, 1992b), and risk of alcohol use disorders in a sample of 468 adults (Martin & Sher, 1994); alcohol use and familial risk for alcoholism was negatively associated with Conscientiousness. Alcohol use disorders were positively associated with Neuroticism and negatively associated with Agreeableness and Conscientiousness. In a study of 583 college students, Raynor and Levine (2009) found that highly conscientious individuals are more likely

to utilize alcohol-related harm reduction; they are also less likely to smoke cigarettes, consume alcohol, and binge drink. Highly extraverted individuals are more likely to smoke cigarettes, consume alcohol, binge drink, and have multiple sexual partners, and they are less likely to engage in alcohol-related harm reduction. According to Raynor and Levine (2009), these findings are supportive of a growing body of evidence indicating that Conscientiousness and Extraversion are indicators of health-related behaviors among college students. In a large sample study of 1,184 college-aged men and women in Spain, Conscientiousness was a particularly strong predictor of health behaviors, including decreased smoking and alcohol consumption, and increased Neuroticism and Extraversion were linked with unhealthy habits in women (Lemos-Giráldez & Fidalgo-Aliste, 1997). In a sample of 683 Swiss university students, regardless of level of Extraversion and Neuroticism, high Conscientiousness was associated with reductions in smoking cigarettes, drinking alcohol, drunkenness, drunk driving, and cannabis use (Vollrath & Torgerson, 2002); conversely, students with low conscientious and either high Extraversion or high Neuroticism were more likely to engage in several of the aforementioned risky health behaviors. Based on the literature, it was hypothesized that—for this study—Neuroticism and alcohol use would be positively correlated, and Conscientiousness and alcohol use would be negatively correlated. Based on these previous studies with college samples, for the current study, Extroversion was hypothesized to be positively associated with alcohol use.

Acculturation and Substance Use

Acculturation to the U.S. culture has been associated with a number of negative health outcomes for Latino adolescents, including a rise in alcohol and other drug use (Epstein, Botvin & Diaz, 1998; Epstein, Margaret & Botvin, 2003; Unger et al., 2002). Acculturation to U.S. society has been associated with an increase in drinking and binge drinking among Hispanics

(Vaeth et. al., 2012). Currently, Latino immigrants living in the U.S., regardless of country of origin, report higher rates of substance and alcohol use when compared to Latinos still living in the country of origin (Caballero-Hoyos et al., 2005; Caetano & Mora, 1988; Cherpitel & Borges, 2001; Fosados et al., 2007; Vega & Gil, 1998). The risk for substance use increases for Latino immigrants with longer stay in the United States (Epstein, Botvin, Dusenbury & Diaz, 1996).

The association between acculturation and substance use is explained by research in regards to the coping processes involved in acculturation (Szapocznik, Santisteban, Rio & Perez-Vidal, 1989; Vega, Zimmerman, Warheit & Gil, 2003). This acculturative process can be understood from the perspective of the stress/coping paradigm whereby, if stressors encountered during the acculturative process exceed an individual's coping skills, and if the individual considers the stressors uncontrollable, the individual may engage in rebellion, delinquency and/or drug use (Unger et al., 2004). Literature on acculturative stress indicates that an integrated acculturation strategy, which involves accepting both cultures, is associated with access to more social resources and a wider array of coping skills; marginalization, which involves rejecting both cultures, results in harmful coping (Berry, 2005). Marginalization is associated with greater risk for lifetime alcohol and drug use, especially among males, and a greater risk of current drug use among females. Therefore, Fosados et al. (2007) suggested that acculturation coping strategies were predictive of both current and lifetime alcohol and drug use. For the current study, it was hypothesized that Assimilation as well as Marginalization acculturation and substance abuse will be positively correlated; participants who report either high assimilation, or high marginalization acculturation will be more likely to report high alcohol use.

Gender, Acculturation and Substance Use

Studies have reported significant gender differences in alcohol use among Latino adults; Hispanic women are more likely to abstain while Hispanic men drink more frequently and more heavily (Marin & Posner, 1995; Caetano, 1988; Gilbert, 1989; Nielsen, 2000; Poledenak, 1997). These gender differences are evident across multiple Latino subgroups, holding for Mexican American, Puerto Rican, Cuban American and other Hispanic adults (Nielsen, 2000; Poledenak, 1997; Marks, Garcia, & Solis, 1990; Randolph, Stroup-Benham, Black & Markides, 1998).

Among adults, some studies have found that alcohol use increases with acculturation for women but not for men (Poledenak, 1997; Markides, Ray, Stroup-Benham & Trevino, 1990; Zemore, 2005); studies have also indicated that the least acculturated Hispanic men do not differ significantly in their drinking patterns from the most acculturated Hispanic men. In contrast, the least acculturated Hispanic women have typically reported the lowest rates of alcohol use, while alcohol use among the most acculturated Hispanic women is more similar to alcohol use among non-Hispanic white women (Wahl & Eitle, 2010).

According to Wahl and Eitle (2010) the in alcohol use associated with acculturation among Hispanic women indicates a strong influence of the dominant culture in the United States, which appears to be less prohibitive about women drinking than are traditional Latino cultures. Fewer studies have focused on gender differences in alcohol use among Latino adolescents and the results of this research are mixed (Wahl & Eitle, 2010).

Wahl and Eitle (2010) examined the relationship between acculturation and alcohol use by gender and ethnicity using a nationally representative sample of Hispanic and non-Hispanic white adolescents. Results showed significant gender differences in alcohol use among first-generation Mexican American as well as other Hispanic groups. Wahl and Eitle (2010) found

that gender appeared to moderate the effects of acculturation and ethnicity on alcohol use and abuse.

Studies suggest the possibility that successful acculturation may depend on a process of integrated acculturation in which the retention of certain cultural traditions and values, such as language and family unity, protects immigrants and their children from potentially negative behaviors (Zhou & Bankston 1994; Portes & Rumbaut, 2001). Vaeth et al. (2012) examined the association between acculturation and drinking-related outcomes: among women, high acculturation was associated with high alcohol use, and high acculturation also interacted with national group to increase the likelihood of binge drinking. Vaeth et al. (2012) suggested that acculturation has a more consistent association with increased drinking and binge drinking among women than among men. It was hypothesized for this study that Hispanic females high in integration or separation acculturation would be less likely to engage in substance use compared with females high in assimilation.

The Current Study

The effects of personality traits, acculturation levels and gender—on alcohol use—were studied. My hypotheses are as follows:

Replication and Clarification Hypotheses

The following effects are predicted by previous research and were replicated—or, if the previous research shows contradictory findings, clarified—in this study. This satisfied prerequisites to test the hypotheses of interest (see "New Hypotheses," below) and extend previous research to the current population.

1. Selected FFM personality factors were expected to predict alcohol use.

a. Participants who report high Neuroticism were expected to report high alcohol use.

b. Participants high in Conscientiousness were expected to report low alcohol use.

c. Extraversion was hypothesized to be positively associated with alcohol use, as in past research with university populations.

2. Acculturation strategies were expected to predict substance abuse: participants who report low involvement in their heritage culture were expected to be more likely to report alcohol use than those with higher heritage culture involvement:

    a. High levels of assimilation were hypothesized to be positively associated with alcohol use.

    b. High levels of marginalization were hypothesized to be positively associated with alcohol use.

3. Gender was hypothesized to moderate the relationship between acculturation and alcohol use in that Heritage-culture orientation was expected to be a stronger protective factor against alcohol use for Hispanic females than for males:

    a. Integration and separation acculturation strategies were expected to predict relatively lower levels of alcohol use for Hispanic females.

    b. Integration and separation strategies were hypothesized to not predict, or more weakly predict, alcohol use for Hispanic males.

New Hypotheses (Confirmatory):

4. The relationship between Conscientiousness and alcohol use was expected to be moderated by both acculturation style and participant gender.

a. Females with high levels of both Conscientiousness and heritage acculturation (i.e., separation and integration) were expected to report lower alcohol use than other participants.

b. Among males, Conscientiousness was hypothesized to be negatively associated with alcohol use, regardless of acculturation levels.

Exploratory Research Questions

It was not known what the effect of acculturation and gender on the relationships between neither Neuroticism nor Extraversion with alcohol use would be. These relationships were analyzed as follows:

5. Any moderating effects of acculturation and gender on the Neuroticism-alcohol use relationship were assessed.
6. Any moderating effects of acculturation and gender on the Extraversion-alcohol use relationship were assessed.

CHAPTER III

METHODOLOGY

Data for this study came from an online survey completed by university students in 2011. The author participated in the planning, administration, and data collection of the overall project, from 2007 until its completion.

Participants

Participants for this study were undergraduate students from a midsize university in the southwest USA (N=572, 94.5% Hispanic, 72.6% female, mean age 23.3 years). Students were recruited from social sciences courses—primarily psychology—in return for extra credit.

Procedures

Participants were recruited via social science classes, fliers, electronic notices on the university's student announcement portal, online content management sites, and emails from instructors. Informed consent was provided on-screen before beginning the online survey. This and all other study procedures were reviewed and approved by the university's institutional review board (IRB) for human subjects research. Compensation was in the form of extra credit for psychology and other social science classes.

Measures

For this analysis multiple assessments were utilized: The Revised NEO Personality Inventory (NEO-PI-R; Costa & McCrae, 1992b) was used to measure personality; the Brief

Michigan Alcoholism Screening Test (bMAST; Connor, et al., 2007) and Alcohol Use Disorder Identification Test (AUDIT; Berner et at. 2007) were used to measure patterns of substance use. The Vancouver Index of Acculturation (VIA; Ryder et al., 2000) was used as a measure of acculturation. Sex/gender was self-reported by participants in the demographics section of the survey.

NEO Personality Inventory-Revised (NEO-PI-R)

The NEO-PI-R consists of 240 items answered on a 5-point Likert scale from *strongly disagree* to *strongly agree* (Costa & McCrae, 1992b). Extraversion, Neuroticism, Conscientiousness, Agreeableness, and Openness to Experience are the five personality traits it measures; The NEO-PI-R also provides scores for six subscales, or "facets" of each trait. When translated, the NEO-PI-R has good internal consistency and it has been validated in countries such as France, Korea, and the Philippines (Kaplan & Sacuzzo, 2008). The NEO-PI-R has been administered in more than 50 cultures and there is evidence of convergent and discriminant validity and a large literature demonstrate cross-observer agreement and prediction of external criteria such as psychological well-being, health-risk behaviors, and coping mechanisms (Terracciano, Lockenhoff, Crum, Bienvenu & Costa, 2008). Previous studies have found adequate alpha reliabilities, retest-stability, and factor structure of the NEO-PI-R scales (Terracciano et al., 2008).

Alcohol Use Disorder Identification Test (AUDIT)

The AUDIT is an effective screening method for alcohol use (Saunders, 1993). It consists of 10 questions about alcohol use including the frequency of drinking, typical quantity and the frequency of binge drinking, and alcohol dependence. It is considered one of the best questionnaires for screening early phase risky drinking and alcohol use disorders, with a reported mean sensitivity of 0.86 and a mean specificity of 0.89 (Reinert & Allen 2007).

The Brief Michigan Alcoholism Screening Test (bMAST)

The bMAST is a 10-item test derived from the 25-item Michigan Alcoholism Screening Test (MAST). It is widely used in the assessment of alcohol dependence. The bMAST has shown moderate correlations with the AUDIT (Connor, Grier, Feeney & Young, 2007); the bMAST and the AUDIT have been similarly associated with quantity of alcohol consumption and clinically-assessed dependence severity features. The bMAST has been found to be as effective as the AUDIT in assessing problem drinking severity (Connor, et al., 2007).

Vancouver Index of Acculturation (VIA)

The version of the VIA used in this study is a 25-item self-report instrument designed to measure acculturation bidimensionally (Ryder, Alden, & Paulhus, 2000). The VIA items are rated on a 9-point scale, ranging from 1 (strongly disagree) to 9 (strongly agree). Examples of items include, "I am interested in having friends of my heritage culture" and "I would be willing to marry a typical American person" (Ryder et al., 2000); thus, higher subscale scores represent higher levels of identification with the culture represented—either "heritage culture" (VIA-H) or "mainstream American culture" (VIA-A). Coefficient alpha of the full VIA has been reported as .80 (Huynh, Howell, & Benet-Martinez, 2009). The VIA has also been reported to have adequate construct validity (Ryder et al., 2000).

Statistical Analysis

The effects of Neuroticism, Conscientiousness, and Extraversion on substance use were studied; the moderating effects that acculturation and gender have on the personality trait/substance abuse associations were also studied. All hypotheses were tested with multiple regression analysis. Moderation effects were tested with interactions between predictors. All analyses were performed with Statistical Product and Service Solutions software, version 20 (SPSS; IBM, 2012).

Creation of Alcohol Use Criterion Variable (AU)

The criterion variable in the analyses below, alcohol use (AU), was created by converting AUDIT and bMAST raw scores into *z*-scores, log-transforming the results (to reduce the extreme positive skew), then adding these transformed scores together for each individual. This combination of scales was an attempt to capture a broader range of alcohol use characteristics than could be measured by either instrument alone.

Creation of Bidimensional Acculturation Scales

Bidimensional acculturation was measured with two scores created from the VIA-H (a measure of retention of heritage culture identity) and VIA-A (a measure of dominant American cultural identification) to reflect the bidimensional interpretation of acculturation. The first bidimensional acculturation scale was created for the Integration/Marginalization dimension (VIA-I/M), by adding together each participant's *z*-scores for the VIA-A—in which high scores indicate high levels of identification with dominant American culture—and the VIA-H—where high scores indicate high identification with one's heritage culture. Thus, high scores on the VIA-I/M indicated high Integration acculturation and low scores indicated its polar opposite, Marginalization. The second bidimensional scale (VIA-A/S) was created for the Assimilation/Separation dimension of acculturation by adding each participant's *z*-score from the VIA-A to the *reversed z*-score (i.e., multiplied by -1 so that formerly low scores became high scores and vice-versa) of his or her VIA-H score. High scores on the resulting VIA-A/S scale indicated high levels of Assimilation and low scores indicated the opposite: high Separation.

Recode and Interaction Variables

Gender was recoded into a numeric binary variable (Male=1, Female=0). Interaction variables—for gender and acculturation scales (VIA-I/M x Gender and VIA-A/S x Gender)—

were created by multiplying the corresponding variables. These interaction variables were entered into the multiple regression analysis.

Replication and Clarification Hypotheses

1. Conscientiousness, Neuroticism and Extraversion scale scores from the NEO-PR-I were hypothesized to show statistically significant regression coefficients when predicting AU.
    a. Neuroticism scores on the NEO-PR-I were hypothesized to positively predict AU.
    b. Conscientiousness scores on the NEO-PR-I were hypothesized to negatively predict AU.
    c. Extraversion scores on the NEO-PR-I were hypothesized to positively predict AU.
2. VIA scores were hypothesized to predict AU:
    a. VIA- A/S scores were hypothesized to be positively associated with AU.
    b. VIA-I/M scores were hypothesized to be negatively associated with AU.
3. Gender was expected to moderate the relationship between VIA scores and AU in that the regression coefficients between the VIA scores and the AU were hypothesized to be stronger in the female group than in the male group.
    a. VIA-A/S scores were expected to be more positively associated, and VIA-I/M scores more negatively, with AU in the female group than in the male group.
    b. VIA- I/M and VIA-A/S scores were expected to be unassociated with AU for Hispanic males, or less strongly than in the female group.

New Hypotheses (Confirmatory):

4. The relationship between the Neuroticism, Conscientiousness, and Extraversion scores of the NEO-PR-I with AU was expected to be moderated by the effects of VIA scores and gender.

a. Females with high scores on both NEO-PI-R Conscientiousness and the VIA-I/M were expected to yield lower AU than other participants.

b. Within the Hispanic male group, a negative regression coefficient between NEO-PI-R Conscientiousness scores and AU was expected regardless of their VIA scores.

Exploratory Research Questions

The moderating effects of VIA scores and the sex of participants with the relationships between the NEO-PR-I scores and AU were explored.

5. Moderating effects of VIA scores and gender on the Neuroticism-AU relationship were assessed.
6. Moderating effects of VIA scores and gender on the Extraversion-AU relationship were assessed.

CHAPTER IV

RESULTS

Replication and Clarification Hypotheses

Hypothesis 1:

Selected FFM personality factors were hypothesized to predict substance abuse. These sub-hypotheses were tested with a multiple regression analysis in which AU was predicted by NEO-PI-R Neuroticism, Conscientiousness, and Extraversion scores. See Table 1. Conscientiousness, Neuroticism, and Extroversion scores together explained 5.9 % of variation in AU.

a. *Neuroticism scores on the NEO-PR-I were hypothesized to positively predict AU.*

   For hypothesis 1a, the standardized regression coefficient for Neuroticism was weak (β=.11), yet positive and statistically significant ($p<.01$). This hypothesis was supported.

b. *Conscientiousness scores on the NEO-PR-I were hypothesized to negatively predict AU.*

   For hypothesis 1b, the standardized regression coefficient for Conscientiousness was weak (β= -.18), yet negative correlated and marginally significant (p=.06). This hypothesis was supported.

c. *Extraversion scores on the NEO-PR-I were hypothesized to positively predict AU.*

For hypothesis 1c, the regression coefficient for Extroversion was not statistically significant ($p>.05$). This hypothesis was not supported.

Hypothesis 2:

Acculturation strategies were expected to predict substance abuse. These sub-hypotheses were assessed with a multiple regression analysis where the AU was expected to be predicted by the VIA-A/S and VIA-I/M scale. Together, the VIA scales explained 3.4% of the variability in substance use AU ($p<.01$). See Table 2.

a. *VIA-A/S scores were expected to be positively associated with AU.*
   The effect of VIA-A/S scores on AU was not statistically significant.
b. *VIA-I/M scores were expected to be negatively associated with AU.*
   Lower VIA-I/M scores (i.e., more marginalization) predicted greater substance use ($\beta= -0.18$, $p<.001$). This hypothesis was supported.

Hypothesis 3:

Gender was hypothesized to moderate the relationship between VIA scores and the AU —i.e., the regression coefficient between the VIA scores and the substance use AU was expected to be stronger among the female group than male group. Together, the VIA scales and gender and the interaction of these variables explained 4.3% of the variability in AU ($p<.01$).

a. Integration and separation acculturation strategies were expected to predict relatively lower levels of substance use for Hispanic females.

b. VIA- I/M and VIA-A/S were not expected to predict AU, or to be less strongly associated with AU for Hispanic males.

The interactions of sex with the VIA-I/M or VIA-A/S scores were not statistically significant in their relationships with AU (p>.05). See Table 3.

New Hypotheses (Confirmatory)

Hypotheses 4:

4. The relationship between Neuroticism, Conscientiousness, and Extraversion scores of the NEO-PR-I with AU was expected to be moderated by the interaction effects of the VIA scores and sex. See Table 4.

a. *Females with high scores on both, the Conscientiousness of the NEO-PR-I and the VIA (scoring high on the VIA-I/M and/or low on the VIA-A/S), were expected to yield the lowest AU than other participant groups.*
b. *Within the Hispanic male group, a negative regression coefficient between the Conscientiousness scores on the NEO-PR-I and AU was expected regardless of their VIA scores.*

A multiple regression analysis was used for hypothesis 4. Together, gender/sex, the VIA-I/M and VIA-A/S scores, and Conscientiousness scores on the NEO-PR-I, and the three-way interaction among these variables explained 8.0% of the variability in AU (p<.001). None of the interactions of sex and the acculturation scales (VIA-I/M and VIA-A) scores on the association between the Conscientiousness scores with AU were statistically significant (p>.05). Neither gender/sex nor the VIA scores appeared to influence the relationship between the Conscientiousness scores with AU. Therefore, hypothesis 4 was not supported.

Exploratory Research Questions

5. *Moderating effects, of VIA scores and gender with the Neuroticism scores- AU relationship, were assessed.* See Table 5.
6. *Moderating effects, of VIA scores and gender with the Extraversion scores- AU relationship, were assessed*. See Table 6.

A multiple regression analysis was used for hypotheses 4-6. Together, gender/sex, the VIA-I/M and VIA-A/S scores, the Neuroticism scores on the NEO-PR-I, and the two-way interaction among these variables explained 8.0% of the variability in AU ($p<.001$). Together, gender/sex, the VIA-I/M and VIA-A/S scores, the Extroversion scores on the NEO-PR-I, and two-way interaction among these variables explained 4.0% of the variability in AU ($p<.05$). None of the interactions of sex and the acculturation scales (VIA-I/M and VIA-A) scores on the association between Neuroticism, and Extroversion scores with AU were statistically significant ($p>.05$). Neither gender/sex nor the VIA scores appeared to influence the relationship between the Conscientiousness, Neuroticism, Extroversion scores with AU. Therefore, hypotheses 6-6 were not supported.

Post-Hoc **Analysis**

Although the moderation hypotheses were not supported, the theory and visual analysis of scatterplots suggested that these interactions may still exist, and might be revealed by analyzing data from only those participants with very high or very low acculturation scores. The sample was split into quartiles, based on VIA-I/M scores. Only the highest and lowest quartiles were used, and a 2 (sex) X 2 (VIA-I/M quartile) analysis of variance (ANOVA) was performed. Results are in Tables 7 and 8.

The interaction of Sex with the high/low VIA- I/M scale grouping was statistically significant ($p<.05$). As Figure 1 shows, in males the VIA- I/M scores did not seem to influence AU. However, females in the most highly integrated quartile of participants had lower AU than females in the first quartile of integration (i.e., the most marginalized). Additionally, the interaction of sex with high/low VIA-I/M was statistically significant ($p<0.05$). Further investigation (see Figure 1) showed that the VIA-I/M was positively associated with AU in females, but the VIA-I/M was not associated with AU in males. An independent samples t-test showed no statistical difference in AU between males and females in the low integration group $p>.05$. There was a statistical difference between in AU between males and females in the high integration group $p<.05$.

The above analysis was repeated after selecting the lowest and highest quartile of VIA-A/S scores (instead of VIA-I/M). The interaction of sex with VIA-A/S scores on AU was not statistically significant ($p>.05$). See Table 8.

CHAPTER V

DISCUSSION

The present study is unique in that it incorporated a three-way moderation analysis to study how personality traits is associated with alcohol use, how this association is moderated by the participants acculturation style, and how this interaction may simultaneously depend on the participant's gender. The study revealed some associations between the selected personality traits and alcohol use. The moderating effects of gender and acculturation with alcohol use—as well as with the personality-alcohol use relationship— were found to not be statistically significant when observing the entire sample. When observing only the low and high integration groups, gender did appear to have an influencing effect on the alcohol use of participants.

A marginal relationship among high neuroticism with alcohol use was found; a statistically significant relationship between low Conscientiousness with high alcohol use among the Mexican Americans population were established. This study was consistent with previous research purporting that higher Neuroticism and lower Conscientiousness is associated with higher alcohol use in the Latino population (Benjamin & Wulfert, 2005; Ham & Hope, 2003). The direction of the relationship between conscientiousness and neuroticism with alcohol use—which is supported by previous studies—also purports that the Five-Factor Model of personality holds promise for studying personality traits in alcohol use disorders. Comparable with the

inconsistent findings from previous FFM studies in the general population (Trull, Bartholow & Vieth, 1999; Rhodes & Smith, 2006), Extroversion was not statistically related with the alcohol use for the current participant sample. However, the previous research with college students has suggested that high Extroversion is associated with high alcohol use among college students (Vollrath & Torgerson, 2002; Raynor & Levine, 2009). For the current study, a possible explanation for lack of association of Extroversion with alcohol use may be related to the sampling methods. The location of the university where the sample was obtained is a community-based institution and many students live at home. It is possible that the current sample may have been representing sample of the general population rather than a college-student population. Additionally, the weak predictive power of the personality traits for alcohol use may have been due to the sample being largely female. As previously discussed, alcohol use among Hispanic females is lower than that of Hispanic males (Nielsen, 2000; Poledenak, 1997). Having a largely female sample with a low participant count reporting high alcohol, and/or a high count of participants not reporting any use at all, use may have influenced the strength of the personality-alcohol use relationship.

In the current study, only the integration aspect of heritage identification—not separation—appeared to be associated with alcohol use among Mexican American adults. As described by Berry (2005,) acculturative stress indicates that an integrated acculturation strategy is associated with access to more community resources and more coping skills because it involves accepting both cultures. It is possible that separation may have not been associated with alcohol use since—although being separated from the main culture may limited people from access to resources in the general population—this pattern may not be as evident within a heritage enclave; the university where the data was gathered was located in a Hispanic enclave.

Thus, separation acculturation within an enclave may not be as stressful and limited in resources as other communities of the United States. Although—when the I/M scale results were interpreted—explanations on the finding pertaining to the negative association of acculturation with alcohol use were inclined towards the integration process, the negative relationship between the I/M scale and alcohol use may have been mainly due to the marginalization aspect of the participant sample. Berry (2005) describes how marginalization results in harmful coping because of the exclusion from both cultures and limited access to those resources and support. Thus, the current study supports the finding by Fosados et al. (2007) which suggested that marginalization was associated with greater risk for lifetime alcohol and drug use, especially among males, and a greater risk of current drug use among females.

Acculturation, gender and gender's moderation of the acculturation-alcohol use relationship appeared to explain a relatively small portion (4.3%) of the variability in alcohol use in this study. Although the relationship between acculturation and alcohol use was expected to be stronger among the female group than male group, gender did not moderate the acculturation-alcohol use relationship. That is, gender did not appear to change the relationship between acculturation and substance use when observing entire the Mexican American adult sample. However, in a post-hoc analysis—the interaction of gender with the high integration-alcohol use relationship was statistically significant when observing high and low integration groups. For males, integration or marginalization did not seem to influence the level alcohol use; yet male alcohol use scores were higher than female alcohol use scores, overall. Females in the highly integrated group had lower alcohol use than females in the low integration or highly marginalized group. Both the bicultural model (Berry, 1989) and the use of the VIA appeared to be supported by the post-hoc findings. In the Hispanic adult population, integration appeared to

be a subcategory of acculturation that seemed to negatively influence substance use, moderated by gender. If these results had been analyzed from the unidimensional acculturation perspective, participants who reported high integration would have been placed in same category as participants that reported high assimilation. This would have resulted in overlooking the interaction effect of gender with these two acculturation strategies.

The relationships between Neuroticism, Conscientiousness, and Extraversion with alcohol use were expected to be moderated by the interaction effects of acculturation and gender for this study. Together, gender, acculturation, and Conscientiousness, Neuroticism, Extroversion and the interaction among these variables appeared to explain a relatively small amount of the variability of alcohol use among college students. This purports that the there may be a number of other factors such as genetics, family history, values, religiosity, etc., that may explained a substantial amount of variability in the alcohol use of Hispanic adults. Additionally, in the current study, participant sex, acculturation, Conscientiousness, Neuroticism, Extroversion were not, significant predictors, individually, of alcohol use among Mexican American adults. Neither, gender or acculturation, were found to moderate the relationships between Conscientiousness, Neuroticism, or Extroversion scores with the alcohol use. Therefore, the hypotheses 4-6 were not supported. These results purports that males and females do not differentiate in the alcohol use regardless of the personality traits or acculturation style. These findings do not support previous findings, which suggest that Hispanic females involved in their heritage culture report lower levels of alcohol use than Hispanic men (Nielsen, 2000). Based on this study, for the general Hispanic population, personality traits, such as Conscientiousness and Neuroticism, may influence alcohol use the same for females and males integrated, assimilated, separated or marginalized. However, a significant moderation may be have been observed if the

sample had encompassed a significant number of participants in the high and low range of the personality.

Limitations

One of the limitations pertained to the item content of the AUDIT/ BMAST scales. It is possible that the number of students reporting high levels of alcohol use was low since these measures may be appropriate for clinical population. Because the sample was compose of high functioning students, in general, only a small percent of participants reported high levels of alcohol use.

Another limitation included focusing on the FFM personality traits only while not exploring the personality factor facets. Sensation seeking has been associated with substance use in previous studies (Roth & Liebe, 2011). Because specific FFM personality facets, such as Sensation Seeking, were not explored, it is possible that significant findings, moderations and relationships between the personality facets that may exist in this population were overlooked.

As discussed in the literature review, previous research has found significant connections between personality traits, acculturation and gender with substance use. However, these relationships were not replicated successfully in this study. It is possible that alcohol use by college students may not encompass the substance use paradigm entirely, and that studying the use of other substances—including substances such as tobacco, marijuana and cocaine—may yield different significant relationships with personality and acculturation, as well as interaction effects with gender. Further research of the use of the various substances and the relationship to personality, as well as the moderations by gender and acculturation may be required.

This study was also limited to a Hispanic sample that was primarily of Mexican descent. As previously stated, although Hispanics of Mexican descent compile the majority of the U.S.

Hispanic population, this sample may not be representative of other Hispanic subgroups. The study was also held at a Hispanic enclave located near the Mexican border.

Implications and Future Directions

Future studies should continue to incorporate multidimensional acculturation scales with substance use research in order to increase our understanding of how acculturation impacts alcohol use within the Hispanic population. Based on the *post-hoc* outcomes, which concentrated on the low and high integration groups of Hispanic samples, future studies may study high and low integration by obtaining more representative and diverse samples representing a wider range of acculturation and alcohol use–perhaps from university, community, and clinical settings. The *post-hoc* finding of the moderation of the acculturation-alcohol use relationship by gender may provide an understanding of alcohol use disorder etiology in Mexican American adults while taking bidimensional acculturation and gender into account; this, in turn, may have clinical and preventive implications.

Research has consistently indicated the utility of personality assessment in the treatment of substance use disorders (Carter et al., 2001; Piedmont & Ciarrocchi, 1999), and particular patterns of personality traits have been found in individuals with substance use problems (Nolan, Johnson, & Pincus, 1994; Quirk & McCormick, 1998). The current research findings on the negative relationship of Conscientiousness—as well as the relatively positive relationship of Neuroticism—with alcohol use may also contribute to understanding of alcohol abuse etiology and prevention among Mexican Americans adults. Thus, it is possible that preventive programs for alcohol abuse may become more effective by utilizing measure such as the NEO-PI-R to identify at-risk individuals.

With this current data in mind, it may be possible that existing programs can be further enhanced by promoting integration acculturation through the use of bilingualism, celebrating and acknowledging clients' heritage practices, and by including culturally-sensitive clinicians in their curriculum for example. Gender-specific programs, such as therapy and support groups for female Mexican Americans can be enhanced or created based on the Integration acculturation and gender research data provided in this study. These results reaffirm the need to further develop and expand this research area—continuing to incorporate moderation and mediation multifactorial designs—to fully understand substance use, acculturation, and personality theoretical models and interconnections between these variables with the focus of enhancing intervention strategies that are both gender-specific and culturally-specific for high-risk groups.

TABLES AND GRAPHS

Table 1

Regression Analysis Model of Personality Explaining Alcohol Use

Predictor	*B*	*SE*	*β*
NEO Conscientiousness scale	-0.00	0.00	-0.18**
NEO Neuroticism scale score	0.00	0.00	0.11
NEO Extroversion scale score	0.00	0.00	0.03

Notes. R^2=.06**. Values of .00 indicate <.01

* p<0.05. ** =p<0.01.

Table 2

Regression Analysis of Acculturation Scales with Alcohol Use

Predictor	*B*	*SE*	*β*
VIA-I	-0.07	0.02	-0.16**
VIA-A	0.01	0.04	0.01

Notes. R^2= .03**. Values of .00 indicate <.01

* = p<0.05. ** = p<0.01.

Table 3

Multiple Regression for Acculturation and Gender Explaining Alcohol Use

Predictor	*B*	*SE*	*β*
Gender (binary)	0.07	0.04	—
VIA-I	-0.04	0.01	-0.20**
VIA-I x Gender	0.02	0.02	0.05
VIA-A	0.01	0.02	0.02
VIA-A x Gender	-0.01	0.03	-0.03

Notes. R^2= .04**. Values of .00 indicate <.01

* = p<0.05. ** = p< 0.01.

Table 4

Acculturation and Gender Moderating the Conscientiousness-Alcohol Use Relation

Predictor	*B*	*SE*	*β*
Gender (binary)	0.09	0.04	—
VIA-I	-0.03	0.01	-0.15*
VIA-A	-0.00	0.02	-0.02
C	-0.00	0.00	-0.21***
Gender x VIA-I x C	0.00	0.00	0.05
Gender x VIA-A x C	-0.00	0.00	-0.01

Notes. R^2=.08***. Values of .00 indicate <.01

* = p<0.05. ** = p < 0.01. *** = p < 0.001.

Table 5

Acculturation and Gender Moderating the Neuroticism-Alcohol Use Relation

Predictor	*B*	*SE*	*β*
Gender (binary)	-0.14	0.15	—
VIA-I	-0.01	0.04	-0.05
VIA-A	-0.06	0.05	-0.22
N	0.00	0.00	0.16**
Gender x N	0.00	0.04	0.30
VIA-I x N	0.00	0.00	-0.13
VIA-A x N	0.00	0.00	0.23

Notes. R^2=.08***. Values of .00 indicate <.01

* = p<0.05. ** = p < 0.01. *** = p < 0.001.

Table 6

Acculturation and Gender Moderating the Neuroticism-Alcohol Use Relation

Predictor	*B*	*SE*	*β*
Gender (binary)	0.10	0.23	—
VIA-I	-0.05	0.06	-0.26
VIA-A	0.07	0.09	0.25
E	0.00	0.00	0.01
Gender x E	0.00	0.00	-0.05
VIA-I x E	0.00	0.00	0.09
VIA-A x E	-0.00	0.00	-0.26

Notes. R^2=.04*. Values of .00 indicate <.01

* = p<0.05.

Table 7

Between-Subjects ANOVA: Moderation of the VIA-I/M—Alcohol Use Relation by Gender

Source	*df*	*MS*	*F*	*p*
Gender	1	0.63	6.66	0.01
VIA-I/M quartile	1	0.44	4.57	0.03
VIA-I/M quartile x Gender	1	0.39	4.11	0.04

Note. R^2=0.12

Table 8

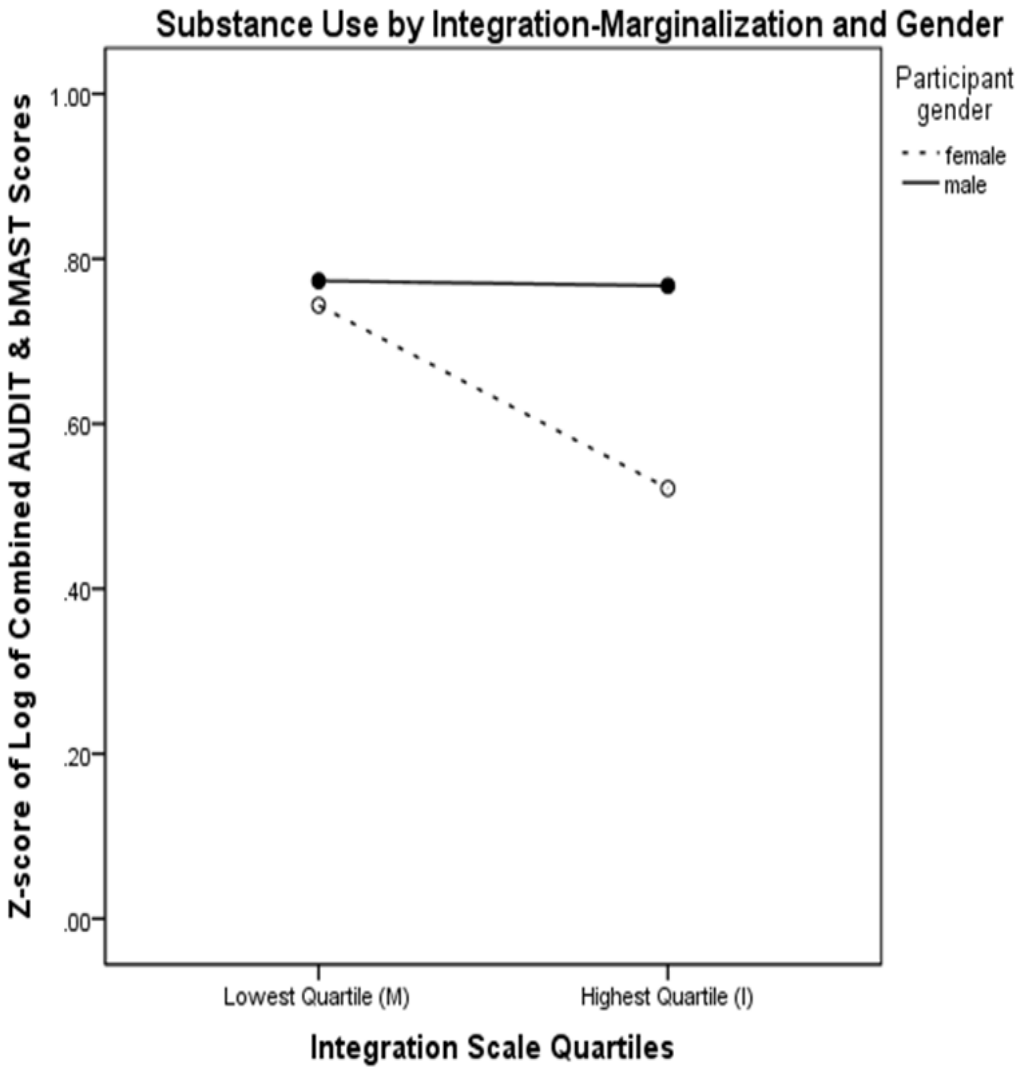
Between-Subjects ANOVA: Moderation VIA-A/S—Alcohol Use Relation by Gender

Source	*df*	*MS*	*F*	*p*
Gender	1	0.33	3.50	0.06
VIA-A/S quartile	1	0.04	0.46	0.50
VIA-A/S quartile x Gender	1	0.02	.180	0.67

Notes. R^2=0.02

FIGURES

Figure 1



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BIOGRAPHICAL SKETCH

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