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The combined relations of gender, enculturation, and depressive symptoms with health risk behaviors in Mexican-Americans: a moderated mediation analysis

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ABSTRACT

Objectives: The present study investigated the relationships of enculturation and depressive symptoms with health risk behavior engagement in Mexican-American college students and examined how these relationships differed by gender. Previous research has noted consistent gender differences in health risk behavior (e.g. alcohol use, substance use, and risky sexual behavior) among Latina/os, and emphasized the role of U.S. acculturation in this difference. Research examining the role of heritage cultural retention (i.e. enculturation), and including the added influence of mental health variables, such as depressive symptoms, is currently lacking. This study sought to address this gap.

Design: A large sample ($N = 677$) of Mexican-American college students from four universities (located in New York, California, Florida, and Texas) completed an online questionnaire assessing health risk behaviors and corresponding variables.

Results: We found that males who endorsed more behavioral enculturation and depressive symptoms were more likely to engage in health risk behavior than all others in the sample. Contrary to previous literature, no relationship was found between behavioral enculturation and health risk behavior in females.

Conclusion: The current study found behavioral enculturation to be associated with depressive symptoms, and in turn with health risk behaviors among the males in our sample. Additional research will be needed to identify the mechanism underlying the relationship between enculturation and depressive symptoms as well as between depressive symptoms and risky behavior.

1. Background

Latina/os Currently make up 17.4% of the U.S. population, and that percentage is expected to expand to 28.6% by the year 2060 (Colby and Ortman 2015). Given the size and growth of this population, it is important to understand issues impacting their health. An issue of particular importance is health risk behavior. Latina/os have been known to exhibit distinct patterns of engagement in a variety of health risk behaviors (i.e. substance use, alcohol use, and risky sexual behavior) when compared to individuals from other

ethnic groups. For example, it has been suggested that Latina/o adolescents are more likely to use some classes of drugs than White or African-American adolescents (Johnston et al. 2016). Other studies have found that Latina/o adults engage in more problematic drinking (e.g. binge drinking) than other ethnic minority groups (Mulia et al. 2009), and that this may be particularly true for Latino males (Witbrodt et al. 2014). Rates of risky sexual behavior, such as having multiple sex partners or participating in sexual activity without a condom are also higher for Latinos (Sastre et al. 2015).

In recent years, ethnic differences in health risk behavior have been receiving increasing empirical attention. Although the influences underlying these behaviors in Latina/os are diverse, research suggests that acculturative processes may offer a substantial and unique contribution (Epstein, Botvin, and Diaz 2001; Hines and Caetano 1998; Safer and Piane 2007). Other research indicates acculturation may also be related to mental health issues, such as depressive symptoms (e.g. Castillo and Cano 2007). Recent research recognizes the importance of examining potential mediators and moderators of the relationship between acculturation and health risk behavior (e.g. alcohol use; Zamboanga, Tomaso, and Lui 2017). This paper addresses the interplay between a dimension of acculturation (i.e. heritage cultural retention, or, enculturation), depressive symptoms, and gender as they relate to health risk behavior. Although each of these constructs has been studied separately in the literature, the current effort is unique in examining their joint influence on health risk behavior.

1.1. Acculturation/enculturation

Acculturation is the process by which immigrants and their descendants modify their behaviors, beliefs, and identifications of as a result of coming in contact with a receiving host culture (Berry 1997; Schwartz et al. 2010). Rates of acculturation vary across individuals, depending in part on the degree each person values maintaining their heritage culture and desires to become integrated with the host culture (Berry 1997; Lara et al. 2005). As such, acculturation researchers generally view the construct as bi-dimensional (Marín and Gamba 1996; Schwartz et al. 2010). Within this framework, orienting to a mainstream host society (referred to in this paper as *U.S. acculturation*) refers to subscribing to components of a new culture with or without relinquishing aspects of one's heritage culture. *Enculturation*, on the other hand, is the process of retaining or acquiring the practices, beliefs, and identifications of a heritage culture (Weinreich 2009). For the sake of this paper, acculturation will refer to the general process leading to U.S. acculturation and/or enculturation. Scholars have posited that acculturation occurs on several levels, increasing in depth, and that some acculturation measures may be better suited than others to empirically capture a person's alignment with the heritage and/or host culture. For example, a person's chosen source of media (e.g. Spanish language or English language) within a multicultural context can be considered a stronger indicator of the extent to which one is displaying enculturation or U.S. acculturation than the retention or acquisition of historical knowledge associated with either the heritage or host culture (Marín 1992). In addition, some of the more recent research on acculturation suggests that distinct acculturative processes occur within several domains in each of the two dimensions (i.e. U.S. acculturation and enculturation). Specifically, acculturation may occur in values (general beliefs), practices (behaviors), identification, or any combination thereof, and these domains are considered

generally independent of one another (see Schwartz et al. 2010). Because of this, it is important to consider both the dimension and the domain of acculturation being studied when interpreting empirical findings. As suggested by Berry (1997), the adoption of some behaviors can be considered a form of U.S. acculturative adaptation if these behaviors are congruent with the expectations of the host culture. Conversely, individuals may choose to engage in behaviors that are considered more characteristic of their heritage culture. Research on acculturation and health risk behavior supports this line of thought.

Although researchers have increasingly shifted to the empirical examination of U.S. acculturation and enculturation separately (e.g. Ceballos, Czyzewska, and Croyle 2012; Schwartz, Zamboanga et al. 2014), research assessing enculturation in relation to health risk behaviors remains relatively infrequent. The majority of existing studies examining the relations between acculturation and health outcomes have treated acculturation as a single bipolar dimension anchored by enculturation (low acculturation) and U.S. acculturation (high acculturation) rather than treating enculturation and U. S. acculturation separately. This unidimensional conceptualization of acculturation has been linked with higher levels of substance use (Epstein, Botvin, and Diaz 2001), alcohol consumption (Safer and Piane 2007) and risky sexual behavior (Hines and Caetano 1998). However, other studies have found higher levels of U.S. acculturation to be associated with lower levels of some relevant health risk behaviors (e.g. engaging in unprotected sex, Schwartz, Unger, et al. 2014; drug use, Zayas, Rojas, and Malgady 1998), while still others find no direct relationship (e.g. Forster et al. 2013).

Also, when considering the separate domains (e.g. general beliefs, behaviors, identifications) of acculturation mentioned above, studies have shown that each of these domains may relate to health risk behavior in distinct ways (e.g. Schwartz, Unger, et al. 2014; Schwartz, Zamboanga, et al. 2014). Many studies finding relations of health behaviors to enculturation and/or U.S. acculturation have used behavioral indicators of the latter (e.g. behavior as predominantly indicated by language preference, Epstein, Botvin, and Diaz 2001; Raffaelli et al. 2007; Safer and Piane 2007; Zayas, Rojas, and Malgady 1998). In support of this, some research indicates behavioral domains of dimensions of acculturation may be particularly strong predictors of some forms of health risk behavior (Schwartz, Zamboanga, et al. 2014), although the mechanisms relating these behavioral domains to health risk behaviors are unclear. One possible reason for the strength of this association may be due to the levels of abstraction in measurement. That is, two measures based on behavior are assessing the variables at a more similar level of abstraction than one based on behavior and one based on values.

Existing research is further complicated by gender differences in the extant literature on acculturation and health risk behavior. There is some indication these gender differences may be due to Latina/o culture encouraging males to engage in certain behaviors while discouraging females from the same behavior (Gonzalez-Guarda et al. 2011). Indeed, gender has been found to influence the relationship between the acculturative process and alcohol consumption (see reviews by Lara et al. 2005; Zamboanga, Tomaso, and Lui 2017; Zemore 2007). For example, a study of Mexican-American college students found that enculturation was positively associated with heavy alcohol use for males but not females (Zamboanga, Raffaelli, and Horton 2006), while another found that orienting toward the U.S. culture was related to increased alcohol use for Mexican-American females, but not males (Mills and Caetano 2012). Studies treating acculturation as

unidimensional (i.e. anchored at one end by enculturation and the other at US accultura-tion) also show gender differences. One study involving only Latino male participants (Zayas, Rojas, and Malgady 1998), found a negative association between acculturation and drug use. However, those involving both genders (e.g. Epstein, Botvin, and Diaz 2001) typically find the opposite sign. In a similar vein, studies of acculturation and drug use among Mexican-Americans have shown that, although acculturation measured this way is related to increased drug use behavior for both males and females, the relation-ship is markedly stronger for females (Vega et al. 1998). There is also evidence the associ-ation of acculturation with risky sexual activity may differ by gender, with males who are more oriented toward the heritage culture having more sexual partners than their female counterparts (Gonzalez-Guarda et al. 2011). As we describe in the next section, another possible – yet understudied – reason for these differences in the relationship between acculturation and health risk behavior by gender may lie in gender differences in the experience of depressive symptoms.

1.2. Depressive symptoms

Many health risk behaviors have been associated with depressive symptoms and other indices of poor mental health. Alcohol consumption (Taniguchi et al. 2014), substance use (Shi 2014), and risky sexual behavior (Taniguchi et al. 2014) all show positive corre-lations with depressive symptoms. There is some evidence this applies specifically to Latina/o samples as well (Zayas, Rojas, and Malgady 1998). Previous research implies that individuals may use drugs, alcohol, and sex as self-medicating tools to cope with depressive symptoms (e.g. Mauro et al. 2015). Some researchers suggest that, among ethnic minority groups, psychosocial factors such as acculturation may be distal predictors of health risk behaviors (e.g. alcohol use; for a discussion, see Iwamoto 2010). These psy-chosocial factors can be associated with experiences of distress; in turn, this distress may then be more proximally associated with health risk behaviors as individuals attempt to alleviate negative affect.

The broader literature suggests the relationship between depressive symptoms and health risk behaviors may be moderated by gender, but the nature of the relationship is unclear. A study of adolescents found that substance use and risky sexual behavior was associated with depressive symptoms for females, but not males (Waller et al. 2006). On the other hand, additional research suggests that men may be more likely than women to use substances such as alcohol to relieve depressive symptoms or other forms of distress (see Nolen-Hoek-sema 2004). Research suggests that, as in other ethnic groups, Latinas exhibit higher levels of depressive symptoms than their male counterparts (Mendelson, Rehkopf, and Kubzansky 2008; Wight et al. 2005), and that depressive symptoms are associated with engaging in health risk behaviors among Latinos (Zayas, Rojas, and Malgady 1998). However, research examining gender differences in the relationship between depressive symptoms and health risk behaviors in Latina/o populations is not prevalent.

The literature regarding the experience of depressive symptomology during the acculturation process is mixed. Some studies suggest orienting toward the U.S. culture puts individuals at risk of experiencing depressive symptoms and other forms of poor mental health such as psychological distress (e.g. Lorenzo-Blanco et al. 2011; Moradi and Risco 2006). While some studies have shown a positive relationship

between enculturation and these adverse outcomes (e.g. Lorenzo-Blanco et al. 2011), others have found enculturation to be protective against poor mental health (e.g. Cano and Castillo 2010; Lewis-Fernández et al. 2016). Findings from a recent meta-analysis support the need to consider the aforementioned acculturative domains (i.e. values, behavior, identifications) when interpreting the nature of these relationships. Whereas enculturative identity was related to increased positive mental health, the same study showed that behavioral enculturation was positively linked to negative mental health (including depressive symptoms) while other enculturation domains showed no relationship with negative mental health (Yoon et al. 2013). Yoon et al. (2013) discuss several mechanisms (e.g. being subjected to discrimination, isolation from mainstream society) that may underlie the relationship between behavioral enculturation and negative mental health.

Potential gender differences in the relationship between acculturation and depressive symptoms are unclear at this time, partly because many studies do not test for the effect of gender (e.g. Cobb et al. 2016; Lewis-Fernández et al. 2016; Moradi and Risco 2006). A few studies found the direct and indirect effects of both U.S. acculturation and enculturation on depressive symptoms were equivalent across gender (Lorenzo-Blanco and Cortina 2013; Lorenzo-Blanco et al. 2011). However, other research indicates there are indirect links between both dimensions of acculturation and depressive symptoms that may differ between genders (e.g. through Spanish competency pressures; Castillo et al. 2015). In addition, a recent meta-analysis showed enculturation is more strongly associated with positive mental health for females than males (Yoon et al. 2013). Taken together, these findings illuminate a potential for gender differences in the relationship between the acculturation process and depressive symptoms that warrant further attention.

1.3. Present study

Compared to U.S. acculturation, studies examining the role of enculturation in relation to depressive symptoms and health risk behavior are scarce. Therefore, for the current effort we chose to focus on enculturation. Specifically, we sought to analyze the combined influence of gender and depressive symptoms on the relationship between enculturation and health risk behavior among Latina/os via analysis of data originally collected as part of the American Legacy Foundation's Latino College Health Initiative (ALF 2014). As depicted in the conceptual figure (see Figure 1), we tested a conditional process model whereby the moderating influence of gender was assessed at each stage of a model examining the indirect effect of depressive symptoms on the relationship between enculturation and health risk behaviors. Given previous research, we hypothesized that enculturation would be positively related to health risk behavior for the men in our sample, but inversely related for women. Due to previous reviews of the literature (Nolen-Hoeksema 2004), we tentatively expected depressive symptoms to be more strongly related to health risk behavior for the men in our sample than the women. Because of the mixed findings in the extant literature on the relationship between enculturation and depressive symptoms as a function of gender, we did not advance a specific hypothesis about the outcome of this portion of the model.

Following the example of previous studies, we assess enculturation in terms of self-reported behaviors indicating engagement with the culture (i.e. media use, language preference for
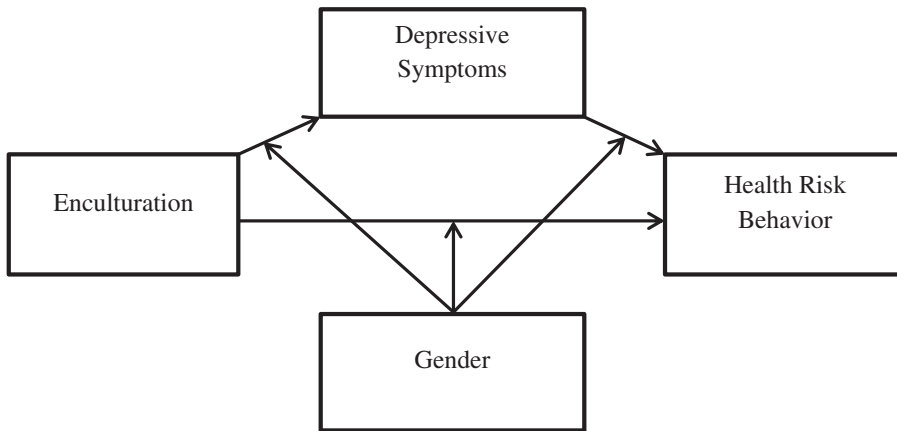
Figure 1. Conceptual figure of the hypothesized model. Enculturation measured via Spanish language engagement (SLE). Gender dummy coded (males = 0).

thinking) as measured through Spanish language engagement (SLE). In recent research, Spanish language use has been a fundamental component in the measurement of enculturation (e.g. Castillo et al. 2015; Schwartz, Unger, et al. 2014; Schwartz, Zamboanga, et al. 2014). There is also a long history of using language preference to assess acculturation (e.g. Epstein, Botvin, and Diaz 2001; Marín and Gamba 1996; Marsiglia et al. 2011; Romero, Martinez, and Carvajal 2007), as language use is a powerful indicator of integration into a culture vis-à-vis socially shared artifacts such as meanings, symbols, etc. (Kuran and Sandholm 2008; Marsiglia et al. 2011). Also, inter-individual differences in the rate of U.S. acculturation and enculturation (Berry 1997) support the need to use measures such as language engagement versus demographic proxies (e.g. immigration generation, nativity status), as the latter imply that each person experiences these processes at an identical pace. Our measure of SLE is designed to be sensitive to these inter-individual differences in enculturation. Further, because our measure of SLE is primarily media based, it represents the extent a person chooses to engage with specific heritage cultural products that are likely informing aspects of behavior relevant to the current study (e.g. gendered media representations of Latina/o engagement in health risk behaviors).

Although we are interested in all Latina/os, the current study focuses on students who identify as Mexican or Mexican-American. People of Mexican descent are the largest Latina/o subgroup in the nation, comprising 63.4% of the Latina/o population as of 2015 (United States Census Bureau 2016) . Although Latina/os are often treated as a single, homogeneous group (e.g. Castillo et al. 2015; Schwartz, Unger, et al. 2014; Schwartz, Zamboanga, et al. 2014), researchers find the relationships between acculturation and health related outcomes vary by Latina/o subgroup (see Lara et al. 2005). Relevant to this study, Latina/o subgroups have been shown to vary on a number of outcomes including depressive symptoms (Crockett et al. 2005), substance use, (Amaro et al. 1990), and alcohol use (Daniel-Ulloa et al. 2014; Marín and Posner 1995; Vaeth, Caetano, and Rodriguez 2012). Furthermore, there is evidence that people of Mexican descent differ from other Latina/o groups in the relation between acculturation and depression (e.g. Lewis-Fernández et al. 2016), between acculturation and substance use (e.g. Kondo et al. 2016), and in the

psychometrics of common measures of depressive symptomology (Crockett et al. 2005). Thus, due to the role of each of these variables in the current study, we considered it both theoretically and methodologically important to focus on a single subgroup of Latina/os. In light of current population numbers and the present state of the literature, we chose Mexican-Americans as our focal group.

2. Method

The current study used a subset of data taken from the American Legacy Foundation's (ALF) survey of Smoking and Tobacco Use among the Latino population (ALF 2014). The purpose of the original project was to examine smoking and related attitudes and behaviors across Latina/o subgroups on college campuses in various regions of the United States (California, Florida, New York, and Texas). At each of the schools selected, Latina/os accounted for a large minority of the student body (25–44%, depending on the school). The entire questionnaire contained measures on multiple topics pertaining to smoking behavior, but also contained measures of health risk behaviors (alcohol use, sexual activity, and marijuana use), acculturation, and depression. Sampling and measures noted in this paper will focus only on the variables that are pertinent for this particular study. For information regarding other measures or findings, see ALF 2014.

2.1. Participants and procedure

Undergraduate students were recruited from one college campus each in Texas, Florida, New York, and California from spring 2011 through spring 2013. The sample consisted both of students recruited through Introduction to Psychology classes (compensated with course credit) and students recruited via flyers and marketing emails (compensated with a $20 gift card). Students recruited through classes completed the questionnaire in computer labs arranged by local researchers. All other participants completed the questionnaire from computers of their choice. All surveys were hosted and completed through SurveyMonkey.com.

The original sample included 2337 participants. Screening for careless responding reduced the N to 2062. Of those, 743 (52% female, mean age = 21) identified as Mexican or Mexican-American. Other Latina/o subgroups were far less common in the obtained sample, contributing to our methodological choice to only focus on Mexican-American participants. Of these, 66 had missing data on one or more variables relevant to the current study and were excluded, resulting in a final sample size of 677.

2.2. Measures

2.2.1. Enculturation: Spanish language engagement (SLE)

Enculturation was measured using 4 items taken from The Bidimensional Acculturation Scale for Hispanics (BAS; Marín and Gamba 1996). The items selected involved engagement with Spanish language media (via television, music, and magazines), and use of Spanish language in discretionary contexts (e.g. thinking in Spanish). As such, the measure captures engagement with Latino cultural products rather than just language use. Given that all students were at English-language universities and thus required to

be competent in and use English daily in class, English competence and use in daily inter-actions were excluded. Supporting this decision, the scale for use of English and English competence had much lower variance (.393) than the discretionary items included as SLE (var = .818). Items are rated on a 4-point scale (1 = Almost Never, 4 = Almost Always). The mean of these items was calculated to obtain the score used in analysis (M = 1.98). The scale had an internal-consistency reliability of α = .891.

2.2.2. Depressive symptoms

Depressive symptoms were measured using the original, 20-item Center for Epidemiologic Studies Depression scale (CES-D; Radloff 1977). The CES-D asks participants to assess their own depressive symptoms for the previous week. The underlying factor structure has been found to fit Mexican/Mexican-American samples well (Crockett et al. 2005). Scores are based on a scale of 0 (rarely or none of the time) to 3 (most or all of the time). Although the default method of scoring the CES-D is to sum the items together, in the interest of presentation and maintaining consistency with the scoring methods used for the other variables in this study, the mean of the scores was calculated (M = .92; range 0–2.55) and used in subsequent analyses. The scale had an internal-con-sistency reliability of α = .902.

2.2.3. Health risk behavior

Health risk behavior was measured as the mean of self-reported frequency of marijuana use (1 item), alcohol use (2 items), and number of sex partners (1 item) within the previous 30 days. Participants responded to each item on a 5-point scale, ranging from 1 (None) to 5 (5 or more times a week/5 or more per week). The scale had an internal-consistency reliability of α = .851.

2.2.4. Covariates

Self-reported age and socio-economic status (SES) were used as covariates during primary analyses. SES was reported using the highest level of education completed by either parent.

3. Results

The analytic framework for the present study was moderated mediation (Edwards and Lambert 2007; Hayes 2013). Data were analyzed using Hayes' (2013) PROCESS macro for SPSS and SPSS version 21. Gender was dummy coded (males = 0). All continuous pre-dictors were standardized using z-scores for each analysis to ease interpretation. All primary analyses were conducted using bias corrected bootstrapped 95% confidence inter-vals with 1000 bootstraps as recommended by Edwards and Lambert (2007). Relevant descriptive statistics for the study's sample can be found on Table 1.

3.1. Preliminary analyses

Previous research shows young adults who are in a committed relationship may have decreased prevalence of some relevant health behaviors (Braithwaite, Delevi, and Fincham 2010). There were no significant effects of relationship status on any of the present study's variables, therefore the variable was not used to exclude cases from

Table 1. Descriptive statistics for sample demographics.

Variable	Both sexes ($n = 741$)	Males ($n = 350$)	Females ($n = 391$)
Location			
Texas	475(64)	206(58.9)	269(68.7)
Florida	90(12.1)	78(22.3)	12(3.1)
New York	8(1.1)	–	8(2.0)
California	168(22.6)	66(18.9)	102(26.1)
Parental education			
≤ H.S. Diploma	102(13.8)	44(22.7)	58(32.4)
≥ 4 yr. Degree	270(36.3)	139(39.7)	131(33.5)
Estimated GPA			
≥ 3.00	151(20.4)	75(21.4)	74(19)
≤ 2.00	97(13.0)	41(11.7)	56(14.3)
Immigration status			
1st generation	128(17.2)	81(23.1)	46(11.8)
2nd generation	199(26.8)	76(21.7)	123(31.5)
3rd generation	171(23)	85(24.3)	85(21.7)
≥ 4th generation	191(25.7)	80(22.9)	111(28.4)
Born in the United States	609(82.0)	268(76.6)	341(87.2)

Note: Values expressed as n(%) or Mean(SD).

further analyses. To assess the validity of combining the four health risk behavior variables into a single scale, we conducted a CFA to examine the fit of these four items to a unidimensional factor. The model fit the data well ($\chi^2 = 38.17$, $p < .001$, CFI = .97, SRMR = .04), and the 4 item scale was retained and used in subsequent analyses. Multiple demographic variables were assessed as potential covariates, including immigration generation, nativity status, age, and SES. Only age and SES exhibited a significant relationship with health risk behavior when included in the hypothesized model, and were thus retained for the primary analysis. The non-significant variables were omitted as recommended by Carlson and Wu 2012.

3.2. Primary analyses

The conceptual model in Figure 1 was entered into PROCESS. The model was tested both with and without age and SES entered as covariates. The interpretation did not differ, so only the former are included here; see Table 2 for detailed numerical results. Significant moderated mediation was found. Examining the individual paths revealed a positive association between SLE and depressive symptoms, and this was significantly moderated by gender. Males who scored higher on SLE were more likely to endorse depressive symptoms than males who scored lower on SLE but the converse was true for females. There was also a positive association between depressive symptoms and health risk behavior, which was again moderated by gender. As expected, males who reported higher levels of depressive symptoms engaged in more health risk behavior than all others in the sample. However, for females there was no relation between level of depressive symptoms and health risk behavior. The overall indirect relationship of SLE to health risk behavior through depressive symptoms was significant for males but not for females.

When accounting for the indirect effect, the remaining direct path between SLE and health risk behavior was significant, positive, and moderated by gender. In line with our hypothesis, the association was positive and significant for males (and overall). It was negative for females, but not significantly so. Overall the model accounted for 6.2%

Table 2. Regression results for moderated mediation.

Predictor	B	SE	t	p	
Depressive symptoms					
Constant	−.296	.102	−2.890	.004	
SLE	.173	.038	4.515	<.001	
Gender	−.046	.075	−.614	.539	
SLE × gender	−.337	.077	−4.373	<.001	
Health risk behavior					
Constant	1.240	.078	15.928	<.001	
SLE	.103	.030	3.475	<.001	
Gender	−.294	.057	−5.189	<.001	
Depressive symptoms	.187	.029	6.419	<.001	
SLE × Gender	.213	.060	3.564	<.001	
Depressive symptoms × gender	.226	.060	3.886	<.001	
Conditional direct effects					
	B	SE	t	LLCI	ULCI
Male (0)	−.524	.215	4.810	.127	.303
Female (1)	.476	.002	.044	−.076	.080
Conditional indirect effects					
Mediator		B	SE	LLCI	ULCI
Depressive symptoms	Male (0)	−.524	.106	.059	.170
Depressive symptoms	Female (1)	.476	.001	−.009	.014

Note: N = 677. Unstandardized regression coefficients reported. Gender dummy coded (Male = 0). Tests of indirect effects conducted using bias-corrected confidence intervals obtained from bootstrap estimates. Bootstrap sample size = 1000. LLCI = lower limit confidence interval, ULCI = upper limit confidence interval.

of the variance in depressive symptoms and 32.23% of the variance in health risk behavior ($R = .249$ and .569, $p < .001$, respectively).

The pattern of findings from our primary hypothesis testing strongly suggested the presence of a three-way interaction at the second stage of the hypothesized model. Therefore, we also performed an exploratory analysis testing a three-way interaction between SLE, gender, and depressive symptoms. Specifically, we allowed SLE to moderate the relationship between depressive symptoms and health risk behavior, and gender moderated this moderation. A significant three-way interaction emerged ($b = −.127$, $SE = .056$, $t = −2.258$, $p = .024$), suggesting that males who are higher in both SLE and depressive symptoms are more likely to engage in higher levels of health risk behavior than other individuals within this sample, see Figure 2. Overall, this model accounted for 24.22% of the variance in health risk behavior ($R = .492$, $p < .001$), with the 3-way interaction term contributing approximately 1% of this variance ($\Delta R^2 = .009$, $p = .004$).

4. Discussion

The present study examined gender differences in the relations of behavioral enculturation (via Spanish language engagement) to depressive symptoms and depressive symptoms to health risk behavior. Our results indicate that behavioral enculturation is associated with depressive symptoms for males but not females, which in turn is associated with health risk behavior for males but not for females. These findings tie together two lines of previous research that suggests enculturation may be related to health risk behaviors for
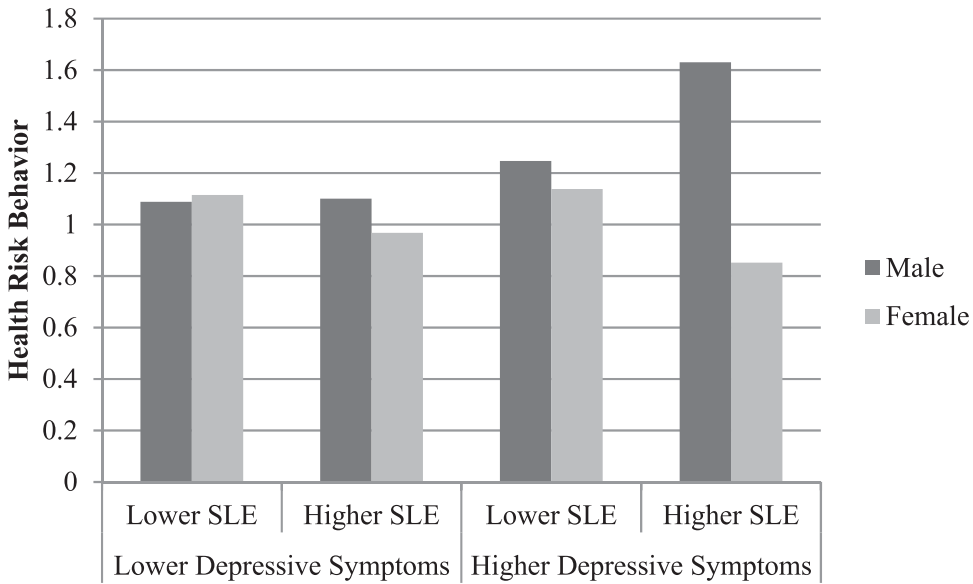
Figure 2. Three-way interaction between SLE, depressive symptoms, and gender on levels of health risk behavior. All continuous predictors are standardized.

Latino males, but not Latina females (e.g. Zamboanga, Raffaelli, and Horton 2006), and that some indices of poor mental health are related to engagement in certain health risk behaviors for males, but not females (Geisner, Larimer, and Neighbors 2004).

Results showed that males in our sample who endorsed more enculturation also reported more depressive symptoms and reported more health risk behavior. Yoon et al. (2013) posit that behavioral enculturation may serve as an indicator that individuals are isolating themselves from U.S. society, or they could be displaying encultural cues in a manner that makes their 'otherness' increasingly apparent, which might inadvertently lead to discrimination. It is important to note that Yoon and colleagues distinguished between behavioral enculturation and linguistic enculturation in the meta-analysis. In their study, linguistic enculturation did not predict poor mental health. However, some studies that include linguistic enculturation use measures that assess multiple facets of language use, such as the affective 'enjoyment' of using the language (e.g. the modified version of the linguistic portion of the ARSMA-II: Cuéllar, Arnold, and González 1995, as used in Choi, Miller, and Wilbur, 2009, and cited by Yoon et al. 2013), or the language spoken with family and friends (e.g. the Short Acculturation Scale for Hispanics; Marín et al. 1987, a popular measure as noted by Yoon et al. 2013 and used by Lewis-Fernández et al. 2016, e.g.). Measures explicitly including an affective component to language use may be more likely to be inversely related to indices of poor mental health. For instance, one's self-reported 'enjoyment' of speaking a certain language may overlap with the same person's global sense of enjoyment, or positive affect. Likewise, measures capturing the language spoken with others may indirectly assess familial and/or intra-ethnic social support. This in turn may buffer the relationship to indices of poor mental health such as depressive symptoms (Rueger et al. 2016) in a way that a linguistic measure without an affective and/or social component does not.

For the present study, we operationalized behavioral enculturation with a measure comprised mostly of items assessing engagement with Spanish language media. Although we did include a language use item in our measure (i.e. how often participants' thoughts were in Spanish), we were careful to ensure it did not include affective or social support components. With this choice in mind, it is possible that for the males in our sample, choosing to engage in Spanish language media either indicated or fostered a sense of detachment from the mainstream U.S. culture and that this detachment led to experiences of psychological distress, as captured by our measure of depressive symptoms. For example, some people may choose to distance themselves from mainstream society as a buffer against experiences of discrimination. These may occur as overt discrimination or more ambiguous discrimination (i.e. micro-aggressions, Huynh 2012). Taken in this context, these findings may map onto the stress-vulnerability framework as applied to ethnic minority populations in relation to health risk behavior (see Iwamoto 2010) wherein behavioral enculturation is conceived as a distal psychosocial predictor of health risk behavior while depressive symptoms may serve as a more proximal predictor. Whether or not the relationship between behavioral enculturation and depressive symptoms can be explained by experiences of perceived discrimination, general discomfort with mainstream culture, or other factors is beyond the scope of the current study. Future research should explore these potential mechanisms, in addition to other parallel mechanisms discussed by Iwamoto (e.g. social cognitive factors such as substance use expectancies and norms; 2010), to provide further clarification to the present findings.

Perhaps the most compelling finding of this study was the moderating effect of gender throughout the mediated model. Depressive symptoms mediated the relationship between enculturation and health risk behaviors, but only for males. As noted by Schwartz, Zamboanga, et al. (2014), 'acculturation often occurs within a gendered U.S. context' (361). These findings are consistent with this claim, and suggest it may be particularly true when accounting for health risk behaviors. Research shows that traditional Latina/o culture socializes males to engage in health risk behaviors (Gonzalez-Guarda et al. 2011), as part of the complex male gender role script *machismo*. Relevant to these findings, previous research suggests that retention of some facets of *machismo* may be related to forms of psychological distress for Latinos in the U.S. (Fragoso and Kashubeck 2000; Nuñez et al. 2015), and that health risk behaviors may occur as a coping mechanism (Gonzalez-Guarda et al. 2010). It must be noted, however, that our findings do not map onto gender role socialization theory for Latinas. *Marianismo* is often considered to be the complex traditional Latina counterpart to *machismo*, portions of which are characterized by purity, submissiveness, and deference (Castillo et al. 2010). Researchers have suggested that adherence to *marianismo* may serve as a buffer against various health risk behaviors, such as substance use (Carranza 2013). We cannot conclude that gender role socialization underlies any of our study's findings, as we did not incorporate specific variables measuring gender role beliefs or gender role identity in our study, which can be considered a limitation. In order to determine the degree these present findings can be explained by traditional Latina/o gender roles, future studies should include specific measures for *machismo* and *marianismo* (see Arciniega et al. 2008; Castillo et al. 2010).

The findings of the current study must be considered in light of some limitations. Because the study is cross-sectional, we cannot draw causal conclusions. Future research

should incorporate these variables within a longitudinal design to determine the extent that Latinos engage in risky behavior following depressive symptoms, experience symptoms following difficulties brought on by health risk behavior, or both. Similarly, it is important that future research examine whether these behaviors follow or precede changes in enculturation. In addition, all measures were self-reported, possibly introducing a degree of social desirability bias. This may be particularly relevant for the risky behavior items as research suggests males may inflate their reports of some risky behavior while females may under-report their levels of the same behaviors (Alexander and Fisher 2003).

Furthermore, this paper only assesses enculturation in terms of heritage cultural practices as denoted by SLE. This was a necessary choice as we were limited by the availability of measures in a pre-existing data set; however, using this data set allowed us to examine our hypotheses in a large, geographically diverse sample. Also, we chose to restrict our analysis to only include a measure of enculturation rather than incorporate a measure of U.S. acculturation. In doing this we were able to isolate a cohesive pattern for males. However, future research should adopt an expanded acculturation framework, assessing each domain of U.S. acculturation and enculturation (Schwartz et al. 2010) as they relate to gender, depressive symptoms, and health risk behavior. Finally, this study only examined these relationships among those who self-identified as either Mexican or Mexican-American. Recent research found variation between Latina/o subgroups pertaining to the relationships between acculturation, depressive symptoms, and substance use (e.g. Kondo et al. 2016; Lewis-Fernández et al. 2016). Future studies would benefit from testing this model across multiple Latina/o subgroups so researchers may be better informed on how these findings may or may not generalize to each Latina/o group. On a related note, this study examined these relationships using a college student sample. Although our sample may represent a slightly lower SES than is typically attributed to college student samples (as indicated by more than 30% of the sample coming from a background where neither parent attended college), these findings may not generalize to other age groups or non-college samples.

Despite limitations, the current study offers a unique perspective into the way gender and behavioral enculturation jointly relate to health risk behavior. Males endorsing higher levels of enculturation also reported greater depressive symptoms and engaged in more health risk behaviors such as alcohol consumption and substance use. The mediation analysis is consistent with the notion that the health risk behaviors were driven in part by psychological distress associated with behavioral enculturation (the indirect path) and in part by other mechanisms linked to behavioral enculturation not assessed (the direct path). However, these relations were not found for females. Additional research should expand upon these findings, increasing the complexity in both design and measures. The Latina/o population is rapidly increasing, creating a growing demand for research addressing the alarming trends in health risk behavior for this group. Findings from the current effort will assist in the calibration of effective intervention programs designed to reduce health risk behaviors in an at risk group.

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