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THE IMPACT OF PRE- AND POST-IMMIGRATION FACTORS ON THE DEPRESSIVE SYMPTOMS AND ALCOHOL USE SEVERITY OF YOUNG ADULT RECENT LATINO/A IMMIGRANTS: EXAMINING THE ROLE OF GENDER AND TRADITIONAL GENDER ROLES

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Vicky Rebecca Vazquez-Barrios

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To: Dean Tomás R. Guilarte
Robert Stempel College of Public Health and Social Sciences

This dissertation, written by Vicky Rebecca Vazquez-Barrios, and entitled The Impact of Pre- and Post-Immigration Factors on the Depressive Symptoms and Alcohol Use Severity of Young Adult Recent Latino/a Immigrants: Examining the Role of Gender and Traditional Gender Roles, having been approved in respect to style and intellectual content, is referred to you for judgment.

We have read this dissertation and recommend that it be approved.

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The dissertation of Vicky Rebecca Vazquez-Barrios is approved.

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Florida International University, 2022

DEDICATION

This dissertation is dedicated to my devoted family, beloved friends, and empathetic mentors who have served as my sources of encouragement and solace throughout my Doctoral journey. Their unwavering support, ongoing insight, and unconditional love has given me the inspiration and grace to continue moving forward during countless moments of despair and affliction. Without this family of support, the completion of my dissertation would not have been possible. I am deeply grateful and moved by each and every one of them. With great appreciation and love, thank you.

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ABSTRACT OF THE DISSERTATION

THE IMPACT OF PRE- AND POST-IMMIGRATION FACTORS ON THE DEPRESSIVE SYMPTOMS AND ALCOHOL USE SEVERITY OF YOUNG ADULT RECENT LATINO/A IMMIGRANTS: EXAMINING THE ROLE OF GENDER AND TRADITIONAL GENDER ROLES

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Over the past decade, there has been a shift in Latino/a immigration patterns to the U.S. including steep increases in South and Central America immigrants. Seeking asylum from political and economic turmoil, many of these immigrants are disproportionately impacted by the compounding conditions of stress, trauma, depressive symptoms, and alcohol use severity (AUS). Most investigations on these conditions have been conducted among Mexican immigrants residing in the U.S. for an extended time period. Far less is known about the cumulative and intersecting effects of these conditions among a diverse group of recent Latino/a immigrants (RLIs) or how cultural factors such as Latino/a traditional gender roles (TGR) may influence these conditions.

The present study examined (1) the cumulative effects of premigration stress/trauma and postimmigration stress on the depressive symptoms of young adult RLIs and the moderating effect of gender on these associations, (2) the cumulative effects

of pre/postimmigration stress on AUS and the respective moderating effects of adherence to TGR and forced migration among RLI men and women, (3) if pre/post immigration stress, forced migration, depressive symptoms, and AUS demonstrated to be a syndemic factor, and (4) the association between adherence to TGR and this syndemic factor. A cross sectional secondary data analysis was conducted using data from a NIAAA funded longitudinal study of N= 540 (N= 271 men, N= 269 women) of RLIs aged 18-34 years old in South Florida (SFL). Hierarchical multiple regression (HMR), moderation analyses, confirmatory factor analysis (CFA), and structural equation modeling (SEM) were employed.

Higher levels of postimmigration stress were associated with higher levels of depressive symptoms and AUS. Gender moderated the association between postimmigration stress and AUS, whereby the association was stronger among men compared to women. Adherence to TGR significantly weakened the association between premigration stress and AUS among men but not for women. A syndemic factor explained the covariance between pre/postimmigration stress, depressive symptoms, and AUS. Adherence to TGR had a significant positive effect on this syndemic factor. These findings support the development of culturally tailored interventions early in the immigration process that address adherence to TGR to mitigate this syndemic among RLIs.

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CHAPTER I. INTRODUCTION

In the past decade, the U.S. Latino/a population has increased to 62.1 million, surpassing the nation's population growth rate by 7% (Krogstad & Noe-Bustamante, 2021). Although this demographic growth has been primarily driven by newborns, foreign-born Latino/a immigrants continue to be the largest immigrant group in the U.S. Historically, Mexican immigrants have accounted for the majority of Latino/a immigrants in the U.S., yet the arrival of recent Latino/a immigrants (RLIs) has grown substantially more varied across country of origin. Shifts in immigration patterns have indicated steep increases in South American and Central American immigrants, largely within the context of forced migration. Specifically, the fastest population growth rate among U.S. Latino/as has come from RLIs with origins in Venezuela, Guatemala, and Honduras (Krogstad & Noe-Bustamante, 2021). According to the National Academy of Sciences Engineering, and Medicine (NASEM, 2019), conditions of forced migration consist of violence, persecution, and national disasters that drive RLIs to cross international borders to seek resolution despite their dire circumstances. Much of these RLIs also experience political, economic, and social exclusion in their countries of origin, making them structurally vulnerable to the social marginalization and emotional suffering associated with the immigration process (Sangaramoorthy & Carney, 2021). Emerging research among Latino/a immigrants has shown how complex challenges both before and after immigrating to the U.S. impacts their mental health and substance use outcomes (Alegria, Alvarez & Dimarzio, 2017; Barton et al, 2021; Clauss-Ehlers, 2019; Garcini et al., 2016; Keller et al., 2017; Sangalang et al., 2018; Subica & Link, 2022; Vos et al., 2021). Even more, recent trends in national immigrant health and health care show that the length of

U.S. residence and documentation status are important predictors of disparate health outcomes (Bustamante et al., 2021). Compared to undocumented Latino/a immigrants residing more than five years in the U.S., undocumented RLIs report lower access to health care (Bustamante et al., 2021).Yet, most of this research has been conducted among Mexican immigrants without considering the context of migration and sociocultural factors that impact health disparate outcomes among RLIs (Alvarez & Dimarzio, 2017; Bustamante et al., 2021; Garcini et al., 2016; Sangalang et al., 2017). Given these recent demographic shifts in immigration patterns to the U.S., the investigation of the unique contextual barriers that influence the integration of a diverse group of RLIs is warranted to ensure that policies are developed to support their transition to the U.S.

Problem Statement

Premigration Conditions. There is evidence demonstrating the differences in the historical, political, and social premigration conditions reported by Latino/a immigrants based on their country/region of origin (Cueno et al., 2021; Keller et al., 2017; Garcini et al., 2016) Conditions such as political and economic turmoil, violence, and persecution that RLIs experience in their country/region of origin have distinguishable implications on the dynamics and complexity of the immigration process (NASEM, 2019). Such contextual migration conditions play a pivotal role in the distinct drivers of immigration to the U.S. and the external and internal barriers that immigrants face. Immigrants who experience forced migration are more likely to be susceptible to the interaction of these conditions, thereby predisposing them to cooccurring mental health disparities (Willen et al., 2017). Forced migration due to such oppressive conditions is characterized by

tremendous reliance on governments to provide stable and secure support (NASEM, 2019). Therefore, such upstream conditions place them not only at a social disadvantage but at a structural vulnerability due to the limited access to resources they may encounter upon arriving to the U.S. Such perpetuation of inequitable support results in the emergence of adverse health disparities among RLIs.

For instance, RLIs from Central America have reported violence as the primary reason they fled their country of origin, while feeling fearful of returning (Keller et al., 2017). Among asylum seeking immigrants from El Salvador, Guatemala, and Honduras, reports of targeted and pervasive violence that were gender based and perpetuated by gangs and state law enforcement has been documented (Cuneo et al., 2021). Whereas reports of exposure to political and war trauma have been reported among RLIs from Mexico (Garcini et al., 2016). This physical and/or psychological violence by an oppressive dominant group which diminishes a group's health protective cultural resources is conceptualized as cultural trauma (Subica & Link, 2022). According to Subica & Link (2022), immigrants exposed to such premigration traumatic experiences of violence become socially disadvantaged and predisposed to persistent stress and social exclusion, resulting in lasting mental health disparities across spatial and generational domains (Subica & Link, 2022). Indeed, premigration stressors such as financial instability and lack of access to health care have been associated with depressive symptoms and alcohol use severity (AUS) (Sangalang et al., 2018; Vos et al., 2021). Yet, research is still needed that disentangles the persistent challenges that diverse groups of RLIs experience both before and after immigrating to the U.S. in order to inform

culturally relevant prevention strategies that target adverse mental health outcomes in this population.

Postimmigration Conditions. Previous research has suggested that exposure to such premigration stressors and trauma may exacerbate the stress RLIs experience after immigrating to the U.S. (Barton et al., 2021; Li, 2016). The oppressive violence and economic instability that drives RLIs to forcibly migrate to the U.S. makes them structurally vulnerable to the social marginalization they experience at every stage of their journey (Vilches Hinojosa, Rivas Castillo, & Vidal De Haymes, 2021). Upon arriving to the U.S., Latino/a immigrants may experience heightened stress during their adaption and integration to American society. Findings from a systematic review conducted by Bekteshi & Kang (2020) indicate that the determinants of acculturative stress among Latino/a immigrants in the U.S. includes both external and internal contexts (Figure 1). The external context consists of historical, economic, development, and cultural conditions. Within the historical context, forced migration, discrimination, and fear of deportation due to documentation status were associated with an increased risk of acculturative stress. In turn, in the economic context, income and financial constraints were associated with greater acculturative stress. Moreover, within the developmental context, being female, not married, having low English proficiency, and living in the U.S. for a short duration of time were all risk factors for acculturative stress. Within the cultural context, pressure to retain one's culture increased the risk of acculturative stress among Latino/a immigrants.

Per the findings of Bekteshi & Kang (2020)'s literature review, the internal contextual variables influencing the acculturative stress of Latino/a immigrants includes

structural and psychological conditions (Figure 1). According to Bekteshi & Kang, structural conditions such as adherence to traditional gender roles (TGR) have significantly predicted acculturative stress among Latino/a immigrants. In the psychological context, appraisal of any stressor related to the immigration process and acculturation were also associated with higher levels of acculturative stress. Therefore, by investigating these contextual drivers of stress among Latino/a immigrants, their compounded effect on the predisposition of mental health disparities among RLIs can be identified to better inform future prevention efforts.

Depressive Symptoms & Alcohol Use Severity (AUS). As a consequence of these cooccurring external and internal conditions, Latino/a immigrants become susceptible to depressive symptoms and AUS. Latino/a immigrants who are in the early stages of adjusting to American culture are more susceptible to psychological distress and substance use compared to those more established immigrants that have resided in the U.S. for a longer period of time (Alegria, Alvarez, & Dimarzio, 2017). A study conducted by Alegria and colleagues (2017) found that acculturative stressors such as changes in language, social status, support system, and racial/ethnic discrimination were more strongly associated with depressive symptoms and substance use among RLIs compared to Latino/a immigrants residing in the U.S. for an extended period of time. This increased risk of depression as a result of acculturative stressors has been shown to be a correlate for AUS (Alegria, Alvarez & Dimarzio, 2017; Cobb et al., 2020; McCabe et al., 2021). Moreover, Latino/a immigrants who report being foreign born and young adults (aged 18-40) have shown to be at a greater risk of depression when exposed to acculturation (Bridges et al., 2021). Bridges and colleagues suggest that the conflicting stressors, shifts

in immigration patterns to the U.S., and distinct reasons for immigration that foreign born young adults experience may explain these previous research findings. Given the more recent immigration patterns to the U.S. from countries in South/Central America (e.g. Venezuela), foreign born young adult RLIs may be experiencing a compounded burden of stress as a result of the trilateral trauma they experience with forced migration, which has been associated with increased depressive symptoms (Clauss-Ehlers, 2019). According to Clauss-Ehlers (2019), forced migration of RLIs brings about trilateral stress that is characterized by the sudden distress to leave their country of origin, stress of leaving loved ones behind, and the uncertainty accompanied by relocating to new country. Such traumatic experiences evident among immigrants from the Northern Triangle (El Salvador, Honduras, and Guatemala) arriving to the U.S. has been documented as a risk factor for depressive symptoms (Keller et al., 2017).

De La Rosa and colleagues (2020) provide evidence of differential AUS outcomes among Latino/a immigrants by country/region of origin and documentation status. Compared to immigrants from Cuba, immigrants from Central and South American origins report greater AUS. Yet, specific immigration related stressors such as racial/ethnic discrimination were found to be associated with greater AUS among Cuban RLIs in SFL (Cano et al., 2017). Additionally, undocumented immigrants report greater AUS compared to their documented counterparts (De La Rosa, 2020). Still, little is known about how exposure to premigration trauma/stress and postimmigration stress impact the depressive symptoms and AUS outcomes among a diverse group of documented and undocumented RLIs.

Gender and Latino/a Traditional Gender Role (TGR) Expectations. A growing body of literature suggests the need to consider the role that gender and adherence to Latino/a TGR plays on the mental distress and alcohol use outcomes among Latino/a immigrants (Alegria, Alvarez, & Dimarzio, 2017; Balagopal et al., 2021; Caplan, 2007; Ertl et al., 2019; Garcini et al., 2016; González-Guarda et al., 2016; Nuñez et al., 2016; Perrotte, Bauman & Knight, 2018; Perrotte & Zamboanga, 2019; Pollack & Levant, 1995). Previous studies conducted on depressive symptoms show that Latina immigrant women who experience greater perceived stress report significantly higher psychological distress such as depressive symptoms compared to men (Alegria, Alvarez, & Dimarzio, 2017; Caplan, 2007; Garcini et al., 2016). Furthermore, although research indicates that alcohol use has decreased among U.S. Latino/a immigrants, there is evidence showing distinct drinking behaviors by gender. Compared to U.S. Latino women, U.S. Latino men report greater AUS (frequency, quantity, binge drinking episodes) both before and after immigration (De La Rosa et al., 2020). Among adult Latino/a immigrants exposed to premigration trauma, men were at a higher risk for AUS compared to women (Ramos et al., 2017). Moreover, RLI men who report greater exposure to cultural stressors such as discrimination were at a higher risk of AUS compared to women (Cano et al., 2017).

According to Gonzalez-Guarda et al. (2016), the interplay of these health disparities among RLIs may be influenced by the sociocultural expectations of Latino/a TGR. Specifically, adherence to machismo dimensions of Latino/a TGR have been associated with higher levels of stress, depressive symptoms and AUS among Latino/a immigrants (Balagopal et al., 2021; Cano et al., 2016; Ertl et al., 2019; Lee et al., 2019;

Nuñez et al., 2016; Perrotte, Bauman, & Knight, 2018; Perrotte & Zamboanga; 2019). Machismo norms typically promote the use of alcohol as a positive coping tool to deal with emotional distresses and as a means for social bonding among Latino men (Lee et al., 2019). In comparison, Latino/a norms such as marianismo ascribe women as familial caretakers and chaste, thereby making the consumption of alcohol not socially acceptable as a coping tool for emotional distress. Accordingly, the majority of the research among Latina women has found that higher adherence to Latino/a TGR has been associated with lower AUS (Perrotte & Zamboanga, 2019). Yet, in the context of elevated stress levels, Latina women who adhere to Latino/TGR have been found to have higher AUS (Perrotte, Bauman, & Knight, 2018). Whereas much of the research on the impact of Latino/a TGR among men has found that higher adherence to machismo TGR is associated to higher levels of AUS and greater emotional distress (Perrotte & Zamboanga, 2019). Notably, little is known about how premigration trauma/stress and postimmigration stress impact the alcohol use and depressive symptoms among a diverse group of RLIs, and how gender and adherence to Latino/a TGR impact these relationships.

Young Adulthood. Research on young adults has recurrently shown that changes undergone during this developmental period makes them particularly susceptible to stress, depressive symptoms, and AUS (Lee et al., 2019; Perrotte & Zamboanga, 2019; Potochnick & Perreira, 2010; Schubert et al., 2017; Toro et al., 2018). During young adulthood, individuals endure transitional life changes such as navigating their independence, careers, and expanding their relationships, which are all influenced by their socioenvironmental conditions (Levinson, 1986; Schubert et al., 2017). Young adult RLIs may experience additional stressors during this developmental period associated

with challenges in Latino/a gender role expectations, and immigration related stressors, both of which have been associated with an increased risk of depressive symptoms and AUS in this population (Lee et al., 2019; Potochnick & Perreira, 2010; Schubert et al., 2017; Toro et al., 2018). In a recent systematic review and meta-analysis conducted by Bridges and colleagues (2021) on the relation between acculturation and depressive symptoms, findings showed that the positive association between these two conditions were stronger among younger adults (aged 18-49) compared to older adults (aged 50+). In the context of recently arrived young adults, understanding the intertwined nature of acculturative stress, depressive symptoms, and AUS while considering the role of adherence to Latino/a TGR has yet to be formally examined. The present study examines the cooccurrence of premigration trauma/stress, postimmigration stress, depressive symptoms, AUS, and TGR among a heterogenous group (e.g. documented and undocumented status; with countries of origin from Venezuela, Colombia, Guatemala, Honduras, and Cuba) of young adult (aged 18-34 years old) RLIs in SFL.

Purpose of the Study

The present study addresses these gaps in the literature by focusing on the interrelatedness of premigration stress/trauma, postimmigration stress, depressive symptoms, and AUS, and how adherence to Latino/a TGR and gender impacts the syndemic vulnerability of a heterogenous group of young adult RLIs in SFL. Findings from this study will be used to provide preliminary evidence that informs the development of culturally tailored interventions that address gender and TGR to reduce the vulnerability that young adult RLIs face in relation to premigration stress/trauma, postimmigration stress, depressive symptoms, and AUS.

Theoretical Framework

The present study was guided by three theoretical frameworks: the acculturative stress, the gender role strain, and the syndemic framework. The acculturative stress framework posits that stress can stem from challenges associated with the immigratory process which can cause adverse mental health outcomes among immigrants (Berry, 2001). These sources of stress include socioeconomic strains, language and health care barriers, discrimination, and navigating new norms and values in their host culture (Sam & Berry, 2010). Prior research has indicated that acculturative stress levels can be influenced by the premigration experiences that Latino/a immigrants are exposed to, which vary by country of origin (Caplan, 2007). The contextual drivers of immigration to the U.S. such as forced migration may be predicated by traumatic experiences due to violence and political turmoil, thereby exacerbating the stress levels that RLIs experience. From this perspective, aims 1 and 2 were guided by the acculturative stress framework to analyze the interrelatedness of the conditions of premigration stress/trauma and postimmigration stress on the respective outcomes of depressive symptoms and AUS among RLIs. Specifically, pre and postimmigration experiences examined in the present study included undergoing poverty, lack of access to health care, and forced migration in the country of origin, as well as postimmigration experiences of discrimination, lack of access to health care, fears related to documentation status, and language barriers. How these factors influenced depressive symptoms and AUS and the role that gender and Latino/as TGR played in these associations are the overarching focus on aims 1 and 2.

Theoretical foundation for this research is also grounded in gender role strain theory. According to the gender role strain theory, any discrepancy in meeting the

expectations of socially conditioned TGR can result in additional internalized distress (Pollack & Levant, 1995). This manifestation of stress can vary by environmental factors such as changing masculine ideologies and gender role duties. Gender roles are typically characterized as the stereotypical standards and expectations that distinct genders should comply with. In turn, any gender role discrepancy that results in internalized emotional tension can lead to externalized behaviors such as increased alcohol consumption, which may vary in severity (Pollack & Levant, 1995). This positive association between adherence to Latino/a TGR and greater emotional distress and AUS has been shown among previous studies conducted among Latino/a immigrants (Balagopal et al., 2021; Cano et al., 2016; Ertl et al., 2019; Lee et al., 2019; Nunez et al., 2016; Perrotte, Bauman, & Knight, 2018; Perrotte & Zamboanga; 2019). Latino/a TGR encourage men to use alcohol as a coping mechanism to stress, whereas for women, alcohol consumption is not perceived as an acceptable coping mechanism (Perrotte & Zamboanga, 2019). For the present study, in the context of compounded stress, adherence to Latino/a TGR would have a positive effect on the association between premigration stress/trauma and postimmigration stress on AUS among RLI men and negative effect among RLI women.

Aims 3 focuses on examining pre/postimmigration stress, forced migration, depressive symptoms, and AUS as intersecting conditions and the impact of TGR on this proposed syndemic. The syndemic framework posits that marginalized populations become structurally vulnerable to diseases as a result of multilevel factors that cooccur, interact, and intensify their total disease burden. Based on a socioecological anthropological perspective, this framework emphasizes the investigation of mutually reinforcing dynamic conditions that perpetuate health disparate outcomes. These

syndemic conditions are caused by the interplay of historical, political, economic, environmental, and sociocultural forces that coincide synergistically in clusters and contribute to excessive morbidity and mortality rates among the affected groups. (Singer et al., 2006). The syndemic phenomena acknowledges that health disparate outcomes among marginalized populations do not occur singularly, and therefore should not be investigated in silos. Using an upstream approach to study the presence of social inequalities, the concept of syndemics emphasizes the notion that structural inequalities lead to health disparities due to the interaction of marginalized indicators (Singer, 2017; Singer & Rylko-Bauer, 2021). These marginalized indicators include economic instability, the historical-political context of migration, loss of systems and social support, racial/ethnic discrimination, structural violence/trauma, and barriers to access to health care among minority populations (Singer, 2017; Singer & Rylko-Bauer, 2021; Willen et al., 2017). Such compounded conditions of social marginalization and inequitable health determinants exacerbates the ongoing structural vulnerability that recently arrived immigrants have to the development of the syndemic of pre/postimmigration stress, premigration trauma, depressive symptoms, and AUS. For the present study, the syndemic framework was used to test if pre/postimmigration stress, premigration trauma, depressive symptoms, and AUS demonstrated to be a syndemic factor among young adult RLIs in SF, while considering the role of gender and adherence to Latino/a TGR.

Research Question.

The present study (1) examined the cumulative effects of premigration stress/trauma and postimmigration stress on the depressive symptoms of young adult

RLIs and the moderating effect of gender on these associations, (2) examined the cumulative effects of pre to postimmigration stress on AUS and the respective moderating effects of adherence to Latino/a TGR and forced migration by gender, (3) tested if these conditions demonstrated to be a syndemic factor, among men and women; and (4) determined the association between adherence to Latino/a TGR and this syndemic factor. The first hypothesis was that greater levels of premigration stress/trauma and postimmigration stress would be positively associated with depressive symptoms and these associations would be moderated by gender among young adult RLIs. Second, we hypothesized that greater levels of pre to postimmigration stress would be positively associated with AUS and these associations would be stronger for men and weaker for women that adhere to Latino/a TGR, and experience forced migration. Additionally, a single syndemic factor would explain the covariance between these intersecting conditions, and greater adherence to Latino/a TGR would be positively associated with this syndemic factor.

Aims/Hypotheses. ***Aim 1:*** To examine the cumulative effects of premigration stress/trauma and postimmigration stress on the depressive symptoms of young adult RLIs and the moderating effects of gender on these associations. ***Hypothesis 1a:*** Greater levels of premigration stress/trauma and postimmigration stress would be positively associated with the depressive symptoms of young adult RLIs. ***Hypothesis 1b:*** The association between premigration stress/trauma and depressive symptoms would be stronger for women compared to men.

Aim 2: To examine the cumulative effects of pre to postimmigration stress on the AUS of young adult RLIs and the respective moderating effects of adherence to Latino/a

TGR and forced migration by men and women. ***Hypothesis 2a:*** Greater levels of premigration stress and postimmigration stress would be positively associated with the AUS of young adult RLIs. ***Hypothesis 2b:*** These associations would be stronger for men and weaker for women that adhere to Latino/a TGR. ***Hypothesis 3b:*** These associations would be stronger for men and weaker for women that experience forced migration.

Aim 3: To test if premigration stress/trauma, postimmigration stress, depressive symptoms, and AUS demonstrate to be a syndemic factor and to determine the association between adherence to Latino/a TGR and this syndemic factor among young adult men and women RLIs. ***Hypothesis 3a:*** A single syndemic factor would explain the covariance of premigration stress/trauma, postimmigration stress, depressive symptoms, and AUS among young adult RLIs. ***Hypothesis 3b:*** Greater adherence to Latino/a TGR would be positively associated to this syndemic factor among young adult RLIs.

Methods

The present study was a cross-sectional secondary data analysis of baseline (T1) and T2 data from a National Institute of Health (NIH)-National Institute on Alcohol Abuse and Alcoholism (NIAAA) funded longitudinal study examining pre to postimmigration drinking and driving trajectories among young adult RLIs in the U.S. (R01AA025720-PI Romano/Sanchez). Study participants consisted of a unique sample population *N*=540 (*N*= 271 men, *N*= 269 women) young adult RLIs between the ages of 18-34 years residing in SFL who have been in the U.S. for less than one year. Recruitment for participants was conducted via collaborative partnerships between a research center at a public university and community-based agencies serving immigrants in SFL. Referrals were obtained from community-based agencies in MDC that provide

legal services to refugees, asylum seekers, and other documented and undocumented immigrants. Additionally, recruitment efforts were conducted by a community health worker (CHW) at locations often frequented by RLIs in MDC, including local Latino/a festivals, health fairs, soccer fields, social service agencies, and health care facilities. A respondent-driven sampling (RDS) approach was used to recruit participants. RDS has been employed in previous studies as an effective method to recruit hard to survey populations including RLIs and unauthorized immigrants (De La Rosa, 2012, 2020; Garcini et al., 2020; Khoury, 2020).To be included in the study, participants had to be between 18-34 years old, immigrated to the U.S. from a Latin American country within one year, and residing for a minimum of three years.

Data Collection. Baseline data (T1) were collected between 2018-2019 through in person interviews and T2 data were collected in 2020 via in person and telephone interviews. Study data were collected and managed using the Research Electronic Data Capture (REDCap) tools hosted at the FIU. Informed consent was obtained from all study participants prior to enrolling in the study. The questionnaire was administered by trained bilingual research staff for approximately 1.5 hours per session. All interviews were conducted in Spanish, audio-recorded, and reviewed for quality assurance purposes by trained research staff. Each participant received a cash incentive of $50 and T1 and $55 at T2 for their contribution to the study. All data were protected following the Protection of Human Subjects guidelines and the study was approved by the Institutional Review Board (IRB) at the Florida International University in SFL.

Data Analysis

Aim 1 & 2 Analysis. Data analysis for aim 1 of the study utilized T1 data and aim 2 utilized T2 data. Hierarchical multiple regression (HMR) and moderation analysis were employed using SPSS version 27 to address aims 1 and 2 of the present study. First, HMR was conducted to examine the influence of the primary exposure variables (premigration trauma/stress and postimmigration stress) on the respective outcome variables (depressive symptoms and AUS). The HMR model was developed by entering the predictor variables in each block in the following order: 1) socio-demographic variables in the initial block, 2) premigration stress and/or premigration trauma in the second block, and 3) postimmigration stress in the third block to conclude how they each distinctively predicted the outcome variable in conjunction with the other predictors. Categorical predictor variables were entered into the model using dummy coding. Model variance for each outcome variable was calculated based on ΔR^2, the variance of each predictor variable added to the HMR. The standardized beta coefficients from the final model were evaluated using $p \leq 0.05$ as an indication of statistical significance.

Second, moderation models were computed using PROCESS version 3.5 in SPSS (Hayes, 2018) to examine the interaction effect of each moderator variable on the associations between each predictor and outcome variable. For aim 1, the interaction effect of gender on the associations between 1) premigration stress, 2) premigration trauma, and 3) postimmigration stress and the outcome variable (depressive symptoms) was examined. For aim 2, the respective interaction effects of adherence to Latino/a TGR and forced migration on the associations between 1) premigration stress and 2) postimmigration stress and the outcome variable (AUS) was assessed separately among

women and men. Each model used 10,000 bootstrap iterations and controlled for the socio-demographic variables that were significant in the HMR model. Categorical variables were entered into the model using the multi-categorical option in PROCESS. The moderation analyses consisted of (a) a multiple regression that replicated the variance of the HMR model, (b) computing interaction terms between the moderator variable and each predictor variable (e.g. premigration stress x gender, premigration trauma x gender, postimmigration stress x gender, premigration stress x adherence to Latino/a TGR, postimmigration stress x adherence to Latino/a TGR, premigration stress x forced migration, postimmigration stress x forced migration), and (c) the conditional effect for each interaction term in relation to the respective outcome variable (depressive symptoms and AUS) was estimated. Missing data were treated using list-wise deletion in SPSS.

Aim 3 Analysis. Data analysis for aim 3 of the study utilized T2 data. Descriptive statistics were conducting using SPSS version 27. Confirmatory factory analysis (CFA) and structural equation modeling (SEM) were employed using Mplus version 8.6 (Muthen & Muthen, 2017) to address aim 3 of the present study. First, CFA was conducted to test if the five factor predictors, premigration trauma, premigration stress, and postimmigration stress, depressive symptoms, and AUS indicated to be a single latent factor (a syndemic factor). According to recommendations made by Kline (2016), model fit was assessed using the following indices: a $\chi 2$ test of model fit ($p >$ .05), the root mean square error of approximation (RMSEA; cutoff of < .06 to declare satisfactory fit), the comparative fit index (CFI; cutoff of $\geq$ than .95), and the standardized root mean square residual (SRMR; cutoff of < .05). Missing data were

handled using the default weighted least square parameter estimator (WLSMV) for categorical and continuous dependent variables (Muthen & Muthen, 2017).

Preliminary descriptive statistics were conducted across all variables. Third, SEM was employed to test the association between the primary exogenous variable (adherence to Latino/a TGR) and the latent (syndemic) factor comprised of the five factor indicators (premigration trauma, premigration stress, postimmigration stress, depressive symptoms, and AUS). Potential covariates tested in the model were gender, age, education, income, country/region of origin, marital status, immigration status, and months in the U.S. The following significant covariates were included in the model: gender, educational attainment, and income level. Overall model fit was assessed using the aforementioned recommendations by Kline (2016). Missing data were handled using the default maximum likelihood estimator (ML) for continuous dependent variables (Muthen & Muthen, 2017).

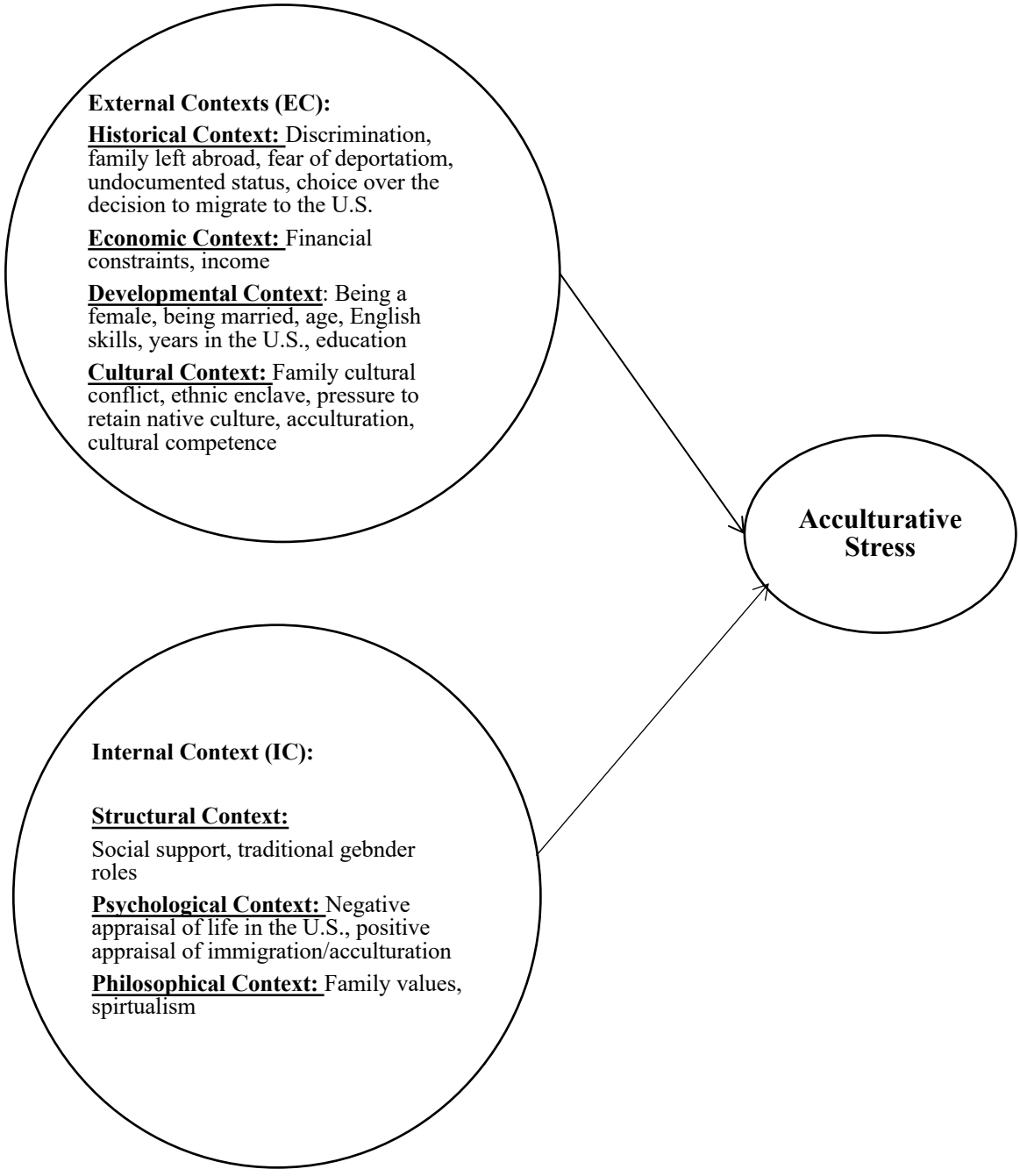
Significance

As part of the Healthy People 2030 initiative, the U.S. Department of Health and Human Services' (DHHS, 2020) has declared their overarching goals to include the elimination of health disparities and achievement of health equity, with a specific focus on the reduction of alcohol misuse and the improvement of mental health (DHHS, 2020). In order to achieve these goals, research is needed that examines the contextual conditions that affect the alcohol use and mental health of various subgroups of young adult Latino/a immigrants in all stages of their migratory experience. Given the shifting Latino/a immigration patterns to the U.S., there is a pressing need to contextualize the unique stressors faced by RLIs before and after immigrating to the U.S. and its impact on

depressive symptoms and AUS in this population. Additionally, research has yet to elucidate the cooccurrence of these factors and how gender and adherence to Latino/a TGR may influence this proposed syndemic vulnerability among young adult RLIs. The present study has the potential to provide strategic recommendations for the planning and development of tailored community based interventions that address the cumulative impact of immigration stress, depressive symptoms, AUS, while considering the influence of gender and adherence to Latino/a TGR on these relationships among RLIs in SFL.

Figure 1

Conceptual Acculturative Stress Framework



Note. External and internal contextual conditions that have been identified to influence the acculturative stress of Latino/a immigrants (Bekteshi & Kang, 2020).

CHAPTER II. MANUSCRIPT I

Depressive Symptoms Among Recent Latinx Immigrants in South Florida: The Role of Premigration Trauma and Stress, Postimmigration Stress, and Gender

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Abstract

In the past decade, recent Latinx immigrants (RLIs) from South and Central America have arrived in the United States seeking asylum from countries affected by war, political upheaval, and high crime and poverty rates. The premigration stress and trauma they experience are further compounded by postimmigration stress due to discrimination, lack of access to health care, and financial instability. Evidence suggests RLIs who experience such stress and trauma have an increased risk of developing depressive symptoms. We examined the combined effect of premigration stress and trauma and postimmigration stress on postimmigration depressive symptoms; we also explored the moderating effect of gender. Hierarchical multiple regression and moderation analyses were conducted on a cross-sectional sample of 540 young adult RLIs (age range: 18–34 years, 50.2% men) in South Florida. Higher levels of postimmigration stress, $\beta = .37$, $p < .001$, were associated with increased postimmigration depressive symptoms. No significant associations emerged between premigration stress and trauma and postimmigration depressive symptoms. Moderation analyses revealed no significant interaction effect of gender. Post hoc analyses indicated that country/region of origin moderated the relation between postimmigration stress and depressive symptoms such that the association was stronger

among Venezuelan, β = 1.51, $p < .001$; other South American, β = 1.06, $p < .001$; and Central American/Mexican RLIs, β = 1.38, $p < .001$, compared with Caribbean RLIs, β = .45, $p = .122$. These findings suggest that interventions focused on addressing postimmigration stress early in the immigration process can potentially lower subsequent depressive symptoms among RLIs.

Introduction

Depressive Symptoms Among Recent Latinx Immigrants in South Florida: The Role of Premigration Trauma and Stress, Postimmigration Stress, and Gender

Over the past decade, there has been a shift in Latinx immigration patterns to the United States, indicating steep increases in South and Central American immigrants. In particular, the rates of immigrants arriving from the South American country of Venezuela have increased 75%, whereas rates of immigrants coming from the Central American country of Guatemala have increased by 37% (Noe-Bustamante, 2019). Many of these immigrants arrive seeking asylum from political upheaval and devastatingly high rates of crime and poverty in their country of origin (Clauss-Ehlers, 2019). In addition, these individuals arrive in the United States amidst a tension-filled sociopolitical climate with changing immigration policies and advancing negative rhetoric surrounding Latinx immigration (Ornelas et al., 2020). As such hostile conditions persist, the need to navigate experiences of premigration stress and trauma is further compounded by postimmigration stressors, including discrimination, language barriers, lack of access to health care, fears of immigration status, and financial instability (Alegría et al., 2017). The combined effects of the stressful and traumatic conditions Latinx immigrants experience throughout their migratory journey are likely to exacerbate social,

environmental, and systemic disparities associated with adverse mental health in this population (Garcini et al., 2016).

The findings from previous studies have shown that Latinx immigrants exposed to the compounding conditions of pre- and postimmigration stress and trauma are at an increased risk of developing mental health problems. Among adult Latinx immigrants of mostly Mexican descent and living in the United States for a duration of time, premigration traumatic experiences due to war and political and institutional violence were shown to be associated with postimmigration mental illness (Sangalang et al., 2018). In addition, postimmigration stress due to threats of deportation and anti-immigrant sentiments was shown to increase their risk of mental distress. In a sample of Latinx immigrants of mostly Mexican descent in the United States, premigration stressors (e.g., trauma exposure, high poverty levels, a stressful move) along with postimmigration experiences (e.g., entering the United States without documentation, racial/ethnic discrimination) were shown to contribute to the development of depressive symptoms (Ornelas & Perreira, 2011). Similar findings were illustrated in the National Latino and Asian American Study (NLAAS), which included Latinx immigrants exposed to trauma and stress before and after immigration who had been living in the United States for an extended period (Li & Anderson, 2015).

Evidence suggests that immigrants who endure stress after immigrating to the United States are at an increased risk of experiencing depression (Jannesari et al., 2020); the risk is even higher for immigrants living in the country for less than 10 years (Alegría et al., 2017). However, existing research on the interrelations of stress and trauma among Latinx immigrants has been conducted mostly among Mexican immigrants residing in the

United States for an extended period of time. Far less is known about the dynamics of the combined effects of these conditions among foreign-born recent Latinx immigrants (RLIs) of South and Central American or Caribbean descent. With depression having emerged as the leading cause of disability worldwide and a major contributor to the total health burden (World Health Organization, 2020), addressing the co-occurring factors that contribute to depression among vulnerable populations, such as young adult RLIs, should be of precedence in public health research.

Furthermore, among adults in the United States, the prevalence of depression has been found to be highest among young adults (U.S. Department of Health and Human Services, 2019). As such, existing research has highlighted the importance of examining the factors that influence depressive symptoms in this age group (Potochnick & Perreira, 2010; Schubert et al., 2017; Toro et al., 2018). During this developmental period, individuals undergo transient maturational processes (e.g., independence, starting careers, navigating relationships, starting families) that are influenced by their biological and environmental risk factors (Schubert et al., 2017). Environmental risk factors, such as the immigration-related stressors Latinx immigrants in the United States are forced to cope with postmigration, have been found to increase the risk of depressive symptoms among young adults (Potochnick & Perreira, 2010). In addition to these stressors, young adult Latinx immigrants are exposed to filial responsibilities they may perceive to be unfair while identifying as a minority group member during important developmental years, both of which can increase their compounded susceptibility to depressive symptoms (Schubert et al., 2017; Toro et al., 2018). This may be particularly relevant for this population due to the emphasis their culture places on familism, which includes

maintaining close family ties and heeding family obligations. However, most studies examining depressive symptoms among young adults have not included RLI samples from diverse origins. The current study aimed to fill this gap by examining the influence of premigration stress and trauma and postimmigration stress on postimmigration depressive symptoms in young adult RLIs from South American, Central American, and the Caribbean.

Theoretical framework

Based on the theoretical underpinnings of acculturation, the reciprocal interaction of stressful and traumatic experiences that individuals encounter during the immigratory process to the United States can be attributed to the concept of "acculturative stress." The acculturative stress framework has been well documented in the literature as a theoretical approach to better understanding how stress caused by the immigratory process impacts an immigrant's mental health (Berry, 2001). Sam and Berry (2010) asserted that acculturation consists of a shared process between two cultures, requiring both phases of assimilation and maintenance. During this integrative process of adjusting to a new culture, any form of loss results in acculturative stress (Cervantes et al., 1991). These acculturative stressors may be due to financial and language barriers, lack of access to health care, unemployment, loss of social ties, discrimination, documentation status, and the political climate (Caplan, 2007). In conjunction with these stressors, Caplan (2007) affirmed the need to consider contextual variables (e.g., ethnicity and gender) that shed light on premigration experiences and differential exposures to stress.

Cabassa's (2003) framework on acculturation considers the context of premigration experiences to better understand the mechanisms that affect an immigrant's

adaption to the United States. This framework specifies the importance of acknowledging the lived experiences prior to immigration, including both societal- and individual-level factors. Societal factors include the political, economic, and social environments to which immigrants are exposed in their country of origin. Individual factors include demographic characteristics before immigrating to the United States, reasons for immigration, and loss of significant others. Based on Cabassa's framework, the current study examined how both premigration and postimmigration factors influence differential depressive symptoms among RLIs in the United States. Specifically, we considered the social, economic, and political stressors and trauma in addition to factors such as gender and socioeconomic status. Hence, both previously discussed frameworks guided the current study in its exploration of the associations between premigration stress and trauma and postimmigration stress on postimmigration depressive symptoms among RLIs of diverse national origins, with consideration given to the potentially moderating role of gender.

Premigration experiences

Our review of the literature on Latinx immigrants helped us to identify factors throughout the migration process that predispose Latinx immigrants to common mental health problems In particular, previous research has suggested that premigration experiences are linked to elevated mental distress among Latinx immigrants (Garcini et al., 2016). Additionally, existing studies have indicated that the types of premigration stress Latinx immigrants experience vary by ethnicity (Keller et al., 2017; Ornelas & Perreira, 2011; Revollo et al., 2011). For example, in a sample of Mexican RLIs living in North Carolina, Ornelas and Perreira (2011) found that those exposed to high levels of poverty or stressful experiences before immigrating to the United States were more likely

to report depressive symptoms. Among Spanish immigrants, Revollo et al. (2011) found that acculturative stress related to homesickness and psychosocial stress was associated with depression. Furthermore, in a study conducted among RLIs from mostly Central American countries, Keller et al. (2017) found that 83% of participants immigrants cited violence as the reason they fled their country, and 90% of the sample reported being afraid to return to their native country; among these RLIs exposed to premigration trauma, 24% met the diagnostic criteria for depression.

The premigration trauma RLIs experience in their country of origin may include any incidence of psychological or physical violence (Centers for Disease Control and Prevention [CDC], 2015). According to Caplan (2007), premigration traumatic experiences due to violence and political disarray may cause forced migration, which, in turn, heightens one's level of perceived stress. Such an elevated awareness of stress due to premigration experiences may be more apparent among RLIs compared with other immigrants. RLIs who migrate from Venezuela and Central America to the United States have a history of forced migration due to political and economic crises, which can result in trilateral migration trauma (Clauss-Ehlers, 2019). Clauss-Ehlers (2019) asserted that all phases of the immigratory process, including premigration experiences of trauma caused by a sudden move and postmigration stress in a host country, interact and intensify the overall burden of these experiences. Even more, exposure to ongoing stress following migration may reactivate trauma-related symptoms an individual experienced premigration (Peña-Sullivan, 2020).

Notably, previous studies have also recognized the prevalence of posttraumatic stress disorder (PTSD) among Latinx immigrants exposed to traumatic experiences and

elevated levels of stress in their country of origin (Keller et al., 2017; Ramos et al., 2017; Sangalang et al., 2018). In a sample of RLIs arriving in the United States from Central America, approximately 32.5% reported symptoms of PTSD in response to the violence and persecution they experienced (Keller et al., 2017). Although an examination of PTSD outcomes was outside of the scope of the present study, it should be noted that once in the United States, Latinx immigrants are further exposed to postimmigration stressors that not only increase their risk of depressive disorders but also can contribute to PTSD (Sangalang et al., 2018).

Postimmigration stress

After immigration, Latinx immigrants undergo stress due to documentation status, pervasive fear of deportation, social isolation, and perceived racial discrimination, all of which are associated with common mental health difficulties such as depression (Li, 2016; Lorenzo-Blanco & Schwartz, 2020; Ornelas et al., 2020; Schwartz et al., 2018; Torres et al., 2018). In a sample of Mexican immigrants with undocumented status, participants who reported a history of trauma exposure were more likely to meet the criteria for clinically significant psychological distress after immigrating to the United States compared with non–trauma-exposed participants (Garcini et al., 2017). Having an undocumented immigration status predisposes immigrants to become members of marginalized, low-income communities and diminishes their access to affordable health care services that can help them cope with these traumatic events. Without specialized mental health care, undocumented immigrants are at an increased risk of adverse mental health symptoms (Ornelas et al., 2020).

In addition to uncertainty and concern regarding documentation status, RLIs experience sudden changes in language, exposure to discrimination, and acculturative stress, which places them at an increased risk of depression (Alegría et al., 2017). Contrary to the immigrant paradox hypothesis cited in previous literature (Alegría et al., 2017), findings from recent studies conducted among Mexican immigrants have demonstrated that immigrants who arrived in the United States in 2015 or later suffer from significantly poorer mental health compared with immigrants who have resided in the United States for a longer period (Gearing et al., 2020). Newly arrived immigrants experience the immediate changes caused by the restrictive immigration policies and intensifying anti-immigrant rhetoric, thereby placing them at a higher risk of adverse mental health outcomes. Yet, little is known about these associations among RLIs from diverse countries of origin and whether these risk factors and their associations with depressive symptoms differ by gender.

Existing literature suggests that the level of acculturative stress and psychological well-being Latinx immigrants experience can differ by gender (Alegría et al., 2017; Garcini et al., 2016; Ramos-Sánchez, 2020). Compared with Latinx immigrant men, Latinx immigrant women are more likely to report depressive symptoms (Garcini et al., 2016). Previous studies have found that during the acculturative process, women generally experience higher levels of perceived stress (Caplan, 2007). This increased perception of stress can lead to changes in levels of mental distress levels, resulting in depression (Caplan, 2007). Alegría et al., (2017) reported that RLI women who experienced stressors due to documentation status and ethnic discrimination had an increased risk of depression compared with their male counterparts. Additionally, the fear

of deportation imposed by stringent immigration policies in the United States can further exacerbate the myriad forms of stress Latinx immigrant women experience; indeed, Latinx women have been shown to have an increased risk of mental distress (Ramos-Sánchez, 2020). To better alleviate the compounded suffering that RLIs experience, it is critical that these pronounced acculturative stressors be addressed by considering the aforementioned contextual domains that contribute to their impact.

To expand upon the current literature on mental health disparities among Latinx immigrants, the current study was conducted to elucidate the distinctive mental health conditions RLIs experience during their immigration process to the United States. Recommendations for future research practices have noted the need to evaluate the health impact of the social factors at different stages of migration (Ornelas et al., 2020). Although limited, previous research has examined the contextual challenges of stressful and traumatic experiences throughout the immigration process among Mexican immigrants or immigrants who have resided in the United States for longer periods. Existing research has also recognized the co-occurrence of both PTSD and depression stemming from these traumatic and stressful experiences among Latinx immigrants in the United States (Keller et al., 2017; Ramos et al., 2017; Sangalang et al., 2018). There remains a need to examine the compounding effect that premigration stress and trauma and postimmigration stress have on depressive symptoms in foreign-born RLIs of diverse national origins. Additionally, little is known about how gender may impact these associations.

The aim of the present study was twofold. We first aimed to examine the combined effect of premigration stress and trauma and postimmigration stress on

postimmigration depressive symptoms in a sample of adult RLIs. In addition, we aimed to examine the moderating effect of gender on these associations. We hypothesized that (a) higher levels of premigration stress and trauma and postimmigration stress would be positively associated with postimmigration depressive symptoms and (b) the association between premigration stress and trauma and postimmigration stress and postimmigration depressive symptoms would be stronger for women compared with men. To our knowledge, this was the first study to examine the combined effect of premigration stress and trauma and postimmigration stress on postimmigration depressive symptoms in a sample of young adult RLIs while considering the moderation effects of gender on this association.

Method

Participants

The sample consisted of 540 (n = 271 men, n = 269 women) RLIs who were recruited for the present study through collaborative partnerships between a research center at a public university and community-based agencies serving immigrants in South Florida (SFL). Purposive and snowballing sampling methods were used to recruit participants. Referrals were obtained from community-based agencies in Miami-Dade County (MDC) in SFL that provide legal services to refugees, asylum seekers, and other documented and undocumented immigrants. In addition to these referrals, recruitment efforts were conducted by a community health worker (CHW) at locations often frequented by RLIs in MDC, including local Latinx festivals, health fairs, soccer fields, social service agencies, and health care facilities.

To be eligible for study inclusion, individuals were required to (a) have been living in the United States for 1 year or less, (b) be between 18 and 34 years of age, (c) have immigrated from a Spanish-speaking Latin American country, (d) self-identify as a man or woman, (e) have authorized or unauthorized immigration status, (f) be living for the first time in the United States, (g) be willing to participate in a 2-year study, (h) be willing to provide corroborative sources in the United States and their country or region of origin, and (i) currently reside in and plan to stay in MDC for at least 2 years.

Procedure

Data for the current study represent a secondary data analysis of baseline data from a larger parent longitudinal study examining pre-to-post immigration drinking and driving trajectories among young adult RLIs in SFL who were early in the immigration process. Baseline data were collected between 2018 and 2019 through face-to-face interviews. Study data were collected and managed using the Research Electronic Data Capture (REDCap). Informed consent was obtained from all study participants prior to study enrollment. A questionnaire was administered by trained bilingual research staff using a tablet computer; each interview lasted approximately 1.5 hr. All surveys were conducted in Spanish and completed at a confidential, safe location agreed upon by both the interviewer and participant. Each participant received a cash incentive of $50 (USD). The interviews were audio-recorded and reviewed for quality assurance by trained research staff. Data were protected following the Protection of Human Subjects guidelines and the study protocol was reviewed and approved by the Social and Behavioral Institutional Review Board of the Florida International University (FIU) in SFL.

Measures

Sociodemographic characteristics

A self-report questionnaire was used to collect information sociodemographic characteristics. Variables included gender (0 = woman, 1 = man); age (18–34 years); educational attainment (1 = high school or less, 2 = some training after high school, 3 = bachelor's degree or higher); monthly income level (0 = $999 or less, 1 = $1,000–$1,999, 2 = $2,000–$2,999, 3 = $3,000 or more); employment status (1 = employed, 2 = not employed); marital status, which was recoded as a binary variable (0 = single [single, divorced, separated or widowed], 1 = not single [in a relationship or married]); immigration status, which was recoded as a binary variable (0 = undocumented [without papers, expired visa], 1 = documented [permanent resident, student visa, dependent on someone else's visa, asylum, temporary resident, temporary work visa, tourist visa, temporary protected immigrant)]; country or region of origin (0 = Venezuela, 1 = other South American country, 2 = Central America or Mexico, 3 = Caribbean), and months in the United States (0–12 months).

Premigration stress

Premigration stress was assessed using five items from the Premigration Stress subscale of the 73-item Hispanic Stress Inventory–2 (HSI-2), Immigrant Version (Cervantes et al., 2016). The self-report Premigration Stressors subscale includes items on the frequency and appraisal of stressors Latinx individuals experience before immigrating to the United States. The scale has demonstrated satisfactory internal consistency and expert-based content and concurrent validity (Cervantes et al., 2016) and shown good psychometric properties in Latinx samples. Participants were asked to

endorse whether they had experienced a particular stressor, with responses scored as 0 for "no" and 1 for "yes." If a participant endorsed a stressor, they were asked to respond to a follow-up question regarding how stressful they perceived that experience to be, scoring answers on a 5-point Likert scale ranging from 1 (*not at all*) to 5 (*extremely*). A sum composite score of the frequency ratings (i.e., sum) and appraisal ratings (i.e., mean) was calculated (range: 1–10), with higher scores reflecting higher levels of premigration stress. As directed by the scale developers, stress frequency items that were not endorsed were coded as 1 (*not at all stressful*) for the appraisal score. In the present sample, Cronbach's alpha for the HSI-2 Premigration Stress subscale was .85.

Premigration trauma

Premigration trauma was measured using one item from the two-item Immigration Trauma Scale to assess the occurrence of psychological or physical violence before immigrating to the United States. The scale is informed by the CDC's Guidelines for Mental Health Screening (2015) for newly arrived refugees. Participants responded either "no" (0) or "yes" (1) to the following question: "Did you leave your country because of violence or because of threats to the health and safety of yourself or your family?" A response of "yes" was used to indicate the presence of premigration trauma.

Postimmigration stress

Postimmigration stress was assessed using four subscales from the self-report HSI-2: Immigration-Related Stress (nine items), Health Access Stress (eight items), Discrimination (11 items), and Language-Related Stress (nine items). These subscales are used to assess the frequency and perception of stressors experienced by Latinx after immigrating to the United States. The scale has demonstrated satisfactory internal

consistency as well as expert-based content and concurrent validity and has been used in Latinx samples (Cervantes et al., 2016). Participants were first asked whether they had experienced a particular stressor, with responses scored as 0 for "no" and 1 for "yes." If an individual endorsed a stressor, they then rated their perception of how stressful that stressor or event was, scoring responses on a Likert scale ranging from 1 (*not at all*) to 5 (*extremely*). A sum composite score of the frequency (i.e., sum) and appraisal items (i.e., mean) was calculated (range: 1–57), with higher scores reflective of higher levels of stress. As directed by the scale developers, stress frequency items that were not endorsed were coded as 1 (*not at all stressful*). In the present sample, Cronbach's alpha for the HSI-2 Immigration-Related Stress, Health Access Stress, Discrimination, and Language-Related Stress subscales were .81, .87, .81, and .81, respectively.

Postimmigration depressive symptoms

The 10-item self-report Center for Epidemiological Studies–Depression scale (CES-D-10) was used to assess symptoms of depression. Participants were asked to rate items based on past-week symptom frequency, scoring answers on a 5-point Likert scale ranging from 0 (*rarely or none of the time*) to 3 (*all the time*). CES-D sum scores range from 0 to 30, with scores of 16 or higher indicating probable clinical depression and higher scores reflecting more severe depressive symptoms. The scale has demonstrated high internal consistency, good test–retest repeatability with RLIs, and has been validated with other self-report measures of depression as well as clinical ratings of depression (Radloff, 1977). In the present sample, Cronbach's alpha for the CES-D-10 was .82.

Data analysis

We used IBM SPSS (Version 27) to perform all three stages of the statistical analysis. First, a preliminary data analysis was conducted using descriptive statistics across all variables. Second, hierarchical multiple regression (HMR) was conducted to determine the extent to which the primary exposure variables (i.e., premigration stress and trauma and postimmigration stress), influenced the outcome variable (i.e., postimmigration depressive symptoms). Predictor variables were grouped and entered into the HMR model in the following order to assess if certain variables predicted depressive symptoms in conjunction with the other predictors: Sociodemographic variables (i.e., gender, age, educational attainment, monthly income level, marital status, immigration status, country or region of origin, months in the U.S.) were entered in the first block, premigration stress and trauma were entered into the second block, and postimmigration stress was entered into the third block. It should be noted that categorical variables were entered into the model as dummy-coded variables (i.e., 0 or 1) using a reference group. The variance of the outcome variable of postimmigration depressive symptoms was calculated by the variance of each predictor variable added to the model using R^2 change. Standardized beta coefficients from the final model were examined, with p values less than .05 indicating statistical significance. Post hoc follow-up analyses were also conducted to examine how each of the four postimmigration stress subscales independently predicted depressive symptoms in the model.

In the final step, moderation analyses were conducted using SPSS PROCESS macro (Version 3.5; Hayes, 2018) to examine the interaction effects of gender on (a) premigration stress, (b) premigration trauma, and (c) postimmigration stress on postimmigration depressive symptoms. A moderation analysis used 10,000 bootstrap

iterations and was tested by (a) performing a multiple regression to replicate the variance explained by all the predictor variables included in the HMR model, (b) estimating interaction terms between gender and the predictor variables (i.e., Premigration Stress x Gender, Premigration Trauma x Gender, Postimmigration Stress x Gender), and (c) estimating conditional effects for each respective interaction term in relation to postimmigration depressive symptoms. Each of the moderation analyses controlled for the sociodemographic variables used in the HMR. The PROCESS macro uses listwise deletion to handle any missing data, and the most missing data on any variable was small (n =15). A one-way analysis of variance (ANOVA) was conducted for any significant interaction to test for group differences by applying a Bonferroni test for multiple comparisons, with p values less than .05 indicating statistical significance. Post hoc moderation analyses were conducted to test potential interaction effects of significant sociodemographic variables from the HMR (i.e., country or region of origin, monthly income level, and educational attainment) on the respective associations between postimmigration stress and depressive symptoms. Variables were entered using the multicategorical variable option in PROCESS, and interaction terms (i.e., Postimmigration Stress x Other South American Country, Postimmigration Stress x Central American/Mexican, Postimmigration Stress x the Caribbean) were automatically computed with a reference coding group (e.g., Venezuela). Significant findings are reported in the results herein.

Results

The mean participant age was 27.46 years (*SD* = 5.01; range: 18–34 years), and all individuals had immigrated to SFL within the past 12 months. The average duration of time each participant lived in the U.S. was 6 months. Overall, 67.0% (*n* = 360) of the participants met the clinical threshold for depressive symptoms. The study sample represented recent immigrants from Venezuela (29.3%, *n* = 158), other South American countries (33.3%, *n* = 180), Central American countries and Mexico (26.7%, *n* = 144), and the Caribbean (10.6%, *n* = 57). Approximately 81.6% (*n* = 436) of the participants were documented, 18.4% (*n* = 98) were undocumented, 39.1% (*n* = 211) had a high school diploma or less, 23.7% (*n* = 128) had completed some training after college, and 36.9% (*n* = 199) had a bachelor's degree or higher. Regarding monthly income level, participants reported the following: 25.2% (*n* = 136) earned $999 or less, 36.9% (*n* = 199) earned $1,000–$1,999, 23.3% (*n* = 126) earned $2,000–$2,999, and 13.1% (*n* = 71) earned $3,000 or more. Additional demographic characteristics, stratified by gender, can be found in Table 1. Bivariate correlations between variables are reported in Table 2.

HMR analysis

Table 3 displays the results from the HMR analysis. The results indicated a significant positive association between postimmigration stress and depressive symptoms. No significant associations were found between premigration stress and trauma and postimmigration depressive symptoms. Approximately 21.1% of the cumulative variance of postimmigration depressive symptoms could be attributed to all predictor variables entered in the regression model. For Block 1, the sociodemographic variables accounted for 8.1% of the variance in depressive symptoms. Block 2 included premigration stress and trauma and accounted for 11.6% of the variance in depressive

symptoms. Block 3 included postimmigration stress and explained 21.1% of the variance in depressive symptoms. Standardized beta coefficients from the final regression model showed statistically significant associations between depressive symptoms and having a bachelor's degree or higher, having a monthly income of $3,000 or more, and being from the Caribbean.

The results of the post hoc follow-up analyses of the effects of the HSI-2 postimmigration stress subscales revealed that the inclusion of immigration-related stress in addition to the sociodemographic variables and premigration stress and trauma accounted for 18.1% of the variance in postimmigration depressive symptoms, $R^2 = .18$, $F(16, 508) = 7.03$, $p < .001$. The addition of stress related to health care access accounted for 19.4% of the variance in depressive symptoms, $R^2 = .19$, $F(17, 507) = 7.20$, $p < .001$. The inclusion of stress related to discrimination accounted for 21.8% of the variance in depressive symptoms, $R^2 = .22$, $F(18, 506) = 7.82$, $p < .001$, and the addition of language-related stress accounted for 21.9% of the variance in depressive symptoms, $R^2 = .22$, $F(19, 505) = 7.46$, $p < .001$. Scores on HSI-2 postimmigration stress subscales related to immigration, $\beta = .20$, $p < .001$; health care access, $\beta = .10$, $p = .041$; and discrimination, $\beta = .17$, $p < .001$, were statistically related to depressive symptoms.

Moderation analysis

The results of the moderation analyses showed no significant interaction effects for gender. Post hoc moderation analyses demonstrated that there were significant interaction effects by country or region of origin for the association between postimmigration stress and depressive symptoms. Country or region of origin accounted for 1.4% of the variance in depressive symptoms, $\Delta R^2 = .01$, $F(3, 520) = 3.07$, $p = .028$,

for the association between postimmigration stress and depressive symptoms. As shown in Figure 1, the conditional effects of postimmigration stress by country or region of origin indicated significant positive associations among RLIs from Venezuela, $\beta = 1.51$, $p < .001$; other South American countries, $\beta = 1.06$, $p < .001$; and Central America and Mexico, $\beta = 1.38$, $p < .001$, but not the Caribbean, $\beta = .45$, $p = .122$. The results of the one-way ANOVA indicated that there was a statistically significant difference between groups, $F(3, 534)=3.35$, $p = .019$. The Bonferroni test revealed that postimmigration depressive symptoms were statistically significantly higher for RLIs from Venezuela ($M = 19.09$, $SD = 5.56$), $p = .017$, and other South American countries ($M = 18.92$, $SD = 5.77$), $p = .027$, compared with those from Central America and Mexico ($M = 18.38$, $SD = 5.79$) and the Caribbean ($M = 16.47$, $SD = 4.99$). There was no statistically significant difference between RLIs from Central America and Mexico and the Caribbean, $p = .186$. Additionally, no significant interaction effects emerged for education or income.

Discussion

The present study explored the interrelations among premigration stress and trauma, postimmigration stress, and depressive symptoms in young adult RLIs while considering the potential moderating effect of gender. As hypothesized, the findings indicate that higher levels of postimmigration stress were associated with higher levels of depressive symptoms. Contrary to our hypotheses, no significant association emerged between premigration stress and trauma and postimmigration depressive symptoms, and moderation analyses revealed no significant interaction by gender.

The study results partially supported our hypothesis regarding an expected positive association between postimmigration stress and depressive symptoms. However,

there was no support for our hypotheses that premigration stress and trauma and postimmigration depressive symptoms would be positively, significantly associated and that this association would be strong among female RLIs compared with male RLIs. Previous research has indicated that many immigrants forced to migrate from their home country due to political or economic instability experience heightened emotional distress (Garcini et al., 2017; Li & Anderson, 2016; Ornelas et al., 2020; Sangalang et al., 2018). However, premigration stress and trauma did not appear to be significantly associated with postimmigration depressive symptoms in the present sample. One possible explanation for these results is that the recent immigrants exposed to premigration stress and trauma may have experienced depressive symptoms in their home country and not the United States. As a result, more recent influences of postimmigration stress (e.g., discrimination, language barriers, lack of access to health care, fears due to immigration status, financial instability, and loss of social support) and sociodemographic factors (e.g., income) may have had a more immediate influence. Another reason for these results is that RLIs may not have experienced high degrees of symptom severity in their home country. Previous studies have documented the prevalence of PTSD among Latinx immigrants exposed to stressors in their countries of origin along with elevated depression levels (Keller et al., 2017; Ramos et al., 2017; Sangalang et al., 2018). For the present study, participants did not report high levels of exposure to premigration stress, but 67.0% of the sample met the clinical cutoff for postimmigration depressive symptoms. As a result, other factors that were not assessed in the present study, such as PTSD symptoms, may have influenced the elevated depression levels in this sample.

Future studies should explore levels of premigration stress and PTSD and their associations with postimmigration depressive symptoms among RLIs.

As hypothesized, the present results indicate that postimmigration stress significantly predicted postimmigration depressive symptoms. In particular, the combined effect of postimmigration stress was driven mostly by immigration-related stress (e.g., documentation status, fear of deportation), followed by stress related to discrimination and health care access. The proximal environmental, social, and societal postimmigration stressors RLIs face are likely related to postimmigration depressive symptoms because of the intensified current emotional toll of these existing challenges. Specifically, societal stress due to documentation status and perceived discrimination may cause RLIs to become socially excluded due to the anti-immigrant sentiment in the United States. As noted in a study conducted among Venezuelan RLIs in SFL, historical positive perceptions of affluent RLIs may change the way new waves of RLIs with lower income levels are received (Schwartz et al., 2018). Additionally, without documents for authorized entry, RLIs may not be eligible to receive health care coverage for mental health services that may help them cope with this stress. Such difficulties may result in increased psychological distress during the process of adapting to a new host country in addition to high levels of stigma associated with seeking mental health services, both of which can lead to depressive symptoms. Consistent with previous research (Alegría et al., 2017; Garcini et al., 2016; Li, 2016; Revollo et al., 2011; Sangalang et al., 2019), these findings suggest immigration stress is positively associated with depressive symptoms in the postimmigration context among Latinx immigrants. It should be noted that although there was a significant association between postimmigration stress and depressive

symptoms, overall, participants did not endorse high levels of postimmigration stress. This can be attributed to the fact that SFL has a well-established immigrant-receiving community with cultural and linguistic support for RLIs. Future research should examine these associations in less established immigrant-receiving communities while also addressing the stigma among RLIs that surrounds seeking mental health services.

Contrary to our expectations, gender did not alter the effect of postimmigration stress on depressive symptoms. Based on prior work demonstrating that Latina immigrant women exposed to acculturative stress report higher levels of depressive symptoms compared to their male counterparts (Alegría et al., 2017; Garcini et al., 2016; Ramos-Sánchez, 2020), we posited that gender would interact with these conditions. However, women included in these previous samples reported higher levels of socioeconomic disadvantage due to low educational attainment compared to the women in the present sample, who had higher levels of educational attainment. This is likely due to the large number of Venezuelan RLIs in the present sample, as RLIs from Venezuelan immigrants tend to have the highest rates of education compared with other Latinx subgroups in the United States (Noe-Bustamante et al., 2020). Additionally, the lack of an interaction effect between gender and postimmigration stress on depressive symptoms suggests that other contextual factors may impact this association, such as income level, country or region of origin, and documentation status. Post hoc tests showed that country or region of origin moderated the association between postimmigration stress and depressive symptoms such that compared with RLIs from the Caribbean, most of whom were from Cuba, stronger effects were observed for RLIs from Venezuela, other South American countries, Central America, and Mexico. These results are not surprising given that

Cubans are currently less likely to experience forced migration than immigrants from Venezuela and Central America (Claus-Ehlers, 2019). Venezuelans and Central Americans who undergo forced displacement as a result of the political, economic, and criminal violence in their country are more vulnerable to the lack of protection and security that an immigration status imposes. Consequently, higher levels of exposure to stressors while departing and migrating from one's country of origin, coupled with relocation-related stressors, can lead to elevated depressive symptoms. Moreover, examining the potential mechanism that adherence to gender roles has on the association between postimmigration stress and depressive symptoms may explain potential differences in outcomes in this population. Prior work among Latinx populations has demonstrated that adherence to gender roles increases the effect of stressors on depressive outcomes (Acosta et al., 2020). Components of Latinx gender roles may cause negative cognitive emotional regulatory practices during the process of coping with stress and depressive symptoms (Nuñez et al., 2016). Future studies are needed to examine the role that adherence to gender roles plays in the association between postimmigration stress and depressive symptoms among RLIs across diverse national origins.

Overall, the present study contributes to the limited literature available on the association between premigration trauma and stress and postimmigration stress on depressive symptoms among RLIs in SFL. First, our analysis focused exclusively on the contextual challenges experienced by RLIs of both documented and undocumented status. By focusing on RLIs, the impact of the early transitional period to the United States can be considered as a factor in their overall mental well-being. Second, our analysis was based on a sample population about whom little data currently exist with

regard to premigration experiences. The present study's focus on premigration experiences among Latinx immigrants of diverse origins provides information that reflects potential hardships to which immigrants are exposed in their home country.

The present results should be interpreted in light of the study's limitations. First, the cross-sectional nature of the study did not allow us to assess causality. Thus, future studies should employ a longitudinal study design to consider the temporal effect of stress and trauma on depressive symptoms. Second, the use of purposive and snowball sampling methods to recruit RLIs in SFL does not ensure a representative sample. More research is needed with samples representative of other immigrant populations in less established immigrant-receiving communities (e.g., Maryland or Virginia) in the United States. Third, the measures used relied on self-report data, which can lead to response bias. Fourth, participants were asked to recount premigration experiences, introducing the possibility of recall bias. However, the recency of immigration maximized participants' capacity to collect accurate data. Fifth, the parent study did not account for any coping resources that may have influenced depression outcomes. Additionally, the assessments of trauma exposure included in the parent study did not account for trauma type or severity. Future studies in this population should take inventory of the specific coping resources used and the specificity of trauma exposure to better understand how these factors may influence depressive symptoms. Finally, because the parent study only included data on postimmigration depressive symptoms, there was no way to test the immediate outcomes of premigration trauma and stress. Forthcoming studies should collect data on premigration depressive symptoms and conduct a longitudinal analysis of the influence of trauma and stress on depressive symptoms.

Despite these limitations, the current study provides fundamental knowledge on the combined effect of premigration stress and trauma and postimmigration stress on depressive symptoms in young adult RLIs and sheds light on the sociocultural mechanisms that immigration-related stress and trauma have on the prevalence of mental health disparities among RLIs in SFL. The present findings can be used to identify modifiable targets for psychosocial and structural behavioral interventions for RLIs. Clinicians, including social workers, counselors, and nurses who work with patients in immigrant-receiving communities, should screen for pre- and postimmigration stress. Considering stress experienced before and after immigration can aid in the development of comprehensive and culturally sensitive mental health programs that help RLIs build the coping skills they need to adapt to these conditions. Previous research has suggested that higher levels of resilience may help counteract the use of maladaptive emotion regulation strategies that cause depressive symptoms among Latinx immigrants in SFL (Cano et al., 2020). Further, findings from this study can be used to provide immigration policy reform recommendations that focus on allocating funding for the surveillance of these conditions as well as for community resources in immigrant-receiving communities. Recommendations should be made with a focus on educated RLIs early in their immigration process who have limited access to affordable and culturally tailored resources.

Open Practices Statement

The study reported in this article was not formally preregistered. The data nor the materials have been available on a permanent third-party archive. Any requests for data or materials can be sent via email to the lead author at vvazq031@fiu.edu.

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Table 1

Descriptive statistics for study variables

	Women (n = 269)				Men (n = 271)							
Variable	*n*	%	*M*	*SD*	*n*	%	*M*	*SD*	χ^2	*t*	*N*	*df*
Employment status												
Employed	155	58.3			175	64.6			2.25		537	1
Unemployed	111	41.7			96	35.4						
Educational attainment												
High school or less	96	36.0			115	42.4			2.56		538	2
Some training after high school	65	24.3			63	23.2						
Bachelor's degree or higher	106	39.7			93	34.3						
Monthly income level (USD)												
≤ $999	70	26.6			66	24.5			10.10*		532	3
$1,000–$1,999	112	42.6			87	32.3						

$2,000–$2,999	49	18.6	77	28.6			
≥ $3,000	32	12.2	39	14.5			
Marital status							
Single	145	54.1	141	52.2	.19	538	1
Not single	123	45.9	129	47.8			
Immigration status					2.27	534	1
Documented	208	79.1	228	84.1			
Undocumented	55	20.9	43	15.9			
Country/region of origin							
Venezuela	90	33.5	68	25.2	10.53*	539	3
Other South American country	93	34.6	87	32.2			
Central America or Mexico	56	20.8	88	32.6			
Caribbean	30	11.2	27	10.0			
Premigration trauma exposure							
Yes	178	66.7	185	68.3	.16	538	1
No	89	33.3	86	31.7			

Age (years)	27.19	5.09	27.73	4.91	-1.25	537
Months in the United States	6.43	3.15	5.90	3.27	1.89	537
Premigration stress (HSI-2)	3.26	2.27	2.83	2.08	2.26*	537
Postimmigration stress (HSI-2 subscales)	12.74	7.28	12.51	8.12	.35	537
Immigration-related	4.62	3.11	4.66	3.29	-.16	537
Health access	2.22	2.01	2.27	2.37	.01	537
Discrimination	2.22	2.37	2.27	2.41	-.23	537
Language-related	3.67	2.68	3.35	2.77	1.37	537
Postimmigration depressive symptoms (CES-D-10)	19.05	5.89	18.06	5.43	2.04*	537

Note. HSI = Hispanic Stress Inventory; CES-D-10 = Center for Epidemiological Studies Depression scale (10 items).
*$p < .05$. **$p < .01$.

Table 2

Bivariate correlations for variables used in regression analyses

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. Depressive symptoms	-	.40**	.08*	.16**	.03	-.11	-.06	-.06	-.17**	.13**	.01	-.07*
2. Postimmigration stress		-	.13**	.28**	.05	0	-.30*	-.01	-.23**	.06	.10*	.01
3. Premigration trauma			-	.25**	.03	-.26**	0	.11**	0	.15**	.07	.02
4. Premigration stress				-	-.02	-.04	-.06	.02	-.08*	.05	.08*	-.09*
5. Months in U.S.					-	.06	-.07	.06	.11**	.03	.12**	-.08*
6. Country/region of origin						-	-.10*	-.04	-.11**	-.22**	.10**	.10*
7. Immigration status							-	.02	.12**	.14**	-.06	.06
8. Marital status								-	.07*	.20**	.37**	.02
9. Monthly income level									-	.03	-.06	.08*
10. Educational attainment										-	.35**	-.06
11. Age											-	.05
12. Gender												-

Table 3

Regression coefficients from the final model predicting post-immigration depressive symptoms

Variable	*B*	*SE*	β
Block 1			
Gender			
Women		Ref.	
Men	-0.58	0.46	-.05
Age	-0.05	0.05	-.05
Educational attainment			
High school or less		Ref.	
Some training after high school	1.11	0.59	.09
Bachelor's degree or higher	1.28*	0.58	.11*
Monthly income level (USD)			
≤ $999	0.18	0.58	.01
$1,000–$1,999		Ref.	

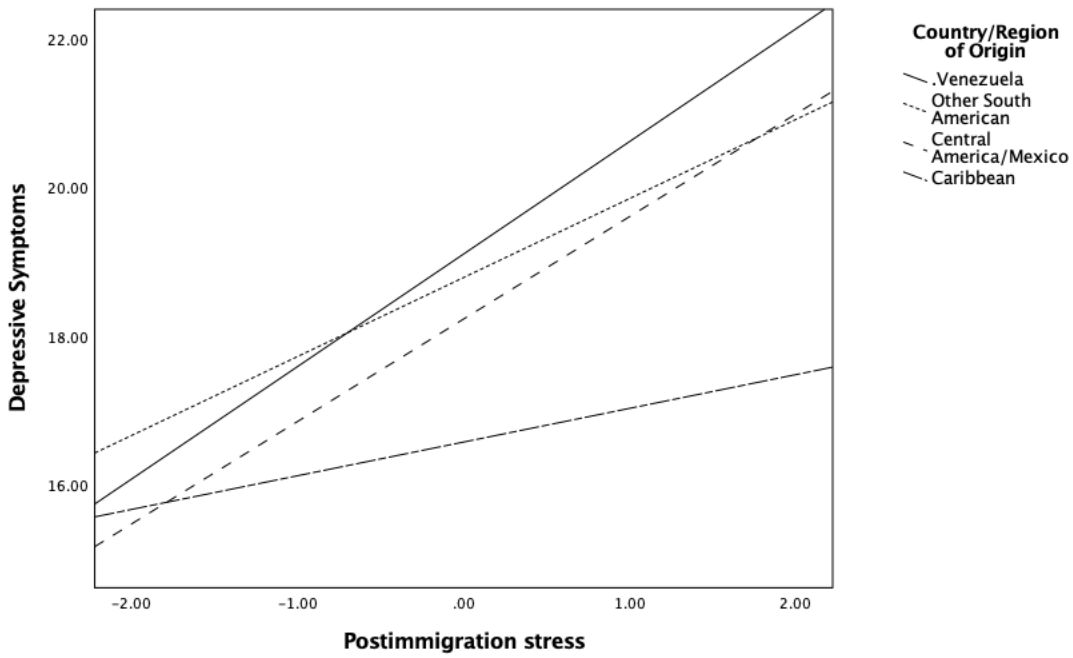
$2,000–$2,999	-0.48	0.59	-.04
≥ $3,000	-1.54*	0.73	-.09*
Marital status			
Single		Ref.	
Not single	-0.84	0.49	-.08
Months in the United States	0.09	0.07	.05
Immigration status			
Documented	0.79	0.62	.06
Undocumented		Ref.	
Country/region of origin			
Venezuela	-0.28	0.64	-.02
Other South American country		Ref.	
Central America or Mexico	-0.41	0.59	-.03
Caribbean	-2.42**	0.81	-.13**
$R^2 = .08$, $F(13, 511) = 3.45$***			
Block 2			

Premigration Stress	.16	.11	.06
Premigration Trauma			
Yes	.06	.53	.01
No		Ref.	
$\Delta R^2 = .03$, $F(2, 509) = 7.27$***			
$R^2 = .11$, $F(15, 509) = 4.04$**			
Block 3			
Postimmigration stress	1.08***	.13	.37***
$\Delta R^2 = .10$, $F(1, 508) = 67.20$***			
$R^2 = .21$, $F(16, 508) = 8.48$***			

Note. $N = 525$. Total $R^2 = 21.1\%$.
*$p < .05$. **$p < .01$. *** $p < .001$.

Figure 1

Moderation analysis, by country or region of origin



Note. Two-way interaction with country or region of origin moderating the association between postimmigration stress and depressive symptoms.

CHAPTER III. MANUSCRIPT II

Alcohol Use Severity Among Young Adult Recent Latino Immigrants: The Role of Stress, Forced Migration, and Adherence to Traditional Gender Roles

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Abstract

Background: Previous research conducted among Latino immigrants has shown the underlying effect that exposure to stress after immigrating to the U.S. has on alcohol use patterns. However, given the demographic shifts in recent immigrants to the U.S., understanding the influence of stress before and after immigration on alcohol use severity (AUS), in the context of forced migration, and adherence to traditional gender roles (TGR) is warranted.

Objectives: To examine (a) the cumulative effects of pre to post-immigration stress on AUS, (b) the moderating effect of adherence to Latino/a TGR, and (c) the moderating effect of forced migration on these associations.

Methods: Hierarchical multiple regression (HMR) and moderation analyses were conducted on a cross-sectional sample of 529 (*N*=268 men, *N*=261 women) adult (18-34 years) recent Latino immigrants (RLIs) in South Florida (SFL).

Results: Findings indicated that post-immigration stress (β = .12, p = .03) and not pre-migration stress was significantly associated with AUS, with men (4.36 ± 3.57, p < .001) reporting greater AUS compared to women (3.08 ± 3.21). Adherence to Latino/a TGR significantly weakened the association between pre-migration stress and AUS among men (β = -.25, p = .01, 95% CI [-.44, -.05]) but not for women. No interaction effect was found by adherence to Latino/a TGR on the association between post-immigration stress and AUS or by forced migration on all the associations.

Conclusion: Interventions early in the immigration process that address post-immigration stress may target the mitigation of AUS particularly among RLI men.

Keywords: Latino immigrants, stress, forced migration, alcohol use, gender roles

Introduction

Epidemiological studies have consistently indicated the presence of ethnocultural variations in alcohol use behaviors in the U.S. Latino population (1-5). Although alcohol consumption has decreased among U.S. Latino immigrants in the past decade, there is evidence showing differences in alcohol use severity (AUS) by country of origin, immigration status, and gender. Among Cuban immigrants in South Florida (SFL), lower AUS was reported compared to immigrants from South/Central America (2). In comparison to immigrants from Mexico, immigrants from Central America and Cuba report lower AUS (1). With regard to immigration and gender, Latino immigrants who are documented report lower AUS compared to their undocumented counterparts and Latino immigrant men report greater AUS compared to Latina immigrant women (2). Prior research suggests that adherence to cultural values prescribed by traditional gender roles (TGR) serve as self-regulating mechanisms to distress and thus can influence the

drinking behaviors across gender (4). Specifically, Latinos who score high on machismo TGR have been associated with greater AUS among men and lower AUS among women (4). Given the growing heterogenous Latino population in the U.S., demographic shifts in the characteristics of newly arrived immigrants are expected to further influence these differences in AUS.

In recent years, the U.S. has recorded a greater number of recent Latino immigrants (RLIs) traveling from South/Central America (6). Notably, an estimated four million refugees and immigrants have fled Venezuela since the year 2015 (7) due to economic, social, and political problems, with many arriving at the U.S. seeking asylum from political/economic stress (6). Among Central American RLIs, Keller and colleagues (8) found that 83.0% cited violence as the primary reason they fled their country of origin. Stress caused by political and gang-related violence forces such immigrants to migrate from these conditions and undergo transnational mobilization to seek governmental support, financial security, and domestic sanctuary (9). Yet, upon arriving in the U.S., they are faced with fears of deportation, separation from family and friends, and limited capacity of governmental support for incoming immigrants. Exposure to such sustained structural vulnerability as a result of forced migration heightens their risk of facing barriers when accessing health care services (9). Such displacement conditions have the potential to further exacerbate an immigrant's stress levels (10-11) and increase their susceptibility to AUS, particularly among men (12-13).

Once in the U.S., RLIs may face stress due to scant policies that provide secured pathways of immigration to the U.S. and societal norms that support the inequitable exclusion of Latino immigrants. Common post-immigration stressors experienced by

RLIs include discrimination, language barriers, lack of access to health care, fear of deportation, and financial instability (14). Previous studies have found that among RLIs in SFL, discrimination was associated with greater AUS (13, 15-16). Among U.S. and foreign-born Latino immigrants, the effect of discrimination has been found to be significantly associated with an increased risk of AUS (16-17). As noted by Cano and colleagues (18), RLI men are more likely to engage in alcohol use as a coping mechanism to immigration-related stress whereas RLI women utilize social support to regulate their distress. Such gender variations in AUS may be culturally prescribed by TGR which shape social norms and personal attitudes toward drinking alcohol (19). Still, little is known about the impact of pre to post-immigration stress on the AUS among RLIs and the moderating role of forced migration and adherence to Latino/a TGR.

Existing research on adults has indicated the developmental changes that younger adults experience (20) and its impact on drinking behaviors (19). It is well known that younger adults undergo maturational processes that include transitional life changes. In this context, some younger adults may not have the emotional regulatory skills to respond to environmental risk factors including immigration-related stressors. Even more, the internalization of gender norms during developmental years has been shown to influence the attitudes that men and women hold towards alcohol use, with men having a more positive attitude towards drinking alcohol compared to women (4). Thus, in response to these norms, younger adult RLI men may be inclined to self-medicate with alcohol to ease their distress. The current study examines the cumulative effect of pre to post-immigration stress on the AUS of adult (18-34 years) RLIs in SFL while considering the

respective moderating roles of forced migration and adherence to Latino/a TGR by gender.

Theoretical framework

The present study is informed by the conceptual frameworks of the acculturative stress and gender role strain theories. According to the acculturative stress theory, immigrants who adapt to a new country may undergo stressors that disposes them to substance use (21). These stressors include language barriers, discrimination, employment strains, lack of access to health care, and difficulties assimilating to beliefs/values of the host culture (22). With this perspective, stress among RLIs should be contextualized with the consideration of pre-migration experiences which can vary by country/region of origin and context of migration (23). Previous studies have highlighted the importance of considering pre-migration experiences to prevent AUS among RLIs (2, 24).

Based on the gender role strain theory, an individual can become vulnerable to gender role stress if they deviate from meeting the expectations of TGR which can vary based on environmental influences (25). Gender role discrepancy can manifest as internalized distress, which may result in externalized behaviors associated with harmful alcohol consumption (25). Previous studies among Latino men have associated greater AUS with greater adherence to Latino/a TGR (4, 18-19, 26-27). Often, adherence to machismo TGR encourages the use of alcohol as a coping mechanism to stress among Latino men, whereas for Latina women, it discourages the use of alcohol to uphold a standard of purity and caregiving (4, 26-28). As such, the literature suggests that in the context of compounded stress, adherence to machismo TGR would have a positive

moderating effect on the relationship between pre to post-immigration stress and AUS for RLI men and a negative moderating effect for RLI women.

Current study

Expanding on the current literature, the present study aimed to 1) examine the cumulative effects of pre to post-immigration stress on the AUS of RLIs; 2) the moderating effect of adherence to Latino/a TGR; and 3) the moderating effect of forced migration among men and women. Guided by the acculturative stress and the gender role strain theories, we hypothesized that (H_1) greater levels of reported pre to post-immigration stress would be positively associated with AUS; (H_2) the associations would be stronger for men and weaker for women that endorse adherence to Latino/a TGR; and (H_3) stronger for men and weaker for women that experience forced migration. This is the first study to examine the cumulative effects of pre to post-immigration stress on AUS and whether these associations differ by adherence to Latino/a TGR and forced migration among adult RLIs in SFL from diverse countries/regions of origin.

Method

Data for the current study is based on secondary data analysis of a National Institute of Health (NIH) funded longitudinal study examining pre to post-immigration drinking and driving trajectories among adult RLIs in SFL. The parent study collected data at three time periods (T1, T2, and T3) and the current study utilizes T2 data. To be included in the study, participants had to be between 18-34 years old, immigrated to the U.S. from a Latin American country within one year, residing in Miami-Dade County (MDC), and planning to stay in the U.S. for three years. Respondent-driven sampling (RDS) approach was employed to recruit participants based on evidence supporting its

effectiveness among RLI populations (2, 29). Each participant was asked to refer three other individuals who met the eligibility criteria. This procedure was followed for a maximum of three legs. Flyers were distributed by community health workers (CHW) at locations frequented by RLIs and in-person referrals were obtained via community-based partners in SFL.

This study was approved by the Institutional Review Board (IRB) of a large public university in SFL. Data for the parent study were collected by a trained bilingual interviewer in 2020 via in person interviews in January and February (T1 & T2) and online surveys in March to December using the Research Electronic Data Capture (REDCap) software. Informed consent was obtained from all participants prior to enrolling in the study. All surveys were administered in Spanish, required 1.5 hours to complete, and participants received $50 for their contribution.

Measures

Socio-Demographics

Self-reported information was collected on variables including: gender (0 = *women*, 1 = *men*), age (continuous variable), educational attainment (1 = *high school or less*, 2 = *some training after high school*, 3 = *bachelor's degree or higher*), monthly gross household income (0 = ≤ *$999*, 1 = $*1,000 to $1,999*, 2 = *$2,000 to $2,999,* 3 = *$3,000 +*), employment status (1 = *employed*, 2 = *not employed*), marital status (0 = *single*, 1= *not single*), immigration status (0 = *undocumented*, 1 = *documented*), country/region of origin (0 = *Venezuela*, 1 = *other South American country*, 2 = *Central America* or *Mexico*, 3 = *Caribbean*), months in the U.S. (continuous variable), the county-based

COVID-19 lockdown (30) (1= pre-COVID-19, 2= COVID-19), and acculturation level based on English language proficiency (0=*low*, 1=*high*).

Pre-migration stress

Pre-migration stress was assessed using the six-item pre-migration stress subscale of the revised 73-item Hispanic Stress Inventory 2 (HSI-2), Immigrant Version, which has been validated in Spanish (31). The subscale collects self-reported information on the frequency and appraisal of stressors experienced by Latinos prior to immigrating to the U.S. Frequency items asked whether participants experienced a stressor (0 = *no*, 1 = *yes*) due to poverty, health care, and educational opportunities. If "yes", a follow-up question was asked using a 5-point Likert scale on how stressful that event was (1 = *not at all* to 5 = *extremely*). Sample items included, "my family was exposed to poverty in my home country." Frequency items that were reported as "0" were coded as "1" for the appraisal score (31). A sum composite score of the frequency (sum) score and appraisal (mean) score were calculated (total range: 1-10). Higher scores reflected greater pre-migration stress. The scale meets satisfactory internal consistency (α =.85) in this sample; demonstrates expert-based content and concurrent validity among diverse East coast Latino immigrants (32).

Post-immigration stress

Post-immigration stress was assessed using the immigration-related stress, health access stress, discrimination, and language-related stress subscales from the 73-item HSI-2, Immigrant Version (31). The scale collects self-reported information on the frequency and appraisal of stressors experienced by Latinos after immigrating to the U.S. Frequency items asked whether participants experienced a particular stressor (0 = *no*, 1 =

yes). If "yes," a follow-up question was asked using a 5-point Likert scale on how stressful that event was (1 = *not at all* to 5 = *extremely*). Sample items included, "my legal status has been a problem in getting a good job". Frequency items that were reported as "0" were coded as "1" for the appraisal score (31). A sum composite score of the frequency (sum) score and appraisal (mean) score were calculated (total range: 1-57). Higher scores reflected greater post-immigration stress. The scale demonstrated good internal consistency in this sample (α =.91) and demonstrated expert-based content and concurrent validity among diverse East coast Latino immigrants (32).

Alcohol use severity (AUS)

The 10-item Alcohol Use Disorders Identification Test (AUDIT) was used to assess AUS. The AUDIT uses a 5-point Likert scale to measure alcohol consumption, drinking behaviors, and alcohol-related problems in the past 12 months and has been validated with other AUS measures (33). A sum composite score was calculated (range: 0-40). Higher scores indicated greater AUS. The scale demonstrated good internal consistency in this sample (α =.87).

Forced migration

Forced migration was measured using one item from the two-item Center for Disease Control (CDC; 34) informed Immigration Trauma Scale to assess exposure to a strained displacement. Participants were asked the following question: "Did you leave your country because of violence or because of threats to the health and safety of yourself or your family?" (0 = *no*, 1 = *yes*). A response of "yes" indicated the incidence of forced migration.

Adherence to traditional gender roles (TGR)

Adherence to Latino/a TGR was assessed using the five-item TGR scale of the 50-item Mexican American Cultural Values Scale" (MACVS) to measure adherence to traditional Latino values on gender role expectations for men and women. The MACVS uses a 5-point Likert scale (1=*none at all* to 5=*completely)*. The scale is highly correlated with other scales that assess adherence to Latino/a TGR among diverse Latino immigrants (35). Sample items included, "men should earn most of the money for the family so women can stay home and take care of the children and the home." A sum composite score was calculated (range: 1-25), with higher scores indicating greater adherence to Latino/a TGR. This scale demonstrated acceptable internal consistency in this sample (α =.83 men, α =.70 women).

Data analysis

SPSS software v27 was used to perform the data analysis. Descriptive statistical analysis was conducted to calculate frequencies and means for all variables. Bivariate correlations were calculated using the Pearson coefficient for continuous and dichotomous variables and the Spearmen coefficient for ordinal variables. Hierarchical multiple regression (HMR) analysis was performed to calculate the influence of the primary exposure variables, pre to post-immigration stress on the outcome variable of AUS. Predictor variables were arranged into the model in the following order: (1) socio-demographic variables (i.e., gender, age, educational attainment, monthly gross household income level, marital status, immigration status, country/region of origin, months in the U.S, acculturation level, and COVID-19 mandate) in the first block, (2) pre-migration stress in the second block, and (3) post-immigration stress in the third block to measure if they predicted AUS in conjunction with the other predictors.

Categorical variables were entered into the model with a reference group and recoded as a dichotomous variable (0 or 1). Percent of the variance for AUS was calculated by measuring the variance attributed to each predictor using ΔR^2. Standardized beta coefficients from the final model were evaluated using p-values < 0.05 as the cut-off for statistical significance. A one-way analysis of variance (ANOVA) was conducted to test group differences using the Bonferroni test.

Moderation analyses stratified by gender were conducted using SPSS macro PROCESS v. 3.5 (36) to assess the respective interaction effects of adherence on TGR and forced migration on the associations between (1) pre-migration stress and (2) post-immigration stress on AUS. A total of 10,000 bootstrap iterations were performed to (a) conduct a multiple regression with the same variance of all predictor variables in the model, (b) estimate the interaction terms between the moderator and the predictor variables (e.g. adherence to Latino/a TGR x pre-migration stress, forced migration x pre-migration stress), and (c) estimate the conditional effects for each corresponding interaction term and their association to AUS. Each moderation analysis controlled for the significant socio-demographic variables in Block 1 of the HMR model. Missing data were handled using listwise deletion.

Results

The sample consisted of 529 RLIs (N = 268 men, N= 261 women) averaging 28.51 years and a median age of 29.00 years. Approximately 59.7% (N=316) had some kind of training after high school and/or a bachelor's degree or higher, 51.6% (N=273) of participants reported a monthly household gross income of $2,000 or more, 72.2% ($N$=382) were documented, 53.7% (N=284) were single, and 63.7% (N=337) from South

America. Table 1 reports the descriptive statistics by gender. Table 2 reports the bivariate correlations of the study variables.

Hierarchical multiple regression (HMR) analysis

Table 3 reports the results of the HMR analysis. Significant positive associations were found between post-immigration stress and AUS and no significant association was found between pre-migration stress and AUS. For the final model, all predictor variables accounted for approximately 11.0% of the variance of AUS. Gender had a significant positive association with AUS, with men (4.36 ± 3.57, $p < .001$) having statistically significant higher AUS compared to women (3.08 ± 3.21). Results of the one-way ANOVA showed no statistically significant differences by immigration status.

Moderation analyses

Results showed a significant direct negative effect of adherence to Latino/a TGR on the association between pre-migration stress and AUS while controlling for immigration status for men, (β = -.25, $p = .01$, 95% CI [-.44, -.05]) but not women (β = -.14, $p = .17$). The interaction between pre-migration stress and adherence to Latino/a TGR accounted for 2.2% of the variance of AUS among men, $\Delta R^2 = .02$, $F(1, 263) = 6.34$, $p = .01$ (Figure 1). Conditional effects showed that pre-migration stress had the strongest association with AUS for men at low levels (1 SD below the mean) of adherence to Latino/a TGR (β = .54, $p < .001$, 95% CI [.24, .84]) and at the mean level of adherence to Latino/a TGR (β = .34, 95% CI [.13, .54], $p < .01$) The conditional effect of pre-migration stress on AUS was not statistically significant at high levels (1 SD above the mean) of adherence to Latino/a TGR (β = .12, $p = .29$). Pre-migration stress was significantly associated with AUS when levels of adherence to Latino/a TGR were .58 or

lower (25.38% of RLI men). No interactive effect was found by adherence for TGR for the association between post-immigration stress and AUS while controlling for immigration status for men (β = -.04, p = .16) and women (β = -.02, p = .46). Moreover, forced migration had no significant interactive effect on the associations between pre-migration stress and AUS for men (β = .10, p = .61) and women (β = -.11, p = .55) and between post-immigration stress and AUS for men (β = .03, p = .64) and women (β = -.04, p = .49).

Discussion

The findings in the current study add to the emerging body of literature that contextualizes the conditions before and after immigrating to the U.S. and their impact on the AUS of adult (18-34 years) RLIs in SFL. Relatively congruent with our first hypothesis, post-immigration stress was significantly associated with AUS, with men reporting greater AUS compared to women. Our results are consistent with previous research indicating the interrelatedness of post-immigration stress and AUS among Latino immigrants (13, 15, 18, 37). There is consensus in the literature on Latino immigrants that attributes alcohol use as a coping mechanism to socio-environmental stressors, particularly among men (18-19). The RLIs in this study may have used the consumption of alcohol as a coping strategy to manage the stressors they were exposed to in the U.S. (13), especially the men who reported lower acculturative levels than the women. Exposure to co-occurring stress due to lack of access to health care, fears of deportation, and language barriers may have created an overwhelming level of distress causing the RLIs to turn to alcohol to regulate their emotions (19). Our results also indicated that pre-migration stress was not significantly associated with AUS for men and

women. A probable explanation for this finding is that the immediate stressors that RLIs faced in their country of origin may have changed after immigrating to the U.S. Given the significance of post-immigration stress and AUS, RLIs may be facing differential and more proximal acute effects of stressors based on conditions in the U.S. compared to the stressors in their country/region of origin. Hence, these new sets of stressors due to their immigration status, health access, and exposure to discrimination may be heightening their risk of AUS. Our findings suggest the need for interventions implemented early in the immigration process that address post-immigration stress among RLIs to potentially mitigate AUS.

Partially consistent with our second hypothesis, adherence to Latino/a TGR significantly moderated the association between pre-migration stress and AUS among men who reported adherence to Latino/a TGR but not among women. However, no interaction effect was found by adherence to Latino/a TGR on the association between post-immigration stress and AUS among men and women. Previous research has found that adherence to Latino/a TGR reflecting machismo values is associated with AUS among Latino immigrants congruent with their exposure to stress (4, 26-27). Our results reflected that adherence to machismo TGR weakened the association between pre-migration stress and AUS among RLI men. Unlike the women who were mostly from Venezuela, the majority of the men were from other South/Central American countries. Our results suggest that RLI men who adhere to machismo TGR may be using protective coping mechanisms to respond to the unique stressors they experience in their country/region of origin, thereby decreasing their risk for AUS. These findings reflect the potential value of screening for differences in adherence to machismo TGR among

diverse groups of RLI men to better understand their differential coping responses as a mitigating factor between pre-migration stress and AUS.

A possible reason for the non-significant interaction effect of adherence to Latino/a TGR on the association between post-immigration stress and AUS among women in this sample is that compared to the study conducted by Perrotte, Baumann & Knight (27), AUS was assessed based on alcohol consumption in the past 12 months instead of alcohol quantity, frequency, and binge drinking within the past 90 days. In the context of recent immigration to the U.S., the moderating effect of adherence to Latino/a TGR may have needed more time to take effect in order for the women to perceive the influence of acculturative stressors. It may be possible that over time, RLIs would be exposed to new social norms, thus shifting their perceptions of what behaviors are considered acceptable for men and women (4). Such would be the case for the non-significant interactive effect of adherence to Latino/a TGR on the association between post-immigration stress and AUS among men. In line with the gender role strain theory, the strain imposed by the perceived need to adhere to TGR may have played a more significant factor in the use of alcohol as a coping mechanism (4, 18-19, 26). Given these findings, future longitudinal studies should evaluate the temporal dynamics of TGR on the association between pre to post-immigration stress on AUS among adult RLIs in SFL.

Diverging from our third hypothesis, forced migration did not moderate the association between pre to post-immigration stress and AUS for men and women. Our results contradict earlier research findings showing that immigrants, particularly male immigrants who experienced forced migration were susceptible to immigration-related stress and greater AUS (9, 12). Although reports of forced migration were high in this

sample, the context of reception may have had a stronger effect. Immigrant-receiving communities like SFL have well-established ethnic enclaves that may serve as protective support systems with social support resources that may replace the use of alcohol (24, 38, 39). As so, future studies should examine the effect of context of reception on the association between pre to post-immigration stress and AUS of adult RLIs in SFL.

Limitations

The findings in this study should be interpreted in light of the following limitations. First, the cross-sectional design of the study did not determine the temporal changes of the study variables. As a result, causal pathways could not be confirmed, and the AUS could have reflected a chronic/relapsing condition. Second, all measures in this study relied on self-report data which may be prone to response/recall bias, however since this sample averaged 6 months in the U.S., their ability to recall information may have been high. Third, the forced migration measure used a single item that did not comprehensively capture the level of displacement that RLIs experienced.

Conclusion

The current study contributes to the existing literature by examining the cumulative effects of pre to post-immigration stress on AUS while considering the respective moderation effects of adherence to Latino/a TGR and forced migration on these associations among adult (18-34 years) RLIs in SFL. This study highlights the importance of considering the contextual challenges and socio-cultural differences that RLIs experience prior to and after immigrating to the U.S and how they may heighten AUS. Future interventions should address the cross-cultural differences of AUS among Latino immigrants by considering their distinctive migration experiences, recency of

arrival, country/region of origin, and adherence to Latino/a TGR. As the field of public health continues to seek strategies to eliminate health disparities, policies are needed that address the contextual factors that drive cooccurring stress and AUS among Latino immigrants.

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Figure 1. Two-way interaction with adherence to Latino/a traditional gender roles (TGR) (β = -.25, *p* = .01, 95% CI [-.44, -.05]) moderating the association between pre-migration stress and AUS for RLI men.

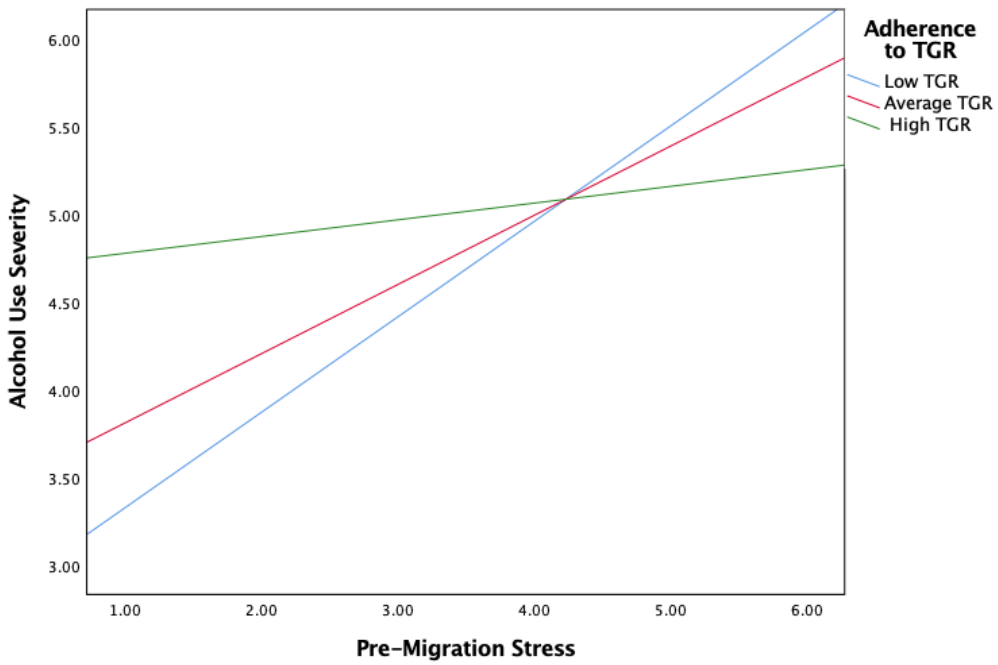

Table 1. Descriptive statistics of study variables by gender.

Variable	Women *N*=261		Men *N*=268		
	N	*%*	*N*	*%*	*χ 2*
Employment Status					
Employed	191	73.2	211	78.7	2.23
Unemployed	70	26.8	57	21.3	
Educational Attainment					
High School or Less	92	35.2	121	45.1	5.92
Some Training After High School	77	29.5	73	27.2	
Bachelor's Degree or Higher	92	35.2	74	27.6	
Monthly Household Gross Income Level					
≤ $999	42	16.2	45	16.8	3.24
$1,000 to $1,999	81	31.3	86	32.3	
$2,000 to $2,999	99	38.2	86	32.1	
$3,000 or more	37	14.3	51	19.0	
Marital Status					
Single	138	53.1	146	54.7	.14
Not Single	122	46.9	121	45.3	
Immigration Status					
Documented	195	75.0	187	69.8	1.80
Undocumented	65	25.0	81	30.2	
Country/Region of Origin					
Venezuela	108	41.4	50	18.7	38.44**
Other South American Country	78	29.9	101	37.8	
Central America or Mexico	60	23.0	74	27.7	
Caribbean	15	5.7	42	15.7	
Forced Migration					
Yes	199	76.5	161	60.3	16.05**
No	61	23.5	106	39.7	
Acculturation Level					
High	120	46.0	96	36	5.66*
Low	141	54.0	172	64.4	
COVID-19 Lockdown					
Pre-COVID-19	191	73.2	43	16.0	9.14**
COVID-19	70	26.8	225	84.0	
	M	*SD*	*M*	*SD*	*t value*
Age	28.25	5.09	28.73	4.92	-1.10
Months in the U.S.	6.30	3.22	6.01	3.22	1.09
Pre-Migration Stress	1.50	1.78	1.09	1.62	2.97**
Post-Immigration Stress	11.95	8.03	10.20	7.92	2.49
AUS	3.08	3.21	4.37	3.58	-4.44*
Adherence to TGR	1.89	.78	1.82	.89	.95

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

Table 2. Bivariate correlations for variables used in regression analysis (N=521).

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Gender	-														
2. Age	.06	-													
3. Educational Attainment	-.10*	.30**	-												
4. Monthly Household Gross Income Level	.01	-.02	.12**	-											
5. Marital Status	-.01	42**	.22**	.21**	-										
6. Months in the U.S.	-.06	-.04	.05	.05	-.01	-									
7. Immigration Status	-.06	-.01	.14**	.13**	.04	.02	-								
8.Country/Region of Origin	.24**	-.02	-.07	-.02	-.07	.05	.01	-							
9. Acculturation Level	-.10*	-.22**	.14**	.04	-.08*	-.02	.13**	-.01	-						
10. COVID-19 Lockdown	.14**	-.04	-.08*	-.22**	-.04	-.06	-.11**	.07	-.02	-					
11. Pre-Migration Stress	-.13**	.10*	-.08*	.05	.05	-.03	-.12**	.11**	-.16**	-.05	-				
12. Post-Immigration Stress	-.10*	.07	-.01	-.05	.03	.02	-.30**	.02	-.22**	.05	.53**	-			
13. Forced Migration	-.18**	-.03	-.02	.03	-.03	.04	.09*	-.25**	-.03	-.16**	-.06	-.05	-		
14. Adherence to TGR	-.06	-.01	-.08*	-.09*	-.15**	.02	.02	.10*	-.13**	.03	.22**	.27**	.02	-	
15. AUS	.18**	.06	.02	-.03	-.05	-.10*	.04	.10*	.02	.10**	.10*	.11**	-.06	.08*	-

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

Table 3. Regression coefficients from the final HMR model predicting AUS (N=523).

Variable **Block 1**	***b***	***SE***	**β**
Gender			
Women		Ref.	
Men	1.47***	.30	.21***
Age	.06	.04	.08
Educational Attainment			
High School or Less		Ref.	
Some Training After High School	.66	.37	.09
Bachelor's Degree or Higher	.15	.39	.02
Monthly Household Gross Income Level			
≤ $999	-.54	.45	-.06
$1,000 to $1,999	.34	.37	.05
$2,000 to $2,999		Ref.	
$3,000 or more	-.28	.45	-.03
Marital Status			
Single		Ref.	
Not Single	-.62	.34	-.09
Months in the U.S.	-.08	.05	-.08
Immigration Status			
Documented	.78*	.35	.10*
Undocumented		Ref.	
Country/Region of Origin			
Venezuelan	-.48	.40	-.06
Other South American Country		Ref.	
Central America or Mexico	-.47	.39	-.06
Caribbean	.23	.52	.02
Acculturation Level			
High	.37	.32	.05
Low		Ref.	
COVID-19 Lockdown			
Pre-COVID-19		Ref.	
COVID-19	.48	.40	.06
R^2 = .08, $F(15, 507)$ = 3.02***			
Block 2			
Pre-Migration Stress	.11	.07	.08
ΔR^2 = .02, $F(1, 506)$ = 9.48**			
R^2 = .10, $F(16, 506)$ = 3.47***			
Block 3			
Post-Immigration Stress	.05*	.02	.12*
ΔR^2 = .01, $F(1, 505)$ = 5.04**			
R^2 = .11, $F(17, 505)$=3.59***			
Total R^2 = 11.0%			

*p < .05. **p < .01. ***p < .001.

CHAPTER IV. MANUSCRIPT III

Investigating Syndemics Among Young Adult Recent Latino/a Immigrants: The Role of Adherence to Traditional Gender Roles

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Abstract

Existing research suggests that pre/postimmigration stress, context of migration, alcohol use, depressive symptoms, and socio-cultural gender roles are linked to disparate health outcomes among Latino/a immigrants. The syndemics approach considers the underlying root of health disparities among marginalized populations by investigating the synergistic interrelations of these factors. However, the co-occurrence of pre/postimmigration stress, forced migration, depressive symptoms, and alcohol use severity (AUS) among recent Latino/a immigrants (RLIs) in South Florida (SFL) while considering the effect of traditional gender roles (TGR) has yet to be tested using the syndemic approach. As such, the present study (a) tested if pre/postimmigration stress, forced migration, depressive symptoms, and AUS demonstrated to be a single syndemic latent factor and (b) examined the association between adherence to Latino/a TGR and this syndemic factor. Confirmatory factor analysis (CFA) and structural equation modeling (SEM) were employed using a cross-sectional sample of 540 (N=271 men, N=269 women) young adult RLIs in SFL. Findings indicated that a single latent syndemic factor explained the covariance among premigration stress ($\beta = .15$ $p = .02$), postimmigration stress ($\beta = .57$, $p < .001$), depressive symptoms ($\beta = .77$, $p < .001$), and AUS ($\beta = .23$, $p < .001$). Results showed that adherence to Latino/a TGR ($\beta = .42$, $p = < .001$) had a statistically significant positive direct effect on the syndemic factor. These findings provide preliminary evidence to inform the development of tailored integrated multilevel interventions that seek to improve the adverse mental distress and AUS among RLIs in SFL.

Keywords: Latino/a immigrants, syndemic, traditional gender roles, stress, alcohol use, depressive symptoms

Introduction

For more than a decade, Latino/as have accounted for more than half of the growth of the overall U.S. population (Krogstad, 2020). Compared to Mexican immigrants, Latino/a immigrants from origins in Venezuela, the Dominican Republic, Guatemala, and Honduras have had the fastest increase in population size (Krogstad & Neo-Bustamante, 2020). Recent Latino/a immigrants (RLIs) account for 38% of all U.S. immigrants who have arrived in the past five years (Radford & Krogstad, 2019). Unlike immigrants with a longer duration in the U.S., many RLIs experience the early stages of cultural adjustment in terms of language, social mobility, support networks, and exposure to racial/ethnic discrimination that may intensify their susceptibility to mental distress and substance use (Alegria, Alvarez & Dimarzio, 2017). Furthermore, RLIs that are forced to migrate to the U.S. are particularly vulnerable to mental distress as a result of the trilateral migration trauma they may be exposed to (Clauss-Ehlers, 2019). Such trilateral migration trauma encompasses the compounding of traumatic events at multiple points of the forced migratory process (e.g. pre/during/postimmigration) (Clauss-Ehlers, 2019). These RLIs are driven from their countries of origin to the U.S. as a result of repressive violence and economic instability, making them structurally vulnerable to the social marginalization they are exposed to in the U.S. (Vilches Hinojosa, Rivas Castillo, & Vidal De Haymes, 2021). Recent sociopolitical climate involving immigration to the U.S. exacerbates RLIs' vulnerability by limiting their access to government support services, isolating them from social support networks, and instilling them with fear and mistrust (Torres et al., 2018). National comprehensive policies and federal initiatives to support the integration of immigrants into the U.S. are still lacking. There is a further

need for research studies that examine the diverse immigration-related challenges that RLIs experience to inform early interventions during this transitional period.

Latino/a immigrants constitute multiple heterogeneous subgroups exposed to differential conditions in their country/region of origin that may predispose them to depressive symptoms and alcohol use severity (AUS) (Castañeda et al., 2019; De La Rosa et al., 2020; Garcini et al., 2016; Keller et al., 2017; Ornelas & Perreira, 2011; Toro et al., 2018; Vazquez et al., 2021). Some Latino/a immigrants arriving to the U.S. are exposed to traumatic and stressful conditions prior to immigrating to the U.S., making them susceptible to adverse mental health outcomes (Adame, Lo & Cheng, 2021; Barton et al., 2021; Keller et al., 2017; Ornelas & Perreira, 2011; Peña-Sullivan, 2019; Ramos et al., 2017; Revollo et al., 2011; Sangalang et al., 2018). For example, exposure to violence among RLIs originating from Venezuela in the context of forced migration has been linked to a greater risk of recurrent substance use before and after immigrating to the U.S (Westrick et al., 2021). Such conditions of forced migration drive RLIs to immigrate to the U.S. to escape the violence and persecution they experience in their countries of origin as a result of political, economic, and social unrest (NASEM, 2019) making them structurally vulnerable to the social marginalization they may experience during the immigration process (Sangaramoorthy & Carney, 2021). Yet, such oppresive conditions are distinct to the countries immigrants originate from, historically fluxuate over time, resulting in shifting immigration patterns to the U.S. Given that the flow of RLIs to the U.S. has substantially increased, there is limited research that contextualizes how these differences in premigration conditions and the conditions upon arriving to the U.S predispose RLIs to adverse mental health outcomes in the current sociopolitical context.

Previous studies among Latino/a immigrants have also indicated that Latino/a are exposed to numerous stressors after arriving to the U.S. that make them vulnerable to depressive symptoms and AUS (Alegria, Alvarez & Dimarzio, 2017; Amaro et al., 2021; Jannesari, Hatch, Prina & Oram, 2020; Vazquez et al., 2021). Factors such as language barriers, fear of deportation, limited access to health care, and racial/ethnic discrimination become sources of stress making them vulnerable to health threats (Bekteshi & Kang, 2020; Fanfan & Stacciarini, 2020; Jannesari, Hatch, Prina & Oram, 2020; Painter, 2019). Much of the literature posits that there is a link between racial/ethnic discrimination and elevated depressive symptoms and AUS (Alegria, Alvarez, & Dimarzio, 2017; Cabrera Tineo et al., 2020; Cano, 2020; Devakumar et al., 2020; Mann-Jackson et al., 2018; Rahman et al., 2022; Villalobos, Hernandez Rodriguez & Funes, 2020). The literature on the depressive symptoms and AUS among RLIs further highlights the negative impact that racial/ethnic discrimination has during their transition to the U.S. (Cabrera Tineo et al., 2020; Cano et al., 2017; Salas-Wright et al., 2020; Schwartz et al., 2018). Notably, previous studies have also emphasized the psychosocial stress that undocumented immigration status can have on the depressive symptoms and AUS of Latino/a immigrants (Hill, Rodriguez & McDaniel, 2021; Ornelas, Yamanis & Ruiz, 2020; Ramos-Sánchez, 2020). To address these health disparities among RLIs, research is needed that examines how premigration coupled with postimmigration conditions may exacerbate the presence of co-occurring health disparities among RLIs from diverse country/regions of origin.

Research among young adults in the U.S. has documented the intensified vulnerability that this age group has to stress, depressive symptoms, and AUS (Lee et al.,

2019; Schubert et al., 2017; Toro et al., 2018). Young adults undergo maturational processes that are impacted by socio-environmental factors including navigating career and relationship developments while undergoing self-management and the internalization of gender norms (Levinson, 1986; Lee et al., 2019). In particular, young adult Latino/a immigrants' experience added immigration-related pressures related to changing familial responsibilities, the identification to a minority group, and changing Latino/a gender roles that increases their risk for depressive symptoms and AUS (Lee et al., 2019; Schubert et al., 2017; Toro et al., 2018). Prior studies have found that adherence to Latino/a TGR exacerbates the stress and AUS reported by young adult Latino/a immigrants (Ertl et al., 2019; Perrotte, Bauman, & Knight, 2018). In particular, machismo norms that promote the use of alcohol as a coping mechanism to stress have been linked with greater AUS and emotional distress (Perrotte & Zamboanga, 2019). Conversely, marianismo norms that characterize women as submissive and familial caretakers have been associated with lower AUS. Given that RLIs are less acculturated than more established immigrants, adherence to Latino/a TGR may be especially relevant in this population. The present study utilized data from a unique and heterogeneous sample of young adult RLIs within their first year of arriving to the U.S. to examine the interacting experiences of pre/postimmigration stress, forced migration, depressive symptoms, and AUS and how adherence to Latino/a TGR impacts these conditions. The sample includes documented and undocumented immigrants from multiple countries of origin (e.g. Venezuela, Colombia, Guatemala, Honduras, Cuba). Identifying the sociocultural determinants that influence these vulnerable Latino/a subgroups will provide an opportunity to tailor interventions that address the unique AUS and mental health needs of young adult RLIs.

Theoretical Framework

The current study is guided by the syndemic and gender role strain theories. Syndemic theory emphasizes the importance of considering the dynamic and relational role of the social and cultural factors in society to address health disparities. Singer et al. (2017) states that syndemics are co-occurring conditions caused by political, economic, environmental, and social forces that tend to occur in clusters, interact synergistically, and together contribute to the excess in morbidity and mortality among affected groups. Based on these principles, the first Syndemic Model focused on Latino/as was developed in 2011 by Gonzalez-Guarda and colleagues. This model was the first to identify substance misuse, violence, HIV risk, and depressive symptoms as an underlying syndemic factor among Latino/as. The underlying syndemic factor was found to be linked to conditions of socioeconomic disadvantage as a result of lower educational attainment (Gonzalez-Guarda et al., 2011). In a second study conducted by Gonzalez-Guarda et al. (2012), the syndemic of substance misuse, violence, HIV risk, and depression was found to be present among low-income Latina women in South Florida. Factors such as stress were reported to be risk factors of the syndemic, and high acculturation levels were documented as protective factors for the syndemic (Gonzalez-Guarda, 2012). Among men, family and cultural stress were found to be indicators for the syndemic. With regard to studies conducted among a diverse group of RLIs living in South Florida (SFL), none have used the syndemic theory to examine how immigration-related factors synergistically interact and result in a syndemic. Expanding on the syndemic literature among Latino/as, the current study examined a single syndemic factor

of pre/postimmigration stress, forced migration, depressive symptoms, and AUS among RLIs in SFL.

In accordance with the gender role strain theory, individuals experiencing depressive symptoms and AUS may become vulnerable to the internalization of stress if there is a divergence from meeting societally imposed TGR expectations. Such gender role discrepancy can contribute to an externalization of distress resulting in depressive symptoms and AUS (Pollack & Levant, 1995). Evidence by Gonzalez-Guarda et al. (2016) suggests that the synergistic effects of these co-occurring conditions among RLIs may be influenced by the cultural expectations tied to TGR. Research investigations on Latino/a TGR among immigrants have associated adherence to TGR expectations with higher immigration-related stress, depressive symptoms, and AUS (Balagopal et al., 2021; Cano et al., 2016; Ertl et al., 2019; Lee et al., 2019; Nunez et al., 2016; Perrotte, Bauman, & Knight, 2018; Perrotte & Zamboanga; 2019). These TGR are typically characterized by emotional restriction and positive attitudes toward drinking as a means of social bonding among men, whereas women are portrayed as familial caretakers and are expected to perceive the consumption of alcohol as inappropriate (Lee et al., 2019). Among Latino men, adherence to TGR has been associated with higher levels of AUS and greater emotional distress compared to women (Perrotte & Zamboanga, 2019; Rojas et al., 2021). Within the context of cultural stressors, higher adherence to Latino/a TGR has been associated to greater AUS among Latino immigrant men (Balagopal et al., 2021). Given the persistent social and structural challenging conditions that RLIs face, this population is at a heightened cumulative risk of pre/postimmigration stress, forced migration, depressive symptoms, and AUS. The present study will address the

interrelatedness of these conditions and how adherence to Latino/a TGR may amplify this proposed syndemic among young adult RLIs.

To advance the current literature exploring syndemics among Latino/a immigrants, the present study aimed to a) test if pre/postimmigration stress, forced migration, depressive symptoms, and AUS demonstrate to be a syndemic factor and b) determine the association between adherence to Latino/a TGR and this syndemic factor among men and women young adult RLIs. Using the syndemic theory as a framework, we hypothesized that 1) a single syndemic factor would explain the covariance of pre/postimmigration stress, forced migration, depressive symptoms, and AUS; and 2) greater adherence to Latino/a TGR would be positively associated with this syndemic factor.

Method

Participants and Procedures

Data for the current study is based on secondary data analysis of a National Institute of Health (NIH) funded longitudinal study examining pre to postimmigration drinking and driving trajectories among adult RLIs in SFL. Participants were recruited for the parent study through collaborative partnerships between a research center at a public university and community-based agencies serving immigrants in SFL. Referrals were obtained from community-based agencies in MDC that provide legal services to refugees, asylum seekers, and other documented and undocumented immigrants. In addition to these referrals, recruitment efforts were conducted by a community health worker (CHW) at locations often frequented by RLIs in MDC, including local Latino/a festivals, health fairs, soccer fields, social service agencies, and health care facilities.

To be included in the study, participants had to be between 18-34 years old, immigrated to the U.S. from a Latin American country within one year, residing in Miami-Dade County (MDC), and planning to stay in the U.S. for three years. A respondent-driven sampling (RDS) approach was used to recruit participants. RDS has been employed in previous studies as an effective method to recruit hard to survey populations including RLIs and immigrants without documentation status (e.g., De La Rosa et al., 2020; Garcini et al., 2020; Romano et al., 2021; Sanchez et al., 2021). This method leverages relations of trust while increasing the representativeness of the network population by maintaining a diverse set of respondents of those relatively less networked (Khoury, 2020).

Data for the parent study were collected by a trained bilingual interviewer via in-person interviews in January and February 2020 and via online surveys from March to December 2020 (due to COVID-19 restrictions) using the Research Electronic Data Capture (REDCap) software. The Informed consent was obtained from all study participants prior to enrolling in the study. A questionnaire was administered by trained bilingual research staff for a duration of approximately 1.5 hours. All surveys were conducted in Spanish. Each participant received a cash incentive of $50. The interviews were audio-recorded and reviewed for quality assurance purposes by trained research staff. Data were protected following the Protection of Human Subjects guidelines and the study protocol was reviewed and approved by the Social and Behavioral Institutional Review Board (IRB) of a large public university in SFL.

Measures

Socio-Demographic Information. Self-reported information was collected on variables including: gender (0 = *women*, 1 = *men*), age (continuous variable), educational attainment (1 = *high school or less*, 2 = *some training after high school*, 3 = *bachelor's degree or higher*), income level (0 = ≤ *$999*, 1 = $*1,000 to $1,999*, 2 = *$2,000 to $2,999,* 3 = *$3,000 +),* employment status (1 = *employed*, 2 = *not employed*), marital status (0 = *single*, 1= *not single*), immigration status (0 = *undocumented*, 1 = *documented*), country/region of origin (0 = *Venezuela*, 1 = *other South American country*, 2 = *Central America* or *Mexico*, 3 = *Caribbean*), and months in the U.S. (continuous variable).

Premigration Stress. Premigration stress was assessed using the six-item premigration stress subscale of the 73-item Hispanic Stress Inventory 2 (HSI-2) scale (Immigrant Version) which has been validated in Spanish (Cervantes et al., 2016). The subscale collects self-reported information on the frequency and appraisal of stressors experienced by Latino/as prior to immigrating to the U.S. Frequency items asked whether participants experienced a particular stressor (0 = *no*, 1 = *yes*). If a stressor was endorsed, a follow-up question was asked using a 5-point Likert scale regarding the appraisal of how stressful that event was (1 = *not at all* to 5 = *extremely*). Items included, "my family was exposed to poverty in my home country." A sum composite score of the frequency (sum) score and appraisal (mean) score were calculated which ranged from 1-10. As directed by the scale developers, stress frequency items that were reported as not occurring by participants were coded as "1" (not at all stressful) for the appraisal score. Higher scores reflected greater premigration stress. The scale meets satisfactory internal

consistency (α =.85) in the present sample; and demonstrates expert-based content and concurrent validity among diverse East coast Latino/a immigrants (Stryker et al., 2021).

Forced Migration. Forced migration was measured using one item from the two-item Center for Disease Control (CDC; 2015) informed Immigration Trauma Scale to assess the incidence of a psychological or physical experience of violence before immigrating to the U.S. Participants responded 0 = *no* or 1 = *yes* to the following question: "Did you leave your country because of violence or because of threats to the health and safety of yourself or your family?" A response of "yes*"* indicated the incidence of forced migration.

Postimmigration Stress. Postimmigration stress was assessed using the immigration-related stress, health access stress, racial/ethnic discrimination, and language-related stress subscales from the 73-item HSI-2 scale which has been validated in Spanish (Cervantes et al., 2016). The scale collects self-reported information on the frequency and appraisal of stressors experienced by Latino/as after immigrating to the U.S. Frequency items asked whether participants experienced a particular stressor (0 = *no*, 1 = *yes*). If a stressor was endorsed, a follow-up question was asked using a 5-point Likert scale regarding the appraisal of how stressful that event was (1 = *not at all* to 5 = *extremely*). Items included, "my legal status has been a problem in getting a good job". A sum composite score of the frequency (sum) score and appraisal (mean) score were calculated which ranged from 1-57. As directed by the scale developers, stress frequency items that were reported as not occurring by participants were coded as "1" (not at all stressful) for the appraisal score. Higher scores reflected greater postimmigration stress. The scale showed good internal consistency in this sample (α =.91) and demonstrated

expert-based content and concurrent validity among a diverse group of East coast Latino/a immigrants (Stryker et al., 2021).

Depressive Symptoms. The 10-item Center for Epidemiological Studies-Depression (CES-D-10) scale was used to measure the participant's self-reported symptoms of depression within the past week after immigrating to the U.S. The scale uses a 5-point Likert scale where 0 = *rarely or none of the time (less than one day out of the week* to 3 = *all the time (5 to 7 days*). The CES-D sum scores ranged between 0 to 30 with scores of 16 or greater indicating risk for clinical depression. Higher scores reflected greater depressive symptoms. The scale had good internal consistency in the present sample (α = .82), test-retest repeatability with RLIs, and is valid with other self-report measures of depression and by correlations with clinical ratings of depression (Radloff, 1977).

Alcohol Use Severity (AUS). The 10-item Alcohol Use Disorders Identification Test (AUDIT) was used to assess AUS. The AUDIT uses a 5-point Likert scale to measure alcohol consumption, drinking behaviors, and alcohol-related problems in the past 12 months and has been validated with other AUS measures (Saunders et al., 1993). A sum composite score was calculated ranging from 0 to 40, with higher scores indicating greater AUS. The scale demonstrated good internal consistency in the present study sample (α =.87).

Adherence to Traditional Gender Roles (TGR). The five-item TGR scale of the 50-item Mexican American Cultural Values Scale (MACVS) was used to measure adherence to differential Latino/a gender role expectations. The MACVS uses a 5-point Likert scale where 1=*none at all* to 5=*completely.* The scale has been found to be highly

correlated with other scales constructed to assess adherence to Latino/a TGR among diverse Latino/a immigrant samples (Knight et al., 2009). Sample items included, “men should earn most of the money for the family so women can stay home and take care of the children and the home”. A sum composite score was calculated ranging from 1-25, with higher scores indicating greater adherence to Latino/a TGR. This scale demonstrated acceptable internal consistency for this study sample (α =.83 men, α =.70 women).

Data Analysis

The statistical analysis consisted of three stages. First, descriptive statistics were computed for all variables in SPSS version 27. Second, confirmatory factor analysis (CFA) using MPlus version 8.6 (Muthen & Muthen, 2017) was conducted to test if pre/postimmigration stress, forced migration, depressive symptoms, and AUS represent a single latent factor (a syndemic factor). Overall model fit was evaluated following the recommendations of Kline (2016) using a variety of global fit indices, including a χ2 test of model fit ($p > .05$), the root mean square error of approximation (RMSEA; cutoff of < .06 to declare satisfactory fit), the comparative fit index (CFI; cutoff of $\geq$ than .95), and the standardized root mean square residual (SRMR; cutoff of < .05). Any missing data were handled using the default weighted least square parameter estimator (WLSMV) for categorical and continuous dependent variables in Mplus (Muthen & Muthen, 2017).

Third, structural equation modeling (SEM) was conducted to examine the direct effect of the primary exogenous observed variable, adherence to Latino/a TGR, on the endogenous syndemic factor. Potential covariates tested in the model were gender, age, education, income, country/region of origin, marital status, immigration status, and months in the U.S. The following significant covariates were included in the model:

gender, educational attainment, and income level. Overall model fit was evaluated following the aforementioned recommendations by Kline (2016). Any missing data were handled using the default maximum likelihood estimator (ML) for continuous dependent variables in Mplus (Muthen & Muthen, 2017).

Results

Participant Characteristics

The results of the descriptive statistics by gender are reported in Table 1.

Confirmatory Factor Analysis (CFA)

The initial single latent factor model (Model 1) did not indicate adequate fit: $\chi 2$ (N = 540, df = 5) = 13.53, p = .02, CFI (.96), RMSEA (.06), and SRMR (.03). Modification indices showed that there was an error covariance between AUS and depressive symptoms. After re-estimating the model and adding this covariance between AUS and depressive symptoms, we found that Model 2 indicated adequate fit: $\chi 2$ (N = 540, df = 4) = 4.55, p= .34, CFI (1.0), RMSEA (.02), and SRMR (.02). However, our results only showed statistically significant standardized loadings for the syndemic factor indicators of premigration stress (β = -.62, p < .001), postimmigration stress (β = -.87, p < .001), depressive symptoms (β = -.52, p < .001), and AUS (β = -.12, p = .01) but not for forced migration (β = .05, p = .43). Thus, the forced migration indicator was removed. The final revised model (Model 3) indicated adequate fit: : $\chi 2$ (N = 540, df = 1) = .46, p= .50, CFI (1.0), RMSEA (0), and SRMR (.01) (Figure 1). The standardized loadings for the syndemic factor indicators were all statistically significant: premigration stress (β = .15, p = .02), postimmigration stress (β = .57, p < .001), depressive symptoms (β = .77, p <

.001), and AUS (β = .23, $p < .001$). Table 2 reports the unstandardized and standardized loadings for the indicators used in each model assessing the syndemic factor.

Structural Equation Modeling (SEM)

Lastly, the direct effect of adherence to Latino/a TGR on the syndemic factor was examined utilizing SEM. All model fit indices suggested adequate fit: $\chi 2$ ($N = 526$, df = 22) = 32.04, $p = .08$, CFI (.97), RMSEA (.03), and SRMR (.03). Table 4 reports the unstandardized and standardized loadings of the indicators and predictors used to examine the direct effects of adherence to Latino/a TGR on the latent syndemic factor while controlling for the significant covariates (gender, educational attainment, and monthly income level). Positive direct effects of adherence to TGR (β = .42, $p = < .001$) were found on the latent syndemic factor. Those participants with an education level of high school or less, were less likely to experience the syndemic factor compared to those with bachelor's degree or higher (β = .11, $p = .04$). Additionally, those with monthly incomes between $1,000 to $1,999 were more likely to experience the syndemic factor compared to those with monthly incomes greater than $1,999. No statistically significant direct effects were found by gender on the latent syndemic factor. No statistically significant direct effects were found by gender on the latent syndemic factor.

Discussion

The present study extends the literature on syndemics that considers the cooccurring conditions of pre and postimmigration stress, forced migration, depressive symptoms, and AUS among young adult RLIs in SFL while considering the association between adherence to Latino/a TGR and this syndemic. By examining these intersecting immigration-related conditions, this study was able to assess whether an underlying

syndemic factor influenced the vulnerability of young adult RLIs in SFL to stress, forced migration, depressive symptoms, and AUS. In particular, this study provides evidence of the influence that adherence to Latino/a TGR have on the dynamic interplay of these conditions among RLIs. Further, these findings expand upon the current knowledge on syndemics among Latino/a immigrants by focusing on young adult RLIs from diverse national origins residing in SFL. Most of the previous research findings on syndemics has been conducted among samples of Latino/a immigrants who were already residing in the U.S. for a longer duration of time and not among RLIs. By targeting our analysis on a heterogeneous sample of RLIs, we were able to examine how experiences early in the immigration process function to form a synergistic effect between pre and postimmigration stress, forced migration, depressive symptoms, and AUS. Although our analysis did provide preliminary evidence of the synergistic effect of these syndemic conditions among RLIs, it should be noted that our focus was not to test the interaction effects of these conditions. Using the syndemic approach as a framework, our findings provide evidence of the domains of syndemic indicators that require further elucidation of their interaction effects to truly measure the emergence of syndemics among RLIs. To our knowledge, this is the first study to examine whether pre/postimmigration stress, forced migration, depressive symptoms, and AUS comprise a syndemic factor while considering the influence of traditional gender roles and the respective syndemic indicators among young adult RLIs.

Our results showed that a single syndemic factor explained the covariance of pre/postimmigration stress, depressive symptoms, and AUS among young adult RLIs. Our hypothesized syndemic among young adult RLIs builds on previous findings among

Latino/a immigrants in in the same region which documented the interplay between stress, depressive symptoms, and AUS (Gonzalez-Guarda et al., 2011; 2012; 2016). The present study adds to the syndemic literature among Latino/a immigrants by accounting for the context of immigration among recently arrived Latino/a immigrants. Our findings provide evidence on the interconnected factors that drive co-occurring adverse psychosocial health disparities among RLIs and the importance of addressing the interplay between both pre and postimmigration conditions. Namely, our results suggest that stress experienced both before and early in the immigration process, along with adverse mental health and alcohol use outcomes can function synergistically among Latino/as. In accordance with the syndemic theoretical framework, the dynamic cooccurrence of these conditions among structurally vulnerable communities can result in the internalization of distress, thereby leading to the amplification of stress, depressive symptoms, and AUS. The young adult RLIs in this study who reported recurring stressors prior to and after immigrating to the U.S, may have been burdened by their mutually reinforcing impact, resulting in feelings of hopelessness and isolation. Thus, it's not surprising that these co-occurring conditions would and lead to reports of depressive symptoms and alcohol use as a means to coping with the stress associated with the immigration process. Our study provides evidence of the negative feedback loop that these clustering and conditions cause, making socially disadvantaged immigrants susceptible to their deleterious effects (Willen et al., 2017). Oftentimes, the upstream factors that include the socio-political, economic, structural, and sociocultural intersecting conditions that perpetuate the emergence of this syndemic are often overlooked. Strategic interventions are needed that address the premigration experiences

of RLIs as well as postimmigration social marginalization, barriers to health care access, financial instability, and racial/ethnic discrimination they often experience within the current U.S. socio-political context.

Moreover, our results indicated that forced migration did not contribute as an indicator to the syndemic latent factor. We initially included forced migration as an indicator in the model given the conceptualization of syndemics in previous research which acknowledges the impact that exposure to traumatic experiences and social marginalization have on the vulnerability to substance use and mental distress among marginalized populations (Li, 2016; Page-Reeves et al., 2018, Singer et al., 2017). The trauma imposed by experiences of forced migration has been shown to be related to reports of systemic and social marginalization, racial/ethnic discrimination, mental distress, and AUS among Latino/a immigrants (Peña-Sullivan, 2019; Keller et al., 2017; Sangalang et al., 2018). As such, we hypothesized that AUS would be a coping response to the stress and trauma they experienced both pre and postimmigration to the U.S. Although a high percentage of RLIs reported forced migration (68%), it may be that the context of reception in SFL had a potential protective effect on their coping response to forced migration. SFL is a well-established immigrant receiving community that provides a supportive environment for immigrants transitioning into American culture. Prior research findings have indicated that that immigrant-receiving communities with increased availability to culturally and linguistically congruent environments may provide RLIs with greater social support that could serve to buffer the Latino/a immigrants from immigration stress, and its adverse consequences (Levitt et al., 2019; Sanchez et al., 2019). Another possible explanation could be that because Latino/as in

this study sample resided in the U.S. for less than one year, the full impact and consequences associated with forced migration may not have fully evolved enough to have consequential influences on their mental health and substance use behaviors. It could also be that other drivers of forced migration that were not measured in this study had a significant effect on this syndemic factor. Other documented drivers of forced migration include persecution and national disasters (NASEM, 2019). More research is needed measuring the various types of forced migration experienced by RLIs, including sub domains of violence and its effect on this syndemic. Conversely, it may be that the impact of forced migration may manifest in other ways that are not depressive symptoms and AUS. Notably, there is substantial evidence for the manifestation of PTSD symptomatology among Latino/a immigrants who have experienced trauma during the immigration process (Keller et al., 2017; Ramos et al., 2016; Sangalang et al., 2018). As such, it may be that the trauma brought on by having to forcibly migrate to the U.S. manifested as PTSD symptoms. Future studies are needed to assess the cumulative effects of various domains of forced migration and PTSD along with the present study's syndemic factor during the early immigration experience of young adult RLIs.

Our findings also revealed that higher levels of adherence to Latino/a TGR were positively associated to the syndemic latent factor of pre/postimmigration stress, depressive symptoms, and AUS among the young adult RLIs in this study. Prior investigations conducted on syndemics among Latino/a immigrants in SFL, have yet to establish the significant association between adherence to Latino/a TGR and a syndemic factor of intersecting adverse mental health outcomes. Specifically, our results emphasize the importance of identifying the extent to which the perceived need to adhere to cultural

gender role expectations has on the susceptibility of experiencing the syndemic conditions of pre/postimmigration stress, depressive symptoms, and AUS among RLIs. These findings support previous research confirming the influence that sociocultural conditions related to adherence to Latino/a TGR have on the stress, depressive symptoms, and AUS of Latino/a immigrants (Balagopal et al., 2021; Cano et al., 2016; Ertl et al., 2019; Lee et al., 2019; Nunez et al., 2016; Perrotte, Bauman, & Knight, 2018; Perrotte & Zamboanga; 2019). Indeed, the RLIs in our study who reported greater adherence to Latino TGR were at a greater risk of the syndemic. Put in context, RLIs in this sample may have experienced a greater strain to uphold their familial and social duties upon arriving in the U.S while having to navigate fears related to their immigration status, finances, access to health care, and racial/ethnic discrimination. Given that this sample consisted of young adult RLIs, these stressors may have been compounded by the developmental changes they experience such as pursuing new careers and relationships (Levinson, 1986; Lee et al., 2019). Thus, the intertwined nature of these conditions may have made them even more susceptible to feeling isolated and despondent, leading to the use of alcohol to cope with the external and internal stress (Ertl et al., 2019; Perrotte, Bauman, & Knight, 2018). The present study provides an initial understanding of how adherence to Latino TGR among young adult RLIs relates to their susceptibility to pre/postimmigration stress, depressive symptoms, and AUS. More research is needed to explore how the impact of adherence to Latino/a TGR on this syndemic changes when RLIs reside in the U.S. for a longer time and if the changes differ by gender.

It is also worth noting that educational attainment and monthly income level also had a positive effect on the syndemic factor. A likely explanation for these findings is

that although the majority of RLIs in this sample reported high levels of high educational attainment of a bachelor's degree or higher (62.8%) upon arriving to the U.S., persistent challenges exist regarding the structural support that RLIs have to access to employment opportunities that provide jobs with financial security and access to health care benefits. Specifically, 76.0% of the present study's sample reported being employed, with 66.0% of RLIs reported making less than $3,000 in monthly income. Our results expand on national data that shows the rising educational attainment levels of a new wave of RLIs of mostly Venezuelan and other South American country/region of origins in Florida, indicating their capacity to obtain high-skill occupations in the U.S (Noe-Bustamante, 2020). It is likely that RLIs with higher educational attainment levels are more likely to experience the syndemic conditions because in the U.S. they experience a decrease in social status. RLIs with higher levels of educational attainment are often employed in low paying jobs that require substantially less education than the jobs they had in their country of origin. This is often the case among RLIs from Venezuela that have the highest levels of educational attainment compared to other U.S. Latino/a immigrants, but that also are among the most socio-economically disadvantaged. Taken all together, the findings in the present study provide evidence of the importance of identifying the underlying intertwined nature of pre/post-immigration stress, depressive symptoms, and AUS among young adult RLIs in SFL and the need to examine how these factors evolve with time to prevent their concurrent and interactive development. Likewise, these results provide preliminary empirical data that can inform the planning of culturally tailored interventions that address mental health during the early phase of immigration and the

role that forced migration, premigration stress, and cultural values such as TGR have among young adult RLIs.

Limitations

The current study had limitations that should be noted. First, secondary data was used that did not collect information on any biological or coping resources measures, on the subtypes of racial/ethnic discrimination, and severity of forced migration. Future research studies should use more nuanced scales with such measures to provide a better context of the underlying dynamics of health disparities among RLIs. Second, due to the cross-sectional nature of the study, causal or direction order of the associations found cannot be implied. Since the synergistic interactive effects of the co-occurring syndemic conditions studied in this study can be sequentially affected by the improvement or diminishment of these indicators, research is needed that takes this causal structure into consideration. Future studies should examine changes in Latino/s TGR and these syndemic conditions among RLIs as their time in the U.S. increases. Third, since the data was self-reported it may be prone to recall bias. However, since the majority of the sample was in the U.S. for an average of six months, this short time-lapse may have made it easier for them to recall information. Fourth, given the fact that SFL is a well-established immigrant-receiving community, the findings in this study may not be generalizable to less established immigrant-receiving communities. As such, similar future studies are needed in less established immigrant receiving communities. Fifth, the syndemic indicators did not include any biomarkers to confirm the self-reported data on the indicators of the syndemic. Future studies should supplement this data with

biomarkers to provide biological evidence of the synergistic impact of these syndemic indicators on RLIs.

Conclusion

Findings from the present study suggest that pre/postimmigration stress, depressive symptoms, and AUS may occur synergistically among RLIs and that adherence to Latino/a TGR are positively associated with this syndemic. As of date, this is the first study to use the syndemic approach to examine the interplay of these pre and postimmigration factors among young adult RLIs early in the immigration process. These findings provide evidence for the need to collectively target these conditions via early interventions that focus on pre and postimmigration conditions during a critical window of transition for RLIs in immigrant receiving communities. Additionally, our findings suggest the need for culturally tailored interventions that account for the impact of traditional gender roles may play on the intersecting conditions of stress, depressive symptoms, and AUS in this population.

Data Statement

The data reported in the study of this article was not formally preregistered. Any requests for data or materials can be sent via email to msanche@fiu.edu.

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Table 1

Descriptive Statistics by Gender

Variable	***Women N=261***		***Men N=268***		
	N	*%*	*N*	*%*	*χ 2*
Employment Status					
Employed	191	73.2	211	78.7	2.23
Unemployed	70	26.8	57	21.3	
Educational Attainment					
High School or Less	92	35.2	121	45.1	5.92
Some Training After High School	77	29.5	73	27.2	
Bachelor's Degree or Higher	92	35.2	74	27.6	
Monthly Income Level					
≤ $999	42	16.2	45	16.8	3.24
$1,000 to $1,999	81	31.3	86	32.3	
$2,000 to $2,999	99	38.2	86	32.1	
$3,000 or More	37	14.3	51	19.0	
Marital Status					
Single	138	53.1	146	54.7	.14
Not Single	122	46.9	121	45.3	
Immigration Status					
Documented	195	75.0	187	69.8	1.80
Undocumented	65	25.0	81	30.2	
Country/Region of Origin					
Venezuela	108	41.4	50	18.7	38.44**
Other South American Country	78	29.9	101	37.8	
Central America or Mexico	60	23.0	74	27.7	
Caribbean	15	5.7	42	15.7	
Forced Migration					
Yes	199	76.5	161	60.3	16.05**
No	61	23.5	106	39.7	
COVID19 Lockdown					
PreCOVID19	191	73.2	43	16.0	9.14**
COVID19	70	26.8	225	84.0	

	M	*SD*	*M*	*SD*	*t value*
Age	28.25	5.09	28.73	4.92	-1.10
Months in the U.S.	6.30	3.22	6.01	3.22	1.09
Premigration Stress	1.50	1.78	1.09	1.62	2.97**
Postimmigration Stress	11.95	8.03	10.20	7.92	2.49
AUS	3.08	3.21	4.37	3.58	-4.44*
Adherence to Latino/a TGR	1.89	.78	1.82	.89	.95

Note. *$p < .05$. **$p < .01$.

Table 2

Unstandardized and Standardized Loadings for Indicators of the Syndemic Factor Models (N=540)

Indicators	***b***	***SE***	**β**
Model 1			
Forced Migration			
Yes	.05	.07	.05
No		Ref.	
Premigration Stress	-1.54***	.16	-.62***
Postimmigration Stress	-6.55***	.41	-.82***
Depressive Symptoms	-2.46***	.19	-.55***
Alcohol Use Severity (AUS)	-.56****	.16	-.16***
Model 2			
Forced Migration			
Yes	.05	.07	.05
No		Ref.	
Premigration Stress	-1.55***	.17	-.62***
Postimmigration Stress	-6.93***	.41	-.87***
Depressive Symptoms	-2.31***	.19	-.52***
Alcohol Use Severity (AUS)	-.40*	.41	-.12*
Model 3			
Premigration Stress	1.53***	.13	.61***
Postimmigration Stress	7.01***	.46	.88***
Depressive Symptoms	2.30***	.22	.51***
Alcohol Use Severity (AUS)	.37*	.17	.11*

Note. Variance of the latent factor is set to 1. Model 1 Fit: $\chi 2$ (5) = 13.53 p = .02, CFI = .96, RMSEA = .06, SRMR=.03. Model 2 Fit: $\chi 2$ (4) = 4.55, p = .34, CFI = 1.0, RMSEA = .02, SRMR=.02. Model 3 Fit: $\chi 2$ (1) = .46, p = .50, CFI = 1.0, RMSEA = 0, SRMR=.01.

*$p < .05$. ***$p < .001$.

Table 3

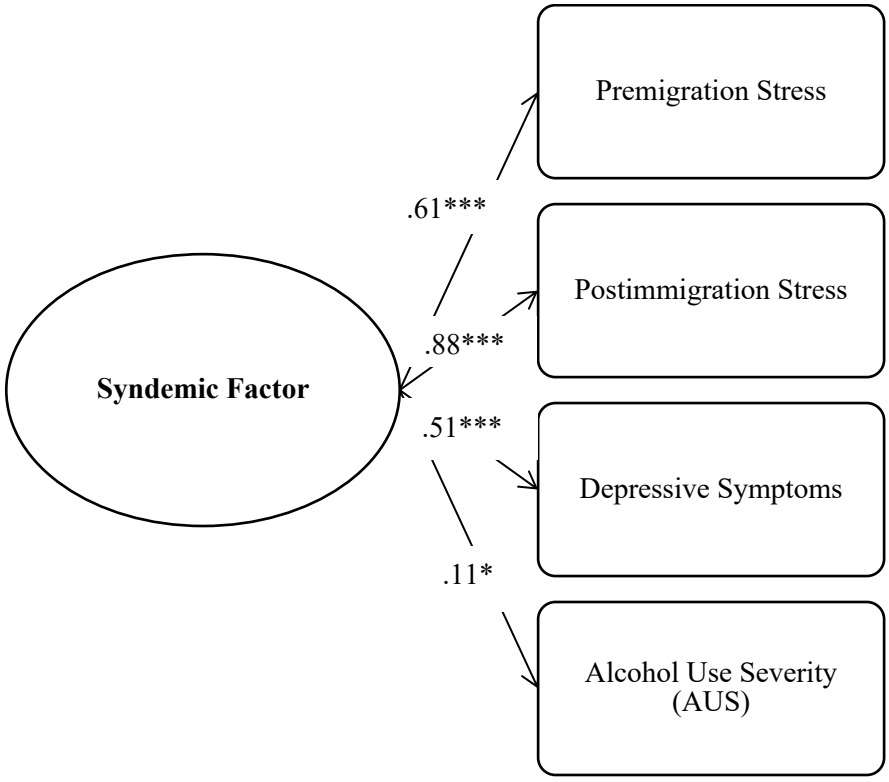
Unstandardized and Standardized Loadings for Indicators and Predictors of the Syndemic Factor (N=525)

Variable	*b*	*SE*	β
Indicators			
Premigration Stress	.34*	.14	.15*
Postimmigration Stress	3.95***	.39	.57***
Depressive Symptoms	3.04***	.29	.77***
Alcohol Use Severity (AUS)	.70***	.16	.23***
Predictors			
Gender→ Syndemic Factor			
Women		Ref.	
Men	.08	.11	.07
Educational Attainment→ Syndemic Factor			
High School or Less		Ref.	
Some Training After High School	.17	.14	.07
Bachelor's Degree or Higher	.28*	.14	.11*
Income Level→ Syndemic Factor			
≤ $999	.10	.17	.03
$1,000 to $1,999	.38**	.14	.16**
$2,000 to $2,999		Ref.	
$3,000 or More	-.06	.17	-.02
Adherence to Latino/a TGR→ Syndemic Factor	.57***	.08	.42***

Note. Model Fit: $\chi 2$ (N = 526, df = 22) = 32.04, p = .08, CFI (.97), RMSEA (.03), and SRMR (.03)
*p < .05. **p < .01. ***p < .001.

Figure 1

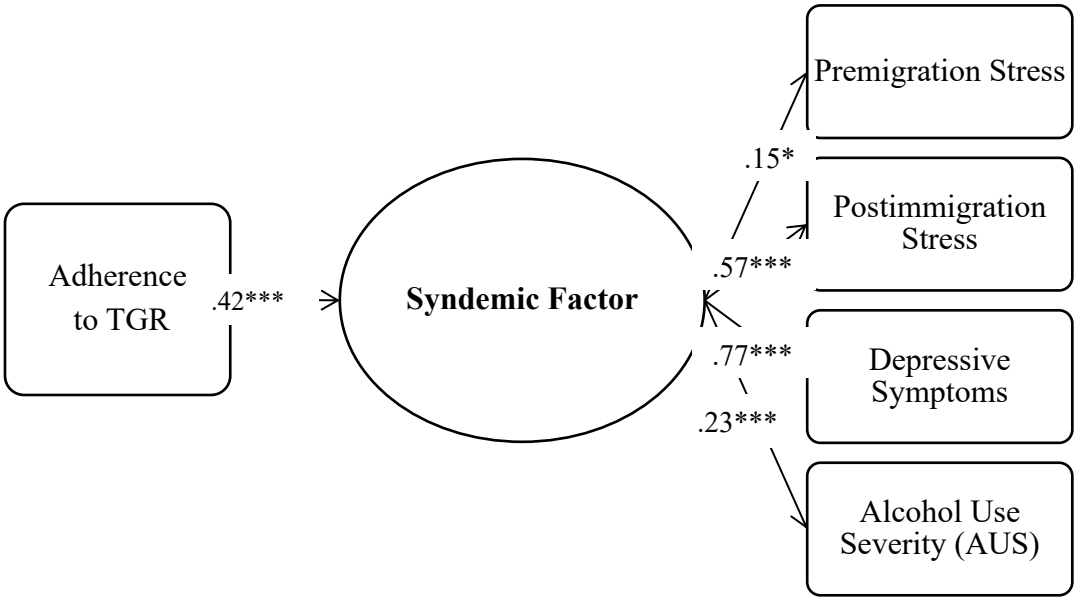
Conceptual Model of Latent Syndemic Factor



Note. Standardized loadings of each indicator of Model 2 of the syndemic factor are shown. This model had a good fit of the data. $\chi 2$ (N = 540, df = 1) = .46, p = .50, CFI = 1.0, RMSEA = 0, SRMR=.01.
*p < .05. ***p < .001.

Figure 2

Conceptual Structural Equation Model



Note. Standardized loadings of each predictor (left side) and indicator of the syndemic factor (right side) are shown. Covariates included in the model were gender, educational attainment, and monthly income level. Model Fit: $\chi 2$ (N = 526, df = 22) = 32.04, p = .08, CFI (.97), RMSEA (.03), and SRMR (.03).
*p < .05. **p < .01. ***p < .001.

CHAPTER V. CONCLUSION

Summary of Findings

The present study addressed research gaps in the literature regarding the cumulative effect of pre migration stress/trauma, postimmigration stress, depressive symptoms and AUS and the interactive effect of gender, adherence to Latino/a TGR, and forced migration on these associations among young adult RLIs in SFL. The results of aim 1 and aim 2 indicated that higher levels of postimmigration stress were significantly associated with higher depressive symptoms and AUS. No significant associations were found between premigration stress/trauma and depressive symptoms, or AUS. A likely explanation for these findings is that the more proximal stressors that RLIs experience after immigrating to the U.S. may have changed and had an acute effect on their depressive symptoms and AUS compared to the distal stressors in their country/region of origin. Moreover, moderation analyses showed that gender had an interactive effect on the association between postimmigration stress and AUS whereby the association was stronger for men compared to women. There was no significant interaction effect by gender on the association between premigration stress/trauma and depressive symptoms or AUS. Additionally, the findings of aim 2 also showed that adherence to Latino/a TGR significantly weakened the association between premigration stress and AUS among men but not for women. No interaction effect was found by adherence to Latino/a TGR on the association between postimmigration stress and AUS and there was no interaction effect by forced migration between the associations of pre/postimmigration stress and AUS. Furthermore, the findings of aim 3 showed that a single latent syndemic factor explained the covariance between pre/postimmigration stress, depressive symptoms, and AUS.

Adherence to Latino/a TGR had a statistically significant positive direct effect on this latent syndemic factor while controlling for gender, educational attainment, and monthly household income among young adult RLIs in SFL.

New Contributions to the Literature

These findings extend the current research among RLIs by providing fundamental knowledge on the cumulative effects of pre and postimmigration experiences and their impact on the depressive symptoms and AUS among young adult RLIs while considering the respective roles that gender, adherence to Latino/a TGR, and forced migration have on these associations. Unlike previous research which has focused mostly on samples consisting of mostly Mexican immigrants and Latino/a immigrants residing in the U.S. for a duration of time, this study examined how conditions prior to and after immigrating to the U.S. impacts the depressive symptoms and AUS of young adult RLIs from diverse countries of origin. Thus, the distinct migration conditions that RLIs experience in their country of origin and upon arrival were accounted for. The present study provides evidence of the significant impact that more proximal stressors compared to distal stressors have on the depressive symptoms of RLIs. In particular, the effect of these proximal stressors in this sample was primarily driven by immigration-related stress due to fears related to their immigration status, racial/ethnic discrimination, and lack of access to health care. As such, these findings provide evidence of the need to address such proximal stressors early in the immigration process to potentially mitigate the adverse mental health outcomes among adult RLIs.

In addition, the present study adds to the body of literature that has investigated the impact of socio-cultural factors on the stress, depressive symptoms, and AUS among young adult Latino/a immigrants by examining the role of gender, adherence to Latino/a TGR, and forced migration among RLIs. Specifically, our findings account for the role that adherence to Latino/a TGR has on the relationship between premigration stress and AUS, by reflecting the protective effect that endorsement of Latino/a TGR has on this association among RLI men. These findings provide new evidence of the importance of assessing adherence to Latino/a TGR among RLIs who report premigration stress in order to mitigate their AUS. Contrary to previous research findings that examine adherence to Latino/a TGR on the stress and AUS among Latino/a immigrants, our results indicate that RLIs who adhere to Latino/a TGR may be using other coping mechanisms to deal with their stressors upon arriving to the U.S.

Notably, to our knowledge this was the first study to identify the interrelatedness between the conditions of premigration stress/trauma, postimmigration stress, depressive symptoms, and AUS and to test if these conditions were a syndemic factor among a diverse group of young adult RLIs in the U.S. Novel to the literature on syndemics, the present study provides empirical evidence of the emergence of the syndemic of pre/postimmigration stress, depressive symptoms, and AUS among young adult RLIs and the positive effect that adherence to Latino/a TGR has on this syndemic factor. In contrast to prior studies that have conducted syndemic research among samples of Latino/a immigrants residing in the U.S for a longer duration of time, these findings indicate that RLIs are also susceptible to syndemics. Moreover, the findings of the present study shed light on the importance of considering the role of adherence to

Latino/a TGR early in the immigration process in order to reduce the syndemic of pre/post immigration stress, depressive symptoms, AUS among young adult RLIs. Previous studies conducted on syndemics among Latino/a immigrants in SFL have yet to document the direct effect that adherence to Latino/a TGR has on the emergence of syndemics. The present study provides preliminary evidence of the positive association between adherence to Latino/a TGR and the syndemic of pre/postimmigration stress, depressive symptoms, and AUS among RLIs in SFL. More importantly, these findings suggest the need to implement culturally tailored interventions early in the immigration process that screen for adherence to Latino/a TGR to reduce the susceptibility of RLIs to this syndemic. Deconstructing Latino/a TGR that support maladaptive coping mechanisms may mitigate the susceptibility that RLIs have to the syndemic of pre/postimmigration stress, depressive symptoms, and AUS. Furthermore, although forced migration did not prove to be a syndemic indicator among young adult RLIs in SFL, these findings suggest the importance of considering the context of reception in less established immigrant-receiving communities to identify their cultural and linguistic needs.

Strengths

The present study examined a unique and heterogenous sample of RLIs of both documented and undocumented immigration status who recently immigrated to the U.S. from South America, Central America, and the Caribbean region; Latino/a subgroups which are currently underrepresented in the literature. By focusing on a heterogenous group of recently arrived immigrants from varied countries of origin, the present study was able to examine the contextual challenges that RLIs experience during an early

transitional phase of the immigratory process to the U.S. The inclusion of RLIs in SFL from a wide range of Latin countries provides fundamental knowledge on the unique premigration experiences they are exposed to in their countries/regions of origin and its impact on their stress, depressive symptoms and AUS after immigration, as well as the role that gender and TGR plays on these associations. The majority of research on mental health disparities among Latino/a immigrants have been conducted among Mexican immigrants and immigrants in the U.S. for an extended period of time, and do not reflect the current immigration patterns to the U.S. Hence, our study provides formative knowledge that reflects the demographic shifts in Latino/a immigration patterns and how current pre and postimmigration experiences impact the mental health and alcohol use outcomes in this population.

Limitations

The present study has limitations that should be noted. First, the cross sectional nature of the study did not allow for the test of causal pathways between variables of interest. As such, the cumulative effects of the syndemic factor were assessed simultaneously and sequentially. As such, the synergistic effects of the syndemic factor variables were not examined and this analysis was beyond the scope of the study. Second, the measures used in the study relied on self-report data which may have been prone to response and recall bias. However, the recency of immigration (less than 1 year) in this sample maximized their capacity to recollect information. Third, the measures used to collect data on AUS, trauma, and forced migration were general in nature and did not account for the subtypes and varying dimensions of these variables. Lastly, given the

geographic specificity of this study, the findings may only be generalizable to RLIs in SFL and not among RLIs in less established immigrant communities.

Future Research Directions

Taken together, the findings from the present study reflect the need for studies that focus on the planning, development, and implementation of culturally tailored integrated interventions early in the immigration process that address pre/postimmigration stress to potentially mitigate depressive symptoms and AUS among RLIs in SFL and other immigrant receiving communities. Clinicians that work in immigrant receiving community health care programs should screen for pre/postimmigration stress among RLIs who report depressive symptoms and/or AUS. Given that SFL is a well-established immigrant receiving community, future research direction should include similar studies in new immigrant receiving communities. Additionally, interventions are needed that are gender specific, in Spanish, and that deconstruct Latino/a TGR that may promote maladaptive coping behaviors. In addition, the present study provides evidence for the need for future research that examines the distinct domains of TGR (i.e. caballeros) that may be protective so that they can be leveraged in culturally tailored interventions that seek to reduce AUS among men. Our findings also suggest the need for future studies among RLIs that collect longitudinal data on the syndemic factor domains of pre/post immigration stress, depressive symptoms, and AUS. By collecting these measures over time , future research can contextualize whether the reports of these conditions among RLIs are due to an acute or chronic/relapsing condition, thereby measuring the interaction effect of these conditions.

Finally, our results provide preliminary evidence of the need for the development of tailored integrated interventions that address the syndemic of pre/postimmigration stress, depressive symptoms, and AUS among young adult RLIs while accounting for the influence of adherence to Latino/a TGR within these intersecting conditions.

Public Health Implications

The findings in this study can serve as target markers for immigration policy reform that allocates greater funding for the surveillance of cooccurring mental health disparities among RLIs in immigrant receiving communities. Moreover, legislation is needed that provides these communities greater resources to safeguard the needs of RLIs by normalizing the welcoming of RLIs, securing a safe pathway to citizenship, and requesting programs to be culturally tailored to reflect the heterogeneity of RLIs. The epidemiologic data collected in this study can be used to improve the structural and social conditions in SFL and other immigrant receiving communities by directing immigration political priorities that push for the resolution of these postimmigration stressors and consider programs that address adherence to Latino/a TGR to reduce the emergence of adverse mental health and alcohol use related outcomes in this population. Findings also inform the development of community-based interventions that address pre and post immigration experiences among newly arrived immigrants and the need for integrating sociocultural factors such as adherence to Latino/a TGR.

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APPENDICES

APPENDIX 1- IRB AMENDMENT APPROVAL LETTER

FIU Research & Economic Development
FLORIDA INTERNATIONAL UNIVERSITY

MEMORANDUM

To: Dr. Mariana Sanchez

CC: Vicky Vazquez

From: Elizabeth Juhasz, Ph.D., IRB Coordinator

Date: January 27, 2021

Proposal Title: "The Role of Pre and Post Immigration-Related Stress, Pre-Immigration Trauma, Depressive Symptoms, and Alcohol Use Severity among Recent Latinx Immigrants in South Florida"

Approval # IRB-20-0313-AM01

Reference # 109330

The Florida International University Office of Research Integrity has approved the following modification(s):

- To associate this protocol to an F-31 proposed study project funding source (Project information AWD# 12067 and Project ID: 800013752). In addition, new key associates were added to the protocol including Dr. Mario De La Rosa, Dr. Hortensia Amaro, and Dr. Michelle Hospital as part of the training team in the F-31 proposed project. These new associates will aid in the data analysis and manuscript writing process of this project.
- Moreover, the project completion date was changed to 12/31/2022 since the project training timeline and allocated funding budget was extended to this date.

There are no additional requirements in regards to your study. However, if there are further changes in the protocol after you commence your study, then you are required to resubmit your proposal for review. For further information, you may visit the FIU IRB website at http://research.fiu.edu/irb.

VITA

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